



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
सी०ई०एन० ०९/२०२५-७ वें सीपीसी वेतन मैट्रिक्स के लेवल १ में विभिन्न पदों हेतु
CEN 09/2025 - Various Posts in Level 1 of 7th CPC Pay Matrix



RRB Group D 2024

Level-1 · CEN 08/2024 · General Science — Topic-wise

English

57 Chapters · 2503 Questions · Official Answer Key

About this Compilation

Every **General Science** question asked across all shifts of the **RRB Group D (Level-1) 2024** examination (CEN 08/2024), regrouped by **chapter** instead of by shift, so you can revise one topic end to end. The correct option is marked as per the official answer key.

22 duplicate questions removed. RRB repeated these word-for-word across different shifts. They appear once here, so a chapter never prints the same question twice - the shift-wise and section-wise books still carry every occurrence.

How to use

- Use the **Index** to jump to any chapter (clickable).
- Within a chapter, questions on the same idea are placed together.
- The correct answer is highlighted in green with a tick.
- The same paper is also available shift-wise and section-wise at rank.qmaths.in.



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Environment & Ecology

15 Questions • Answer Key

Q1 General Science

A housing society has started segregating waste into two bins – green for kitchen waste and blue for plastic, metal and glass. What is the main benefit of this practice?

- A. It makes waste collection faster.
- B. It helps separate non-biodegradable from biodegradable waste. ✓
- C. It increases the quantity of waste produced.
- D. It reduces the smell of garbage.

Q2 General Science

While cleaning the school campus, students are asked to separate biodegradable waste. Which of the following should be placed in the biodegradable bin?

- A. Wooden pencil shavings ✓
- B. Polythene bag
- C. Glass bottle
- D. A crushed cold drink can

Q3 General Science

Plastic waste has increased a lot in a city over the last 10 years. Which habit of people is most likely causing this?

- A. Plastic bags have been banned.
- B. People are using more disposable items instead of long-lasting ones. ✓
- C. More people are using buses and trains.
- D. People are choosing reusable things.

Q4 General Science

Substances that are broken down by biological processes are said to be:

- A. biodegradable ✓
- B. synthetic
- C. metallic
- D. non-biodegradable

Q5 General Science

A school organises a 'Zero Waste' day. Which of the following practices will best support this initiative?

- A. Serving food in banana leaves or reusable plates ✓
- B. Disposing food waste in regular trash bins
- C. Using single-use plastic cutlery
- D. Wrapping snacks in plastic foil

Q6 General Science

Which of the following substances is NOT an example of biodegradable substance?

- A. Plastic bags ✓
- B. Spoilt food
- C. Vegetable peels
- D. Waste paper

Q7 General Science

Which of the following is human-made material and will NOT be broken down by the action of bacteria?

- A. Butter
- B. Rice
- C. Plastic ✓
- D. Bread

Q8 General Science

When thrown in soil, which of the following substances will persist in the environment for a long time?

- A. Pieces of bread
- B. Mango seed
- C. Apple peel
- D. Broken glass pieces ✓

Q9 General Science

Which of the following materials remains unchanged over long periods of time?

- A. Silk cloth bag
- B. Cotton cloth bag
- C. Plastic bag ✓
- D. Jute bag



Q10 General Science

What is the primary goal of reducing non-biodegradable waste production?

- A. To make more space available in landfills
- B. To recycle the waste
- C. To conserve natural resources and minimise pollution ✓
- D. To promote industrial growth

Q11 General Science

Which of the following methods will NOT help in the management of garbage and other wastes produced by humans?

A. Landfilling plastics in soil ✓

- B. Treating wastes before release
- C. Following 3R's (Reduce, Reuse, Recycle)
- D. Vermicomposting

Q12 General Science

Using cracked crockery to grow small plants is an example of _____.

- A. Refuse
- B. Repurpose ✓
- C. Recycle
- D. Reuse

Q13 General Science

Which of the following is a non-biodegradable material?

A. Plastic bag ✓

- B. Cotton cloth
- C. Paper
- D. Vegetable peel

Q14 General Science

From the given alternatives, select the correct statement related to garbage from a general household.

A. Safe disposal of garbage is not mandatory.

B. Entire garbage is biodegradable.

C. Garbage contains both biodegradable and non-biodegradable components. ✓

D. Entire garbage is non-biodegradable.

Q15 General Science

What is the best way to manage non-biodegradable waste such as plastic?

A. Recycle and reuse it ✓

- B. Bury it in soil
- C. Burn it in open air
- D. Mix it with compost



Q1 General Science

Through the phenomenon of biological magnification, which of the following has the maximum concentration of pesticides in them?

- A. Grass
- B. Snake ✓
- C. Grasshopper
- D. Frog

Q2 General Science

Which of the following substances have a high chance of contributing to the phenomenon of biological magnification?

- A. Pesticide ✓
- B. Neem bark
- C. Rose petals
- D. Orange peel

Q3 General Science

Which of the following may lead to biological magnification?

- A. Pesticides ✓
- B. Straw
- C. Peel of banana
- D. Degrading vegetables

Q4 General Science

Which of the following substance is inert and simply persist in the environment for a long time and harm various members of the eco-system?

- A. Tea leaves
- B. Disposable plastic cups ✓
- C. Disposable paper cups
- D. Tea clay kullhads

Q5 General Science

Which of the following organisms will accumulate maximum concentration of DDT?

- A. Grass
- B. Human ✓
- C. Spider
- D. Goat

Q6 General Science

A food chain starts from grass → grasshopper → frog → snake → hawk. How much concentration of non-biodegradable pesticides is expected in hawk?

- A. The highest concentration of pesticides ✓
- B. Equal concentration of pesticide as in the frog
- C. The lowest amount of pesticide residue
- D. No pesticide residue at all

Q7 General Science

Which of the following statements describes biological magnification?

- A. Energy increases as it flows from producers to consumers.
- B. Progressive increase in biological activities.
- C. Increase in concentration of harmful substances at higher trophic levels. ✓
- D. Pollutants are completely broken down by decomposers in the ecosystem.

Q8 General Science

Food items such as wheat, rice, vegetables, fruits and meat contain varying amounts of pesticide residues due to which of the following phenomena?

- A. Photosynthesis
- B. Eutrophication
- C. Transpiration
- D. Biological magnification ✓



Q9 General Science

Which trophic level represents maximum concentration of pesticides by biological magnification?

A. Tertiary Consumer



B. Primary Consumer

C. Producer

D. Secondary Consumer



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Q1 General Science

Which of the following is formed by each step of the food chain?

- A. Troposphere level
- B. Ozone layer
- C. Stratosphere level
- D. Trophic level

**Q2** General Science

Which of the following trophic levels is occupied by the tertiary consumers?

- A. Second trophic level
- B. First trophic level
- C. Fourth trophic level
- D. Third trophic level

**Q3** General Science

Why are autotrophs placed at the first trophic level in a food chain?

- A. Because they consume organic waste materials
- B. Because they feed on herbivores
- C. Because they manufacture food from inorganic substances
- D. Because they decompose dead organisms



Q1 General Science

In a school garden, butterflies often visit flowers while squirrels feed on nuts. What types of consumers are these organisms?

- A. Butterflies – herbivores, Squirrels – herbivores ☒
- B. Butterflies – carnivores, Squirrels – omnivores
- C. Butterflies – parasites, Squirrels – decomposers
- D. Butterflies – omnivores, Squirrels – carnivores

Q2 General Science

Which of the following help in maintaining the supply of nutrients to the growing plants in the forest?

- A. Secondary consumers
- B. Tertiary consumers
- C. Decomposers ☒
- D. Primary consumers

Q3 General Science

The process of converting farm waste material into decomposed matter rich in organic matter and nutrients is called:

- A. Composting ☒
- B. Fertilization
- C. Pollination
- D. Green Manuring



Q1 General Science

Which of the following human activities contributes to ozone layer depletion?

- A. Conserving water
- B. Composting organic waste
- C. Using solar energy
- D. Using CFC-based refrigerants and spray cans ✓

Q2 General Science

Which of the following leads to significant damage to the ozone layer in the atmosphere?

- A. Oxygen
- B. Carbon dioxide
- C. Chlorofluorocarbons (CFCs) ✓
- D. Methane

Q3 General Science

Imagine a country continues to use CFCs despite the global agreement. What could be the consequences for that country and the world?

- A. Environmental harm and global criticism ✓
- B. Faster industrial development
- C. Increase in rainfall
- D. No effect, as other countries have stopped using CFCs



Q1 General Science

At higher levels of the atmosphere, which of the following shields the surface of the earth from ultraviolet radiation?

A. Hydrogen

B. Carbon

C. Ozone



D. Nitrogen

Q2 General Science

Ozone protects the Earth from _____ radiation of the sun.

A. infrared

B. ultraviolet



C. cosmic

D. gamma

Q3 General Science

Which of the following molecules is split apart by higher energy ultraviolet for formation of ozone?

A. Sodium

B. Zinc

C. Oxygen



D. Iron



Q1 General Science

The relationships of food chain, which can be shown as a series of branching lines is called:

- A. Spider web
- B. World wide web
- C. Trophic level
- D. Food web

**Q2** General Science

Which of the following scenarios can disturb a food web the most?

- A. Seasonal change in rainfall
- B. Change in wind direction
- C. Sudden removal of a key species
- D. Increase in sunlight hours

**Q3** General Science

Food web consists of different types of _____.

- A. trophic levels
- B. food chains
- C. foods
- D. ecosystems



Q1 General Science

Which of the following is abiotic factor responsible for storage losses in agricultural produce?

- A. Fungi
- B. Insects
- C. Moisture
- D. Rodents

**Q2** General Science

Which of the following is not an abiotic component of an ecosystem?

- A. Temperature
- B. Wind
- C. Rainfall
- D. Microbes



Q1 General Science

In India, biodiversity hotspots are primarily located in _____.

A. the Western Ghats and Eastern Himalayas



B. Central India and the Deccan Plateau

C. the Mediterranean, Sardinia and Sicily

D. the Cold desert of Ladakh



Q1 General Science

Which of the following practices would conserve the natural forest cover and different forest products?

- A. Deforestation
- B. Grazing in green forest
- C. Burning of forest
- D. Promoting afforestation



Q1 General Science

Which gas is mainly responsible for the greenhouse effect and is released when fossil fuels are burned?

A. Carbon dioxide



B. Oxygen

C. Nitrogen

D. Hydrogen



Q1 General Science

When water and nutrients are available, algae grow and multiply rapidly by the process of _____.

- A. budding
- B. pollination
- C. fragmentation 
- D. spore formation



Q1 General Science

Generally which of the following trophic levels have the least number of organisms?

A. Secondary consumers

B. Producers

C. Primary consumers

D. Tertiary consumers



Q1 General Science

Approximately what percentage of energy is transferred from one trophic level to the next in an ecosystem?

A. 10%



B. 1%

C. 50%

D. 90%



Q1 General Science

The blades of a windmill rotate because of which of the following?

- A. Sound energy
- B. Elastic energy
- C. Light energy
- D. Wind's kinetic energy



Q1 General Science

The Chipko Movement that took place in the Garhwal Himalayas in 1974 is an example of:

- A. mining-based forest exploitation
- B. community-led protection of trees ☒
- C. government-led reforestation
- D. urban infrastructure development



Q1 General Science

Which of the following principles helps reduce pressure on the environment and promotes sustainable living?

- A. Extract as much as possible
- B. Produce more and consume more
- C. Reduce, Reuse, and Recycle
- D. Use and discard



Q1 General Science

Which of the following is an example of natural ecosystem?

- A. Fish aquarium
- B. Hydroponics
- C. Kitchen garden
- D. Forests



General Knowledge

24 Questions • Answer Key

Q1 General Science

Which poultry are birds farmed to produce eggs?

- A. Common carp
- B. Layers
- C. Milch
- D. Broilers



Q2 General Science

Which of the following statements is NOT correct?

- A. In a prism, the emergent ray bends towards the base of the prism when the incident ray is coming from the base side.
- B. In a prism, dispersion can occur if white light is used.
- C. In a prism, the incident ray and emergent ray are always parallel.
- D. The angle of deviation is the angle between the incident ray and emergent ray.



Q3 General Science

Which of the following is in accordance with Law of constant proportions?

- a. In water, the ratio of the mass of hydrogen to the mass of oxygen is always 1 : 8.
- b. The ration of carbon and oxygen in carbon dioxide is always 3 : 8 by mass.
- c. In ammonia, nitrogen and hydrogen are always present in the ratio 14 : 1 by mass.

- A. a, b and c
- B. Only a
- C. Only b and c
- D. Only a and b



Q4 General Science

The removal of which of the following weeds from agricultural land will be beneficial for farmers?

- A. Wheat
- B. Parthenium
- C. Soybean
- D. Sunflower



Q5 General Science

Which of the following is/are controlled by the use of insecticides in crop protection management?

- A. Fungus
- B. Weeds
- C. Insects
- D. Virus



Q6 General Science

Which of the following is a biological method of crop protection?

- A. Burning crop residues
- B. Spraying DDT
- C. Introducing pest predators
- D. Ploughing



Q7 General Science

Which of the following situations involves an unbalanced force?

- A. A book kept on a table
- B. A ball rolling on the ground and eventually stopping
- C. A person standing still on the ground
- D. A car moving with uniform speed on a straight road



Q8 General Science

Which of the following statements is correct?

- A. Right-hand thumb rule gives the direction of magnetic field around a straight conductor.
- B. Right-hand thumb rule cannot be applied to a straight conductor.
- C. Right-hand thumb rule cannot be applied to circular loops.
- D. Right-hand thumb rule can be used to find the force on a conductor in a magnetic field.



Q9 General Science

If the direction of current in a conductor is reversed, the direction of force on it will:

- A. become zero
- B. reverse
- C. remain the same
- D. double

Q10 General Science

What is molecular mass of carbon dioxide?

- A. 44
- B. 22
- C. 38
- D. 42

Q11 General Science

In which of the following groups of organisms sex determination occurs due to environmental temperature?

- A. All birds
- B. Few reptiles
- C. Human beings
- D. All fishes

Q12 General Science

If 100 J of work is required to transfer 5 C of charge between two points, the potential difference between the points is:

- A. 20 V
- B. 25 V
- C. 50 V
- D. 10 V

Q13 General Science

Which of the following is an example of basic salt?

- A. Ammonium chloride
- B. Sodium chloride
- C. Hydrogen chloride
- D. Sodium bicarbonate

Q14 General Science

Which of the following is true?

- A. Advanced sunrise and delayed sunset is due to atmospheric refraction.
- B. Advanced sunrise and delayed sunset is due to Earth's rotation only.
- C. Advanced sunrise and delayed sunset is due to scattering of light.
- D. Advanced sunrise is due to scattering and delayed sunset is due to refraction.

Q15 General Science

Formula unit mass is:

- A. the sum of the atomic masses of all atoms in a formula unit of a compound
- B. the sum of the number of protons of all atoms in a formula unit of a compound
- C. the sum of the number of electrons of all atoms in a formula unit of a compound
- D. the sum of the atomic number of all atoms in a formula unit of a compound

Q16 General Science

Growing wheat and mustard simultaneously on the same piece of land is an example of which of the following?

- A. Monoculture cropping
- B. Jhum cultivation
- C. Crop rotation
- D. Mixed cropping

Q17 General Science

Which among the following statements represents a characteristic of asexual reproduction?

- A. Involves two parents
- B. Produces genetically diverse offspring
- C. Involves only one parent
- D. Requires gametes

Q18 General Science

What is rancidity?

- A. The process of food becoming stale due to drying
- B. The process where fats and oils in food are oxidised, leading to changes in smell and taste
- C. The process of preserving food by adding salt or sugar
- D. The process of food decaying due to bacterial growth



Q19 General Science

In which of the following organisms do both fragmentation and spore formation occur?

- A. Planaria
- B. Yeast
- C. Fungi
- D. Amoeba

**Q20 General Science**

Consider the following statements and select the correct option.

Statement A: Alcohols react with sodium to evolve hydrogen.
Statement B: No gas is evolved when sodium reacts with ethanol.

- A. Statement A is incorrect but B is correct.
- B. Statement A is correct but B is incorrect.
- C. Both statements A and B are incorrect.
- D. Both statements A and B are correct.

**Q21 General Science**

How is the timely sowing of crops helpful for the farmer?

- A. It increases weed growth.
- B. It attracts pests.
- C. It decreases crop yield.
- D. It avoids competition with weeds.

**Q22 General Science**

Herbicides protect crops by _____.

- A. Killing fungi
- B. Killing bacteria
- C. Killing insects
- D. Killing weeds

**Q23 General Science**

Which of the following is NOT an olfactory indicator?

- A. Vanilla
- B. Onion
- C. Clove oil
- D. Litmus

**Q24 General Science**

Read the following statements carefully and select the correct option.

Assertion (A): Keeping oily food in airtight containers prevents rancidity.
Reason (R): Airtight containers slow down the oxidation of fats and oils.

- A. Both A and R are true, and R is the correct explanation of A.
- B. A is true, but R is false.
- C. Both A and R are true, and R is not the correct explanation of A.
- D. A is false, but R is true.



Q1 Acceleration and uniform motion

Which of the following statements is INCORRECT about uniform motion?

- A. The velocity remains unchanged
- B. The speed varies continuously with time ✓
- C. The body covers equal distances in equal intervals of time
- D. The acceleration is zero

Q2 Acceleration and uniform motion

Which of the following statements is correct for uniform motion?

- A. The slope of the distance–time graph is decreasing.
- B. The slope of the distance–time graph is increasing.
- C. The slope of the distance–time graph is zero.
- D. The slope of the distance–time graph is constant. ✓

Q3 Acceleration and uniform motion

An object is said to be in uniform motion if:

- A. it covers equal distances in unequal time intervals
- B. it covers unequal distances in equal time intervals
- C. it covers unequal distances in unequal time intervals
- D. it covers equal distances in equal time intervals ✓

Q4 Acceleration and uniform motion

A car starts from rest and reaches a speed of 72 km/hr in 20 seconds. What is the acceleration of the car?

- A. 2 m/s^2
- B. 4 m/s^2
- C. 1 m/s^2 ✓
- D. 3 m/s^2

Q5 Acceleration and uniform motion

A train is moving along a straight track with a speed of 54 km/hr. It stops after traveling 150 m. The magnitude of its acceleration is:

- A. 1 m/s^2
- B. 0.75 m/s^2 ✓
- C. 2 m/s^2
- D. 1.5 m/s^2

Q6 Acceleration and uniform motion

A particle starts from rest and moves with uniform acceleration. Which of the following represents the correct velocity–time graph for the particle?

- A. A parabola
- B. A straight line passing through the origin with positive slope ✓
- C. A horizontal line
- D. A straight line passing through the origin with negative slope

Q7 Acceleration and uniform motion

A particle's velocity–time graph is a straight line with a negative slope. What does this indicate about the particle's motion?

- A. The particle is slowing down if moving in the positive direction. ✓
- B. The particle is moving with increasing acceleration.
- C. The particle is at rest.
- D. The particle is speeding up in the positive direction.

Q8 Acceleration and uniform motion

What do we call the motion of an object that travels equal distances in equal intervals of time, even when the time intervals are very small?

- A. Non-uniform motion
- B. Accelerated motion
- C. Uniform motion ✓
- D. Circular motion

Q9 Acceleration and uniform motion

Which of the following best describes the key feature of the velocity–time graph for an object moving with uniform velocity?

- A. It is a straight line parallel to the velocity axis.
- B. It is a curved line.
- C. It is a straight line parallel to the time axis. ✓
- D. It is a straight line inclined to the time axis.



Q10 Acceleration and uniform motion

Which of the following is NOT true about an object in non-uniform motion?

- A. It has different speeds at different points
- B. The change in velocity is zero over time interval ✓
- C. It moves unequal distances in unequal time intervals
- D. Its velocity changes with time

Q11 Acceleration and uniform motion

A distance–time graph is a curve rather than a straight line. What does this indicate?

- A. The body is moving with uniform speed.
- B. The body is moving with uniform acceleration.
- C. The body is at rest.
- D. The body is moving with non-uniform speed. ✓

Q12 Acceleration and uniform motion

When an object moves along a straight path but its speed keeps changing, how can we describe its rate of motion?

- A. By checking how far it goes every second
- B. By measuring its constant velocity
- C. By using the total time over the average velocity
- D. By using average velocity over the total time ✓

Q13 Acceleration and uniform motion

In a v–t graph, if the slope keeps changing, it means:

- A. displacement is zero
- B. acceleration is uniform
- C. acceleration is non-uniform ✓
- D. speed is constant

Q14 Acceleration and uniform motion

If a body's velocity changes from +20 m/s to –10 m/s in 4 seconds, the acceleration is _____.

- A. + 7.5 m/s²
- B. – 5.0 m/s²
- C. – 7.5 m/s² ✓
- D. + 5.0 m/s²

Q15 Acceleration and uniform motion

Meenu starts from rest and pedals her bicycle to reach a speed of 5 m/s in 25 seconds. What is her acceleration?

- A. 0.3 m/s²
- B. 0.2 m/s² ✓
- C. 0.1 m/s²
- D. 0.4 m/s²

Q16 Acceleration and uniform motion

Which of the following shows the correct formula for acceleration?

- A. acceleration = distance / time
- B. acceleration = change in velocity × time
- C. acceleration = change in velocity / time taken ✓
- D. acceleration = force × mass

Q17 Acceleration and uniform motion

The sign of acceleration depends on its direction relative to velocity. Which of the following is correct?

- A. Acceleration is always positive, irrespective of direction.
- B. Acceleration is negative if it is in the direction of velocity.
- C. Acceleration is positive if it is in the direction of velocity, and negative if it is opposite. ✓
- D. Acceleration is positive if it is opposite to the direction of velocity.

Q18 Acceleration and uniform motion

What is the nature of the distance-time graph for an object in non-uniform motion?

- A. A vertical line
- B. A horizontal line
- C. A curved line ✓
- D. A straight line

Q19 Acceleration and uniform motion

Which of the following statements is correct about acceleration?

- A. Acceleration is positive when it is opposite to the direction of velocity.
- B. The SI unit of acceleration is m/s.
- C. Acceleration is always positive, regardless of direction.
- D. Acceleration is negative when it acts opposite to the direction of velocity. ✓



Q20 Acceleration and uniform motion

Which of the following represents non-uniform linear velocity?

A. A train starting from rest



B. A ball rolling at uniform rate

C. A body moving in a straight line at fixed speed

D. A car moving at constant speed

Q21 Acceleration and uniform motion

If the slope of a distance-time graph changes continuously, it indicates:

A. stationary object

B. instantaneous rest

C. non-uniform speed



D. uniform speed

Q22 Acceleration and uniform motion

A car moves with uniform velocity v . Which of the following statements is true about its velocity-time graph?

A. Slope of graph = displacement

B. Slope of graph = velocity

C. Slope of graph = 0



D. Graph passes through origin only

Q23 Acceleration and uniform motion

During non-uniform motion of an object along a straight line _____.

A. the velocity remains constant with time.

B. the change in velocity over any time interval is zero.

C. the change in velocity over any time interval is non zero.



D. the velocity has same values at different points of the path.

Q24 Acceleration and uniform motion

What does the velocity-time graph look like for an object moving with uniform velocity?

A. A curved line rising gradually

B. A straight line parallel to the time axis



C. A straight line sloping downwards

D. A straight line sloping upwards

Q25 Acceleration and uniform motion

During uniform motion of an object along a straight line _____.

A. The change in velocity over any time interval is non zero.

B. The change in velocity over any time interval is zero.



C. The velocity changes continuously with time.

D. The velocity has different values at different instants and at different points of the path.

Q26 Acceleration and uniform motion

If the velocity-time graph of an object is curved, it indicates _____.

A. Constant speed

B. Uniform motion

C. Zero velocity

D. Non-uniform acceleration

**Q27 Acceleration and uniform motion**

Starting from rest, a car attains a velocity of 10 m/s in 20 s. Braking reduces the velocity to 5 m/s in the next 5 s. What is the respective acceleration in the two scenarios?

A. 0.5 m/s² ; -1 m/s²



B. 1 m/s² ; 0.5 m/s²

C. -1 m/s² ; 0.5 m/s²

D. 0.5 m/s² ; 1 m/s²

Q28 Acceleration and uniform motion

What will the distance-time graph look like for an object moving with uniform speed?

A. The graph looks like a sine wave.

B. The graph is a straight line.



C. The graph cannot be drawn.

D. The graph is a zig zag line.

Q29 Acceleration and uniform motion

When the distance-time graph of an object is a curved line, it indicates that _____.

A. The object is moving with a constant speed

B. The speed of the object is changing with time



C. There is no acceleration in the motion

D. The object remains stationary



Q30 Acceleration and uniform motion

If the velocity of a car increases from 20 m/s to 40 m/s in 4 seconds, the acceleration of the car is ____.

A. 5 m/s²



B. 5 m/s

C. 10 m/s²

D. 10 m/s

Q31 Acceleration and uniform motion

For a body moving with uniform velocity, the acceleration is:

A. constant

B. increasing

C. decreasing

D. zero

**Q32 Acceleration due to gravity (g)**

Which of the following statements is correct about acceleration due to gravity?

A. It decreases with altitude



B. It is the same everywhere on Earth

C. It remains constant with depth

D. It increases as we go inside the Earth

Q33 Acceleration due to gravity (g)

If an object weighs 60 N when measured on the surface of the Earth, what would be its approximate weight when measured on the surface of the Moon?

A. 60 N

B. 360 N

C. 15 N

D. 10 N

**Q34 Acceleration due to gravity (g)**

An object has a weight of 24 N on Earth. What will be its weight on the Moon's surface?

A. 6 N

B. 144 N

C. 4 N



D. 240 N

Q35 Acceleration due to gravity (g)

An object is thrown vertically upwards with velocity u . Under the influence of gravity, the acceleration:

A. acts in the direction of motion

B. acts opposite to the direction of motion



C. becomes zero at the highest point

D. increases the upward velocity

Q36 Acceleration due to gravity (g)

What causes the acceleration of an object when it falls toward the Earth?

A. Friction

B. Magnetic force

C. Air resistance

D. Earth's gravitational force

**Q37 Acceleration due to gravity (g)**

The expression for acceleration due to gravity on the surface of a planet of mass M and radius R is:

A. $g = GM^2/R$

B. $g = R/GM^2$

C. $g = GR/M^2$

D. $g = GM/R^2$

**Q38 Acceleration due to gravity (g)**

The weight of an object is less on the Moon than on the Earth because:

A. the Moon has smaller acceleration due to gravity than the Earth



B. the Moon attracts objects with more force

C. the object becomes lighter due to air resistance

D. the mass of the object decreases on the Moon

Q39 Acceleration due to gravity (g)

The formula for acceleration due to gravity (g) at the surface of the Earth is ____.

A. $g = GM/R^2$



B. $g = R^2/GM$

C. $g = G/MR^2$

D. $g = GM/R$



Q40 Acceleration due to gravity (g)

The acceleration due to gravity on the surface of the Earth is given by:

A. $g = GM/R^2$ ✓

B. $g = GM/R$

C. $g = R^2/GM$

D. $g = GM$

Q41 Acceleration due to gravity (g)

At which location on the Earth's surface would a standard object experience the maximum acceleration due to gravity (g)?

A. The Equator

B. Tropic of Cancer

C. The Poles ✓

D. Tropic of Capricorn

Q42 Acceleration due to gravity (g)

Read the given statements and select the most appropriate option.

Statement 1: When a ball is thrown vertically upward, its velocity decreases at the rate of g.

Statement 2: The acceleration due to gravity acts downward even when the ball moves upward.

A. Only Statement 1 is correct

B. Only Statement 2 is correct

C. Both Statements are incorrect

D. Both Statements 1 and 2 are correct ✓

Q43 Acceleration due to gravity (g)

What will be the acceleration due to gravity on a planet whose mass and radius are double that of the Earth? (Take the acceleration due to gravity on Earth as g.)

A. $g/4$

B. g

C. $g/2$ ✓

D. $2g$

Q44 Acceleration due to gravity (g)

Which of the following is/are true about the acceleration due to gravity?

- (i) The value of acceleration due to gravity depends on the mass of the object falling under the effect of gravity.
(ii) The value of acceleration due to gravity is universally constant.

A. Only (ii)

B. Neither (i) nor (ii) ✓

C. Both (i) and (ii)

D. Only (i)

Q45 Acceleration due to gravity (g)

Two planets have the same radius. Planet A has twice the mass of Planet B. What is the ratio of acceleration due to gravity on Planet A to that on Planet B?

A. $2:1$ ✓

B. $4:1$

C. $1:2$

D. $1:1$

Q46 Archimedes principle and buoyancy

Archimedes' principle states that when a body is immersed in a fluid, it experiences _____.

A. An upward force equal to the weight of the body

B. An upward force equal to the weight of fluid displaced by the body ✓

C. No change in its weight

D. A downward force equal to the weight of fluid displaced by the body

Q47 Archimedes principle and buoyancy

Which of the following quantities does NOT affect the buoyant force acting on a body immersed in a fluid?

A. Density of object ✓

B. Gravitational acceleration

C. Volume of displaced fluid

D. Density of fluid



Q48 Archimedes principle and buoyancy

When an empty plastic bottle with an airtight stopper is pushed deeper into a bucket of water, the increasing upward force that resists the downward push is known as _____.

- A. surface tension
- B. buoyant force (or upthrust) ✓
- C. gravitational force
- D. atmospheric pressure

Q49 Archimedes principle and buoyancy

Which of the following statements about the Archimede's Principle is correct?

- A. When a body is immersed fully or partially in a fluid, it experiences an upward force that is much less than the weight of the fluid displaced by it.
- B. When a body is immersed fully or partially in a fluid, it experiences a downward force that is equal to the weight of the fluid displaced by it.
- C. When a body is immersed fully or partially in a fluid, it experiences an upward force that is equal to the weight of the fluid displaced by it. ✓
- D. When a body is immersed fully or partially in a fluid, it experiences a downward force that is much less than the weight of the fluid displaced by it.

Q50 Archimedes principle and buoyancy

According to Archimedes' principle, what is the magnitude of the upward force (buoyant force)?

- A. It is equal to the pressure exerted by the fluid.
- B. It is equal to the volume of the fluid.
- C. It is equal to the weight of the fluid displaced by the body. ✓
- D. It is equal to the weight of the immersed body.

Q51 Archimedes principle and buoyancy

Which of the following instruments is NOT based on Archimedes' principle?

- A. Ammeter ✓
- B. Submarine
- C. Lactometer
- D. Hydrometer

Q52 Archimedes principle and buoyancy

Hydrometers are tools used to measure the density of liquids. Which scientific principle are they based on?

- A. Archimedes' Principle ✓
- B. Universal law of Gravitation
- C. Newton's First Law
- D. Pascal's Law

Q53 Archimedes principle and buoyancy

Which of the following is NOT an application of Archimedes' Principle?

- A. Determining the density of an irregular solid
- B. Submarine floating and diving
- C. Calculating buoyant force on a body in fluid
- D. Measuring electrical resistance of a wire ✓

Q54 Archimedes principle and buoyancy

When an object is placed in a fluid, it feels an upward force called buoyancy. On which factor does the magnitude of this buoyant force depend?

- A. The weight of the object only
- B. The colour of the object
- C. The density of the fluid ✓
- D. The shape of the object

Q55 Archimedes principle and buoyancy

Which of the following is a practical application of Archimedes' Principle in daily life?

- A. Using a prism for light dispersion
- B. Design of ships and submarines ✓
- C. Operating a pendulum
- D. Using a thermometer

Q56 Archimedes principle and buoyancy

In a fluid, the buoyant force acting on a submerged or floating object always acts _____.

- A. vertically downward
- B. vertically upward ✓
- C. along the direction of motion of the object
- D. in a direction depending on the shape of the object



Q57 Archimedes principle and buoyancy

Which of the following statement(s) is/are true about the buoyant force experienced by an object when it is immersed in a fluid?

- (i) All objects experience a force of buoyancy when they are immersed in a fluid.
(ii) The magnitude of this buoyant force depends on the density of the fluid.

- A. Neither (i) nor (ii)
B. Only (ii)
C. Only (i)
D. Both (i) and (ii) ✓

Q58 Archimedes principle and buoyancy

Which of the following quantities determines the magnitude of the buoyant force on a body?

- A. Density of the fluid and volume displaced ✓
B. Temperature of the fluid
C. Surface area of the body
D. Weight of the body

Q59 Archimedes principle and buoyancy

Which of the following devices works on Archimedes' principle?

- A. Sphygmomanometer
B. Hydrometer ✓
C. Altimeter
D. Aneroid barometer

Q60 Circular motion and centripetal force

Which of the following describes an example of uniform circular motion?

- A. A train moving on its track
B. A ball thrown vertically upwards
C. A car accelerating on its way
D. A fan blade rotating at constant speed ✓

Q61 Circular motion and centripetal force

The motion of a satellite orbiting the Earth in a circular path at constant speed is a classic example of uniform circular motion. What property of this motion prevents its acceleration from being zero?

- A. The total mechanical energy is conserved, necessitating acceleration.
B. The object's mass continually changes due to orbital dynamics.
C. The speed is too high for the gravitational force to sustain a constant velocity.
D. The direction of motion changes continuously at every point, meaning the velocity is changing. ✓

Q62 Circular motion and centripetal force

What is the motion of an object called when it travels along a circular path at a constant speed?

- A. Linear motion
B. Non-uniform circular motion
C. Non-linear motion
D. Uniform circular motion ✓

Q63 Circular motion and centripetal force

What is the direction of velocity in uniform circular motion?

- A. Away from the circle
B. Along the tangent to the circle ✓
C. Towards the centre of the circle
D. Along the radius of the circle

Q64 Circular motion and centripetal force

A cyclist performing uniform circular motion throws an apple in his direction, the apple moves in a _____.

- A. tangential path to the circular path at that point ✓
B. straight line path opposite to the cyclist
C. circular path opposite to the cyclist
D. circular path as the cyclist

Q65 Circular motion and centripetal force

In uniform circular motion, which of the following physical quantities remains constant?

- A. Acceleration
B. Centripetal force
C. Velocity
D. Speed ✓



Q66 Circular motion and centripetal force

A particle moves in a circle of radius 1.5 m with angular velocity 3 rad/s. What will the ratio of its linear velocity to angular velocity be?

A. 1 : 2

B. 3 : 2



C. 2 : 1

D. 2 : 3

Q67 Circular motion and centripetal force

The Moon moves in a curved path around the Earth instead of a straight line because:

A. the Moon has a very large mass

B. the Moon has no inertia

C. the Sun's light pushes the Moon

D. the Earth's gravitational force provides the centripetal force

**Q68 Circular motion and centripetal force**

What happens to a stone tied to a string and moving in a circular path when the string is suddenly released?

A. It changes direction and moves in a zig-zag path

B. It returns to its starting point

C. It stops immediately

D. It continues moving in the direction it was heading at the moment of release

**Q69 Circular motion and centripetal force**

Which of the following is an example of uniform circular motion?

A. A satellite orbiting the Earth



B. A person walking in a straight line

C. A ball thrown vertically upwards

D. A car moving on a straight road

Q70 Circular motion and centripetal force

An athlete runs around a circular track with radius r , completing one full round in t seconds. Which of the following correctly represents the athlete's speed v ?

A. $v = 2\pi r/t$



B. $v = 2\pi r \times t$

C. $v = t/2\pi r$

D. $v = r/2\pi t$

Q71 Circular motion and centripetal force

What type of force is responsible for the Moon's circular motion around Earth?

A. Normal Force

B. Centrifugal Force

C. Centripetal Force due to Earth's gravity



D. Electromagnetic Force

Q72 Circular motion and centripetal force

A stone tied to a string and whirled in a circle exhibits _____.

A. non-uniform motion

B. circular motion



C. uniform straight-line motion

D. linear motion with increasing speed

Q73 Circular motion and centripetal force

An athlete moves on a circular path with uniform speed, completing one revolution in a fixed time. Which of the following statements is correct?

A. The athlete's velocity remains constant in both magnitude and direction.

B. The athlete's speed decreases continuously as they move along the path.

C. The motion is a non-uniform circular motion.

D. The athlete moves with constant speed, which equals the distance travelled in one revolution divided by the time for that revolution.

**Q74 Circular motion and centripetal force**

In uniform circular motion, the speed of the body:

A. remains constant



B. changes continuously

C. becomes zero at every point

D. depends on the radius only

Q75 Circular motion and centripetal force

Which of the following is an example of an object in uniform circular motion?

A. A satellite orbiting Earth at a constant speed



B. A person jogging in a park

C. A car moving on a crowded street

D. A train moving on a straight track at varying speeds



Q76 Circular motion and centripetal force

Which of the following is an example of uniform circular motion in daily life?

- A. A ceiling fan rotating at constant speed** ✓
- B. A bus accelerating on a straight road
- C. A ball rolling down an inclined plane
- D. A person walking in a straight line

Q77 Circular motion and centripetal force

In uniform circular motion, the direction of velocity of an object is:

- A. Along the radius, away from the center
- B. Perpendicular to the axis of rotation
- C. Along the radius, toward the center
- D. Tangential to the circular path** ✓

Q78 Commercial unit of energy (kWh)

The commercial unit of electric energy is kilowatt hour (kWh). Which of the following is the correct value of 1kWh?

- A. 3.6×10^6 Joule** ✓
- B. 1.9×10^6 Joule
- C. 3.0×10^6 Joule
- D. 1.6×10^6 Joule

Q79 Commercial unit of energy (kWh)

Which of the following correctly describes the SI unit of electric power and the commercial unit of electrical energy, respectively?

- A. Kilowatt-hour (kWh); Watt (W)
- B. Watt (W); Kilowatt-hour (kWh)** ✓
- C. Volt (V); Joule (J)
- D. Watt (W); Joule (J)

Q80 Commercial unit of energy (kWh)

If an electric heater consumes 1000 W of power, how much electrical energy does it use in 1 hour?

- A. 1 kWh** ✓
- B. 1000 J
- C. 3600 J
- D. 1000 kWh

Q81 Commercial unit of energy (kWh)

What is the equivalent of 1 kilowatt-hour (kWh) in joules?

- A. $1 \text{ kWh} = 3.6 \times 10^6$ joules** ✓
- B. $1 \text{ kWh} = 36 \times 10^{-6}$ joules
- C. $1 \text{ kWh} = 3.6 \times 10^3$ joules
- D. $1 \text{ kWh} = 360$ joules

Q82 Conservation of energy

Which of the following is NOT a consequence of the law of conservation of energy?

- A. Energy can be created to increase total energy of a closed system** ✓
- B. Kinetic energy can convert into potential energy
- C. Total energy in a closed system remains constant
- D. Energy can be converted from one form to another

Q83 Conservation of energy

During energy transformation, the total energy of a system:

- A. disappears completely
- B. always decreases
- C. remains unchanged** ✓
- D. always increases

Q84 Conservation of energy

The principle of conservation of energy is applicable to _____.

- A. every electrical system exclusively
- B. every chemical system only
- C. every physical process in general** ✓
- D. every mechanical system only

Q85 Density and relative density

What happens to the density of a substance when the temperature of a substance increases?

- A. Density decreases** ✓
- B. Density increases
- C. Density doubles
- D. Density has no effect



Q86 Density and relative density

The measurable quantity 'Density' may be represented in the SI unit of:

- A. kilograms per square metre
- B. kilograms per cubic metre ✓
- C. kilograms per metre
- D. grams per metre

Q87 Distance, displacement, speed, velocity

The shortest distance between the initial and final positions of an object is called _____.

- A. acceleration
- B. distance
- C. displacement ✓
- D. speed

Q88 Distance, displacement, speed, velocity

A runner completes one round of a circular track of radius 175 m in 35 seconds. The average velocity after one round is _____.

- A. 5 m/s
- B. 10 m/s
- C. 0 m/s ✓
- D. 20 m/s

Q89 Distance, displacement, speed, velocity

An object moves along a straight path from point O to point A (100 m away), then immediately reverses and stops at point B, which is 30 m away from A back towards O. What is the total distance covered and the magnitude of the displacement, respectively?

- A. 70 m, 70 m
- B. 130 m, 70 m ✓
- C. 100 m, 70 m
- D. 130 m, 30 m

Q90 Distance, displacement, speed, velocity

A body moves along a straight line with varying speed. Its displacement in 10 s is 50 m. What is the average velocity?

- A. 25 m/s
- B. 50 m/s
- C. 5 m/s ✓
- D. 10 m/s

Q91 Distance, displacement, speed, velocity

Which of the following quantities represents the slope in a displacement–time graph?

- A. Acceleration
- B. Speed
- C. Distance
- D. Linear velocity ✓

Q92 Distance, displacement, speed, velocity

A car travels 100 km at an average speed of 50 km h⁻¹ and immediately returns along the same route covering the distance in 1 hour. What is the average speed of the car for the entire journey in m s⁻¹?

- A. 16.67 m s⁻¹
- B. 13.9 m s⁻¹
- C. 20.0 m s⁻¹
- D. 18.52 m s⁻¹ ✓

Q93 Distance, displacement, speed, velocity

Which of the following statements is NOT true about average speed?

- A. Average speed only needs the magnitude, not direction
- B. To find speed, we need both the magnitude and direction of the object ✓
- C. Its SI unit is metres per second (m/s)
- D. Speed is calculated as distance divided by time

Q94 Distance, displacement, speed, velocity

If an object moves from point A to point B (50 m east) and returns to point A in 10 seconds, its average velocity is:

- A. 5 m/s
- B. 10 m/s
- C. 0 m/s ✓
- D. -10 m/s

Q95 Distance, displacement, speed, velocity

What is required to describe the distance an object has travelled?

- A. Only the direction of motion
- B. Only the numerical value, which is its magnitude ✓
- C. The starting and ending points only
- D. Both magnitude and direction



Q96 Distance, displacement, speed, velocity

What physical quantity is obtained by multiplying the velocity of an object by the time it travels, assuming the object moves with a uniform velocity?

- A. Acceleration
- B. Displacement
- C. Force
- D. Momentum

Q97 Distance, displacement, speed, velocity

A car travels at 62 km/hr for 2.5 hours and then at 48 km/hr for 1.5 hours. Its average speed is approximately _____.

- A. 55 km/hr
- B. 58 km/hr
- C. 27.5 km/hr
- D. 56.8 km/hr

Q98 Distance, displacement, speed, velocity

A boy is running in a circular track of radius 10 m. He completes one circle in 1 minute. What is his average speed?

- A. 10.4 m/s
- B. 0 m/s
- C. 1.04 m/s
- D. 5.2 m/s

Q99 Distance, displacement, speed, velocity

A boy walks from one end A to the other end B of a straight 1000 m road in 2 minutes and then turns around and walks 400 m back to point C in another 2 minutes. What will be the average velocity (in m/s) of the boy in going from point A to point C?

- A. 15
- B. 25
- C. 2.5
- D. 150

Q100 Distance, displacement, speed, velocity

Which of the following is NOT correct for uniform velocity?

- A. The v-t graph is a horizontal line.
- B. Velocity is constant and acceleration is zero.
- C. The area under the v-t graph gives acceleration.
- D. The slope of the line in v-t graph is zero.

Q101 Distance, displacement, speed, velocity

Which of the following describes the nature of the average speed?

- A. It is a scalar quantity (only magnitude).
- B. It can be negative.
- C. It is a vector quantity (magnitude and direction).
- D. It is always equal to or less than the average velocity.

Q102 Distance, displacement, speed, velocity

Rekha swims in a 40-metre-long pool. She swims from one end to the other and comes back, covering 80 metres in one minute along a straight path. What is her average velocity?

- A. 80 m/min
- B. 0 m/min
- C. 20 m/min
- D. 40 m/min

Q103 Distance, displacement, speed, velocity

A man rides a bicycle in a circular track of radius 10 m. He completes one round in 10 minutes. What is his average velocity?

- A. 0.1 m/s
- B. 1 m/s
- C. 6.2 m/s
- D. 0 m/s

Q104 Distance, displacement, speed, velocity

A car moves with uniform speed along a straight road. Its distance-time graph is:

- A. a straight line inclined to the time-axis
- B. a straight line parallel to the time-axis
- C. a curve concave downwards
- D. a curve concave upwards

Q105 Distance, displacement, speed, velocity

A bus travels a 6 km distance in 20 minutes to go from point A to point B. The bus travels from point B to point A in 30 minutes. What is the average speed in m/s of the bus?

- A. 24
- B. 400
- C. 2400
- D. 4



Q106 Distance, displacement, speed, velocity

An object moves 10 m in 2 s. On a distance–time graph, what is the slope?

- A. 10 m/s
- B. 8 m/s
- C. 20 m/s
- D. 5 m/s

**Q107 Distance, displacement, speed, velocity**

If a car moves 100 m in 5 seconds, its linear velocity is:

- A. 15 m/s
- B. 25 m/s
- C. 10 m/s
- D. 20 m/s

**Q108 Distance, displacement, speed, velocity**

A car's odometer shows 3000 km at the beginning of a journey and 3200 km at the end. If the journey takes 4 hours, what is the car's average speed?

- A. 75 km/hr
- B. 25 km/hr
- C. 50 km/hr
- D. 100 km/hr

**Q109 Distance, displacement, speed, velocity**

A particle moves along a straight line. The particle covers displacement of 40 m in 8 seconds. What is its average velocity?

- A. 4 m/s
- B. 40 m/s
- C. 5 m/s
- D. 8 m/s

**Q110 Distance, displacement, speed, velocity**

For a body moving in a straight line, if the distance covered from point A to point B is 10 km, then which of the following statements is true regarding the displacement of the body from point A to point B?

- A. The displacement is equal to 10 km.
- B. The displacement is always zero.
- C. The displacement must be greater than 10 km.
- D. The displacement is always less than 10 km.

**Q111 Distance, displacement, speed, velocity**

Which of the following examples represents motion along a straight line?

- A. A pendulum swinging
- B. A child running around a park
- C. A train moving on a straight track
- D. A fan blade rotating

**Q112 Distance, displacement, speed, velocity**

The slope of a distance–time graph represents the:

- A. speed of the object
- B. distance covered
- C. force on the object
- D. acceleration of the object

**Q113 Distance, displacement, speed, velocity**

If the distance covered is halved and time remains the same, the linear velocity becomes _____.

- A. Same
- B. Half
- C. Zero
- D. Double

**Q114 Distance, displacement, speed, velocity**

Which of the following statements about average speed is INCORRECT?

- A. It is change in distance divided by change in velocity.
- B. It is measured in m/s.
- C. It is total distance divided by total time.
- D. It does not depend on the direction of motion.

**Q115 Distance, displacement, speed, velocity**

An object is moving along a straight line with a velocity that is initially positive (+u) and non-zero, but the acceleration is non-uniform and negative, such that the velocity eventually becomes negative (–v). What does the negative final velocity signify?

- A. The object is moving backward relative to its initial direction.
- B. The acceleration became positive at some point.
- C. The object is at rest.
- D. The object has constant but negative acceleration.



Q116 Distance, displacement, speed, velocity

Can the displacement of an object be greater than the distance travelled?

A. No, displacement can never be greater than distance ☒

B. Only when the object moves in a straight line

C. Yes, sometimes

D. Yes, always

Q117 Distance, displacement, speed, velocity

From a distance–time graph, an object moves from point A to point B, covering a distance ($s_2 - s_1$) in time ($t_2 - t_1$).

Which of the following correctly represents the speed (v) of the object?

A. $v = (s_1 - s_2)(t_1 - t_2)$

B. $v = (s_2 - s_1)(t_2 - t_1)$

C. $v = (s_2 - s_1)/(t_2 - t_1)$ ☒

D. $v = (t_2 - t_1)/(s_2 - s_1)$

Q118 Distance, displacement, speed, velocity

Which of the following statements about average velocity is NOT correct?

A. It is always the same as average speed. ☒

B. It is measured in m/s.

C. It depends on the direction of motion.

D. It is the total displacement divided by total time.

Q119 Distance, displacement, speed, velocity

If a particle covers a distance of 12 m in every 3 s, what is the slope of its distance-time graph?

A. 12.0 m/s

B. 0.25 m/s

C. 3.0 m/s

D. 4.0 m/s ☒

Q120 Distance, displacement, speed, velocity

If the distance-time graph of an object is a straight line parallel to the time axis, what is the object's speed?

A. Uniform

B. Zero ☒

C. Increasing

D. Non-zero constant

Q121 Energy transformations (examples)

Which of the following is the best example of conversion of chemical energy into heat energy?

A. A battery lighting a bulb

B. Burning of wood ☒

C. A motor running on electricity

D. Solar cooker heating food

Q122 Energy transformations (examples)

During the transformation of energy from one form to another, such as gravitational potential energy converting into kinetic energy during free fall, _____.

A. new energy is constantly created, balancing the loss of the original form

B. the total energy before and after the transformation remains the same ☒

C. the total mechanical energy increases, adhering to the law

D. energy is gradually lost to the environment, violating the law

Q123 Equations of motion (kinematics)

A car starts from rest and accelerates uniformly at 2 m/s^2 for 5 seconds. What is the final velocity of the car?

A. 20 m/s

B. 5 m/s

C. 15 m/s

D. 10 m/s ☒

Q124 Equations of motion (kinematics)

Which of the following equations of motion is independent of the final velocity of a particle?

A. $v = ut + a$

B. $v^2 - u^2 = 2as$

C. $v = u + at$

D. $s = ut + \frac{1}{2}at^2$ ☒

Q125 Equations of motion (kinematics)

An object is thrown straight up and reaches a maximum height of 20 m. If we take $g = 10 \text{ m/sec}^2$, what was the initial speed of the object when it was thrown?

A. 40 m/sec

B. 10 m/sec

C. 30 m/sec

D. 20 m/sec ☒



Q126 Equations of motion (kinematics)

A car starts to move from rest and attains a velocity of 20 m/s in 4 seconds. What is the acceleration of the car?

A. 5 m/s²



B. 80 m/s²

C. 100 m/s²

D. 4 m/s²

Q127 Equations of motion (kinematics)

A body of mass 2 kg is moving with a velocity of 10 m/s. A force of 4 N is applied for 5 s. The final velocity is:

A. 35 m/s

B. 25 m/s

C. 15 m/s

D. 20 m/s

**Q128 Equations of motion (kinematics)**

A ball is thrown vertically upward with initial velocity (u). After time (t), its velocity (v) becomes _____.

A. $v = u - gt$



B. $v = u + gt$

C. $v = gt - uv$

D. $v = u + gt$

Q129 Equations of motion (kinematics)

A gun fires a bullet horizontally. Which of the following statements is correct?

A. Recoil depends on gravity.

B. The bullet exerts no force on the gun.

C. The gun experiences a smaller backward force than the bullet's forward force.

D. The gun experiences a backward force equal to the forward force on the bullet.

**Q130 Equations of motion (kinematics)**

What does the area under a velocity-time graph give?

A. Force

B. Acceleration

C. Displacement



D. Work done

Q131 Equations of motion (kinematics)

A ball is thrown vertically upwards at a speed of 2 m/s. What will be the maximum height attained and velocity of the body at the highest point, respectively, of the ball? (Take $g = 10 \text{ m/s}^2$)

A. 5 m and 2 m/s

B. 0.2 m and 0 m/s



C. 5 m and 0 m/s

D. 0.2 m and 2 m/s

Q132 Equations of motion (kinematics)

A car starts from rest is accelerated to a velocity of 60 km/hr in 5 minutes. What is the acceleration of the car?

A. 12 m/s²

B. 1 m/s²

C. 0.055 m/s²



D. 0.025 m/s²

Q133 Equations of motion (kinematics)

A car starts from rest and accelerates uniformly at 2 m/sec² for 5 seconds. What is the velocity at the end of 5 seconds?

A. 15 m/sec

B. 5 m/sec

C. 10 m/sec



D. 20 m/sec

Q134 Equations of motion (kinematics)

A ball is thrown upward with an initial velocity of 12 m/s. What will be its velocity after 1 second? (Take $g = 9.8 \text{ m/s}^2$)

A. 2.2 m/s



B. 12 m/s

C. 0 m/s

D. 21.8 m/s

Q135 Equations of motion (kinematics)

A train is travelling at a speed of 180 km/hr. Brakes are applied so as to produce a uniform acceleration of (-1 m/s^2) . What will be the distance covered by the train before coming to rest?

A. 16,200 m

B. 1250 m



C. 1620 m

D. 125 m



Q136 Equations of motion (kinematics)

If the velocity of an object changes from an initial value u to the final value v in time (t) , then what will be the acceleration (a) ?

A. $a = (v - u) \times t$

B. $a = t/(v - u)$

C. $a = (v - u)/t$ ✓

D. $a = v/(u - t)$

Q137 Equations of motion (kinematics)

In a running race, a boy starts at rest and reaches 60 m/s velocity in 5 min. If acceleration is uniform, the acceleration and distance covered by the boy during this period are _____ and _____, respectively.

A. 20 m/s² and 9 km

B. 0.2 m/s² and 600 m

C. 0.2 m/s² and 9 km ✓

D. 12 m/s² and 9000 m

Q138 Equations of motion (kinematics)

What does the area under a velocity-time graph represent for motion along a straight line?

A. The total displacement of the object ✓

B. The change in acceleration

C. The final velocity of the object

D. The total distance between two points

Q139 Equations of motion (kinematics)

A stone is thrown downward with an initial velocity of 5 m/s. After 2 seconds, its final velocity v (taking $g = 10 \text{ m/s}^2$) will be:

A. 5 m/s

B. 10 m/s

C. 25 m/s ✓

D. 20 m/s

Q140 Equations of motion (kinematics)

An object moves along a straight path for 5 s. Its initial velocity is 10 m s^{-1} and its final velocity is -2 m s^{-1} . What is the magnitude of the average velocity?

A. 8 m/s

B. 6 m/s

C. 4 m/s ✓

D. 5 m/s

Q141 Equations of motion (kinematics)

Which of the following equations does NOT correctly represent the relationship between physical quantities for an object moving with uniform acceleration?

A. $v^2 - u^2 = 2as$

B. $s = ut + \frac{1}{2}at^2$

C. $2as = v^2 + u^2$ ✓

D. $v = u + at$

Q142 Equations of motion (kinematics)

For uniformly accelerated motion, which of the following is true about the velocity-time graph?

A. The graph is always curved because velocity changes irregularly.

B. The graph can have any shape depending on the motion.

C. The graph is a straight line because velocity changes by equal amounts in equal intervals of time. ✓

D. The graph is horizontal because velocity remains constant.

Q143 Equations of motion (kinematics)

If an object's velocity changes uniformly over a period of time, how can the average velocity during that time be calculated?

A. By adding the initial velocity to twice the final velocity

B. By subtracting the initial velocity from the final velocity

C. By taking the arithmetic mean of the initial and final velocities ✓

D. By dividing the final velocity by the initial velocity

Q144 Equations of motion (kinematics)

What can be said about the shape of a velocity-time graph for an object moving with non-uniform acceleration?

A. It is always a horizontal line.

B. It is always a straight line.

C. It is always a downward sloping line.

D. It is a curved line. ✓

Q145 Equations of motion (kinematics)

What does the area under a velocity-time graph represent?

A. The speed of the object

B. The acceleration of the object

C. The displacement of the object during that time interval ✓

D. The time taken by the object



Q146 Equations of motion (kinematics)

A stone is thrown vertically upward with an initial velocity of 49 m/s. Calculate the maximum height it reaches before momentarily stopping. (Take $g = 9.8 \text{ m/s}^2$).

- A. 245 m
- B. 49 m
- C. 9.8 m
- D. 122.5 m

**Q147 Equations of motion (kinematics)**

A particle accelerates uniformly at 2 m/s^2 . Its velocity changes from 5 m/s to 15 m/s. How long does this take?

- A. 10 s
- B. 7s
- C. 5 s
- D. 2 s

**Q148 Equations of motion (kinematics)**

A car slows down uniformly when brakes are applied, producing an acceleration of 8 m/s^2 opposite to its motion. If the car comes to rest in 2s, what distance does it cover before stopping?

- A. 12 m
- B. 16 m
- C. 20 m
- D. 8 m

**Q149 Equations of motion (kinematics)**

The velocity-time graph of a particle moving with uniform acceleration is a:

- A. curve concave upward
- B. straight line inclined to time axis
- C. vertical line
- D. horizontal line

**Q150 Equations of motion (kinematics)**

A train starts from rest and reaches a velocity of 36 km/hr in 3 minutes with uniform acceleration. What is the distance covered by the train during this time?

- A. 900 m
- B. 750 m
- C. 250 m
- D. 500 m

**Q151 Equations of motion (kinematics)**

A ball is dropped from rest. What will be the velocity of the ball after falling 20 m?
(Take, $g = 10 \text{ m/s}^2$)

- A. 20.0 m/s
- B. 10.0 m/s
- C. 40.0 m/s
- D. 50.0 m/s

**Q152 Equations of motion (kinematics)**

A ball is thrown up with a velocity of $x \text{ m/s}$. The ball attains a maximum height of 50 m. What is the value of x ? (Take the value of g as 10 m/s^2)

- A. 10 m/s
- B. 100 m/s
- C. $10\sqrt{10} \text{ m/s}$
- D. 1000 m/s

**Q153 Equations of motion (kinematics)**

A race car starting from rest accelerates uniformly. If the car covers 22.5 m in the 5th second of its motion, what is the total distance covered at the end of 10 seconds?

- A. 250 m
- B. 450 m
- C. 300 m
- D. 375 m

**Q154 Equations of motion (kinematics)**

An object is thrown vertically upwards and rises to a height of 20 m. What was the velocity with which the object was thrown? (Take $g = 10 \text{ m/s}^2$).

- A. 30 m/s
- B. 10 m/s
- C. 40 m/s
- D. 20 m/s

**Q155 Equations of motion (kinematics)**

A car's velocity-time graph is a straight line parallel to the x-axis at 40 km/h. What will the area enclosed between the graph and the time axis from $t = 0$ to $t = 3$ hours represent?

- A. Acceleration of the car
- B. Average speed of the car
- C. Final velocity of the car
- D. Displacement of the car in 3 hours



Q156 Equations of motion (kinematics)

In a $v-t$ graph for uniform acceleration, which of the following is NOT correct?

- A. The area under the $v-t$ graph gives displacement.
- B. The slope of the $v-t$ graph is constant.
- C. The $v-t$ graph is always curved. ✓
- D. Positive slope indicates acceleration.

Q157 Everyday inertia examples (seatbelt/jerk)

To demonstrate the relationship between inertia and mass, a student compares the difficulty of kicking a football versus kicking a stone of equal size. What fundamental principle justifies the greater difficulty and potential injury associated with kicking the stone?

- A. The stone possesses greater mass, which results in greater inertia, meaning it offers larger resistance to changing its state of rest. ✓
- B. The stone has lower surface friction, causing all force to be transmitted.
- C. The stone is subject to the First Law of Motion, while the football is governed by the Second Law.
- D. The force applied to the stone is insufficient to overcome the centripetal force holding its atoms together.

Q158 Everyday inertia examples (seatbelt/jerk)

Which of the following is the correct reason for why fruits fall from the tree when the branches of the tree are shaken vigorously?

- A. The fruits fall down due to change in momentum.
- B. The fruits fall down due to inertia. ✓
- C. The fruits fall down due to frictional force.
- D. The fruits fall down due to action reaction forces.

Q159 Everyday inertia examples (seatbelt/jerk)

A passenger in a moving bus falls forward when the bus suddenly stops. This is due to which of the following?

- A. Friction between seat and passenger
- B. Gravity
- C. Inertia of motion of the passenger ✓
- D. Force applied by the bus

Q160 Everyday inertia examples (seatbelt/jerk)

Which of the following is NOT an example of inertia?

- A. Dust falling off a carpet when beaten
- B. A ball rolling on a frictionless surface forever
- C. A book sliding on a rough surface and stopping ✓
- D. Passenger falling forward when a bus stops suddenly

Q161 Everyday inertia examples (seatbelt/jerk)

When you shake a tree, fruits fall because of _____.

- A. Gravity and Inertia of rest ✓
- B. Gravity only
- C. Air pressure
- D. Inertia of motion

Q162 Everyday inertia examples (seatbelt/jerk)

Why do passengers in a moving car tend to jerk forward when the brakes are suddenly applied?

- A. Because the brakes push the passengers forward
- B. Because of the inertia of motion that keeps the body moving forward ✓
- C. Due to the force applied by the engine
- D. Because of the friction between the seat and the body

Q163 Everyday inertia examples (seatbelt/jerk)

When brakes are applied to a moving car, the car slows down but the passengers inside tend to move forward. This happens because _____.

- A. the passengers have inertia and continue in their state of motion ✓
- B. the passengers are pulled forward by gravity
- C. the brakes apply a forward force on the passengers
- D. the air inside the car pushes the passengers forward

Q164 Floating/sinking and law of flotation

Which of the following objects will sink in water? (Take the density of water as 1g/cm^3)

- (i) An iron nail of density 2.5g/cm^3
- (ii) A iron block of density 0.83g/cm^3
- (iii) A iron ball of density 2g/cm^3

- A. Only (ii)
- B. Both (i) and (iii) ✓
- C. Only (iii)
- D. Both (i) and (ii)



Q165 Floating/sinking and law of flotation

An object floats on water if _____.

A. Its density is less than water



B. Its weight is zero

C. Its volume is very small

D. Its density is greater than water

Q166 Floating/sinking and law of flotation

A ship floats on water because:

A. the surface tension holds it afloat

B. the density of water is greater than that of the ship material

C. the atmospheric pressure supports the ship

D. the weight of water displaced equals the weight of the ship

**Q167 Floating/sinking and law of flotation**

A solid cube of wood has a density less than water. When it is placed in water, which of the following statements is correct?

A. The cube will remain suspended in the middle of water.

B. The cube will float with its entire volume above the water surface.

C. The cube will float partially submerged, displacing water equal to its weight.



D. The cube will completely sink to the bottom.

Q168 Floating/sinking and law of flotation

A sealed packet has a mass of 500 g and a volume of 350 cm³. Given the density of water is 1 g cm⁻³, will the packet float or sink in water, and why?

A. Float, because its mass is low.

B. Sink, because its density is greater than water's density.



C. Sink, because the total volume is high.

D. Float, because its density is less than water.

Q169 Free fall and weightlessness

A body is dropped from a height. If it falls for 3.0 s and $g = 10 \text{ m/s}^2$, its final velocity (v) is _____.

A. 40 m/s

B. 30 m/s



C. 20 m/s

D. 10 m/s

Q170 Free fall and weightlessness

An object is dropped from a height of 78.4 m. What is the time taken to reach the ground? (Use $g = 9.8 \text{ m/s}^2$)

A. 2 s

B. 5 s

C. 4 s



D. 6 s

Q171 Free fall and weightlessness

When an object falls freely near the Earth, the direction of its motion:

A. remains the same



B. becomes opposite to gravity

C. changes continuously

D. becomes horizontal

Q172 Free fall and weightlessness

A block of mass 1 kg is dropped from the top of a building of height X m. What will be the value of X if the block hits the ground with a velocity of 20 m/s?

(Take the value of $g = 10 \text{ m/s}^2$)

A. 20 m



B. 0.2 m

C. 200 m

D. 2 m

Q173 Free fall and weightlessness

Two objects of different masses are dropped from the same height in vacuum. Which one will reach first?

A. The lighter one reaches first.

B. The heavier one reaches first.

C. Both reach the ground at the same time.



D. Both reach at different times, depending on shape and size.

Q174 Free fall and weightlessness

A block of mass 1 kg is dropped from the top of a building of height 20 m. What will be the velocity with which the block hits the ground?

(Take the value of $g = 10 \text{ m/s}^2$)

A. 20 m/s



B. 40 m/s

C. $\sqrt{40}$ m/s

D. $\sqrt{20}$ m/s



Q175 Free fall and weightlessness

An object is dropped from a height. What is its initial velocity?

A. 0 m/s



B. Can't be determined

C. 9.8 m/s

D. 10 m/s

Q176 Free fall and weightlessness

The motion of a freely falling stone is an example of:

A. non-uniform motion



B. uniform motion

C. rectilinear motion with constant speed

D. motion with zero acceleration

Q177 Friction (types, uses, reduction)

A heavy wooden block is pushed across a rough floor. The applied force is gradually increased:

1. At first, the block does not move.
2. Then, at a certain force, the block just begins to slide.
3. Finally, when the block is sliding, it moves with constant velocity.

Which of the following correctly describes the force situation in these three stages?

A. Stage 1 – Balanced, Stage 2 – Unbalanced, Stage 3 – Balanced



B. Stage 1 – Unbalanced, Stage 2 – Unbalanced, Stage 3 – Balanced

C. Stage 1 – Balanced, Stage 2 – Balanced, Stage 3 – Unbalanced

D. Stage 1 – Unbalanced, Stage 2 – Balanced, Stage 3 – Balanced

Q178 Friction (types, uses, reduction)

A person ignores regular vehicle maintenance. Which of the following is most likely to happen?

A. Decreased pollution

B. Better tyre grip and less pollution

C. Increased fuel efficiency

D. Poor engine performance

**Q179 Friction (types, uses, reduction)**

The work done by friction on a moving object is usually _____.

A. zero

B. negative



C. positive

D. both positive and negative

Q180 Gravity, Friction, Pressure

A fluid filled in a container exerts pressure _____ at the same height.

A. only downward

B. only upward

C. equally in all directions of the container



D. only on the sides

Q181 Gravity, Friction, Pressure

Which of the following phenomena is responsible for the blue colour of a clear sky?

A. Scattering



B. Reflection

C. Dispersion

D. Refraction

Q182 Gravity, Friction, Pressure

Which of the following is NOT correct?

A. Pressure in a fluid depends on the shape of the container



B. Pressure in a fluid acts in all directions

C. Pressure in a fluid increases with depth

D. Pressure = force/area

Q183 Gravity, Friction, Pressure

A satellite moves in a circular orbit of radius 42,250 km and completes one revolution in 24 hours. If a new satellite orbits at half this radius but maintains the same period, how does the speed (v_{new}) compare to the original speed (v_{orig})?

A. $v_{\text{new}} = v_{\text{orig}}$

B. $v_{\text{new}} = 2v_{\text{orig}}$

C. $v_{\text{new}} = 4v_{\text{orig}}$

D. $v_{\text{new}} = 0.5v_{\text{orig}}$



Q184 Gravity, Friction, Pressure

Which of the following is INCORRECT?

- ☒ A. Buoyant force is independent of fluid density.
- ☐ B. Buoyant force is maximum for fully submerged body.
- ☐ C. Buoyant force = weight of fluid displaced
- ☐ D. Buoyant force acts upwards.

Q185 Kinetic and potential energy

A body of mass 'm' kg is kept at a height of 'h' m from the surface of the Earth. What will be the potential energy possessed by this body?

- ☒ A. mgh
- ☐ B. mh/g
- ☐ C. $m2gh$
- ☐ D. hg/m

Q186 Kinetic and potential energy

Which of the following is an example of potential energy?

- ☐ A. A rolling ball
- ☒ B. A book kept on a table
- ☐ C. A flowing river
- ☐ D. A moving train

Q187 Kinetic and potential energy

What happens when a pendulum bob swings from its mean position to extreme position?

- ☐ A. Total energy decreases
- ☒ B. Potential energy increases, kinetic energy decreases
- ☐ C. Both kinetic and potential energies increase
- ☐ D. Potential energy decreases, kinetic energy increases

Q188 Kinetic and potential energy

When the velocity of a body is increased to twice its original value, its kinetic energy becomes _____.

- ☐ A. twice the original value
- ☐ B. the same as before
- ☒ C. four times the original value
- ☐ D. half the original value

Q189 Kinetic and potential energy

A body of mass 2 kg is moving with a speed of 3 m/s. Its kinetic energy is _____.

- ☒ A. 9 J
- ☐ B. 6 J
- ☐ C. 3 J
- ☐ D. 18 J

Q190 Kinetic and potential energy

The work required by an external force to bring a moving body to rest is equal to:

- ☐ A. its momentum
- ☐ B. its weight
- ☐ C. its potential energy
- ☒ D. its kinetic energy

Q191 Kinetic and potential energy

The kinetic energy of a body of mass m moving with a velocity v m/s is 'X' J. If the velocity of the body changes to $4v$ m/s, what will be the value of kinetic energy?

- ☐ A. $4X$ J
- ☐ B. $2X$ J
- ☐ C. $8X$ J
- ☒ D. $16X$ J

Q192 Kinetic and potential energy

What does the potential energy of an object depend on?

- ☐ A. Its temperature
- ☐ B. Its colour and shape
- ☒ C. Its position or arrangement
- ☐ D. Its speed during motion

Q193 Kinetic and potential energy

Which of the following statements best explains kinetic energy?

- ☐ A. It is the energy stored in an object due to its shape.
- ☐ B. It is the energy that decreases as the object's speed increases.
- ☒ C. It is the energy an object has because of its motion, and it increases as the object's speed increases.
- ☐ D. It is the energy an object has because it is at rest.



Q194 Kinetic and potential energy

The energy possessed by a moving object due to its motion is called:

- A. thermal energy
- B. potential energy
- C. kinetic energy ✓
- D. chemical energy

Q195 Kinetic and potential energy

If a body falls freely from a height, its potential energy is converted into _____.

- A. Thermal energy
- B. Chemical energy
- C. Sound energy
- D. Kinetic energy ✓

Q196 Kinetic and potential energy

A car with a mass of 150 kg is moving at a speed of 36 km/hr. What is the amount of work required to increase its speed to 72 km/hr?

- A. 37,500 J
- B. 30,000 J
- C. 22,500 J ✓
- D. 7500 J

Q197 Kinetic and potential energy

The potential energy of a body depends on which of the following?

- A. Speed
- B. Mass only
- C. Both mass and height ✓
- D. Height only

Q198 Kinetic and potential energy

When the height of an object is doubled, its potential energy becomes:

- A. double ✓
- B. triple
- C. half
- D. zero

Q199 Kinetic and potential energy

A ball of mass 3 kg is raised to a height of 6 m. Its potential energy is _____.

Take $g = 10 \text{ m/s}^2$

- A. 20 J
- B. 200 J
- C. 180 J ✓
- D. 1.8 J

Q200 Kinetic and potential energy

A particle has zero kinetic energy. What can be concluded about the particle's motion?

- A. It is moving with uniform velocity
- B. It must be at rest ✓
- C. It is moving with high acceleration
- D. Its momentum is maximum

Q201 Kinetic and potential energy

Which of the following is the correct formula for kinetic energy of a body of mass 'm' kg moving with a uniform speed of 'v' m/s?

- A. $\frac{1}{2} mv^2$ ✓
- B. $\frac{1}{4} mv^2$
- C. $\frac{1}{2} mv$
- D. mv

Q202 Kinetic and potential energy

If the kinetic energy of a moving body is 450 J and its velocity is 15 m/s, the mass of the body is _____.

- A. 2 kg
- B. 5 kg
- C. 3 kg
- D. 4 kg ✓

Q203 Kinetic and potential energy

What is the minimum approximate work required to bring a car of mass 1500 kg moving at a velocity of 60 km/hr to rest?

- A. $6.25 \times 10^5 \text{ J}$
- B. $2.08 \times 10^5 \text{ J}$ ✓
- C. $1.56 \times 10^5 \text{ J}$
- D. $4.68 \times 10^5 \text{ J}$



Q204 Kinetic and potential energy

Which of the following statements is true about potential energy?

- A. It is always zero at the ground level.
- B. It depends only on mass.
- C. It cannot be converted into kinetic energy.
- D. It can be negative depending on the reference point. ✓

Q205 Kinetic and potential energy

The mechanical energy of a body can be expressed as the sum of _____.

- A. potential energy and kinetic energy ✓
- B. sound energy and light energy
- C. heat energy and light energy
- D. chemical energy and electrical energy

Q206 Kinetic and potential energy

The energy possessed by a body due to its position or configuration is called _____.

- A. Thermal energy
- B. Kinetic energy
- C. Potential energy ✓
- D. Chemical energy

Q207 Kinetic and potential energy

If the speed of an object is doubled, its kinetic energy _____.

- A. remains the same
- B. becomes half
- C. becomes four times ✓
- D. becomes double

Q208 Kinetic and potential energy

The potential energy acquired by a balloon when we press it (changing its shape), or by a spring inside a toy car when wound, is possessed by virtue of the object's _____.

- A. acceleration rate
- B. constant speed
- C. mass and volume
- D. configuration ✓

Q209 Kinetic and potential energy

If the velocity of a body is doubled, its kinetic energy becomes:

- A. half
- B. four times ✓
- C. double
- D. eight times

Q210 Kinetic and potential energy

A certain force acting on a 20 kg mass changes its velocity from 5 m/s to 2 m/s. Calculate the work done by this force.

- A. 210 J
- B. -210 J ✓
- C. -420 J
- D. 420 J

Q211 Kinetic and potential energy

The work done in carrying a block of mass 30 kg to a height of 'X' m is 6000 J. What will be the value of X (in m)? (Take the value of $g = 10 \text{ m/s}^2$)

- A. 200
- B. 20 ✓
- C. 1800
- D. 1,80,000

Q212 Kinetic and potential energy

A mass of 3 kg is lifted to a height of 12 m. What is the value of potential energy at the given height?

(Take $g = 10 \text{ m/s}^2$)

- A. 360.0 J ✓
- B. 36.0 J
- C. 3.0 J
- D. 4.0 J

Q213 Kinetic and potential energy

Which pair of energy forms constitutes the total mechanical energy of an object?

- A. Electrical energy and Light energy
- B. Heat energy and Chemical energy
- C. Nuclear energy and Sound energy
- D. Potential energy and Kinetic energy ✓



Q214 Kinetic and potential energy

An object of mass 12 kg is located such that its potential energy relative to the ground is 480 J. Assuming $g = 10 \text{ m s}^{-2}$, what is the height (h) of the object?

A. 4 m



B. 40 m

C. 120 m

D. 2 m

Q215 Kinetic and potential energy

Which of the following forms of energy will be possessed by a body of mass 'm' moving with a uniform velocity 'v'?

A. Heat Energy

B. Kinetic Energy



C. Potential Energy

D. Sound Energy

Q216 Kinetic and potential energy

Which of the following is a form of mechanical energy?

A. Kinetic energy



B. Heat energy

C. Chemical energy

D. Sound energy

Q217 Kinetic and potential energy

A stone of mass 500g is raised from ground to a height of 20 m. What is the gain in its potential energy?

(Take $g = 10 \text{ m/s}^2$)

A. 100 J



B. 150 J

C. 50 J

D. 200 J

Q218 Kinetic and potential energy

Which of the following best describes mechanical energy?

A. The sum of light energy and chemical energy

B. Energy stored in food and fuel

C. Energy from the Sun

D. The sum of potential energy and kinetic energy

**Q219 Kinetic and potential energy**

The Work-Energy theorem states that the total work done on an object is equal to:

A. Change in the static energy of the body

B. Change in the kinetic energy of the body



C. Change in the potential energy of the body

D. Change in the work and energy of the body

Q220 Kinetic and potential energy

Which two forms of energy are collectively known as mechanical energy?

A. Electrical energy and Magnetic energy

B. Heat and Light energy

C. Kinetic and Potential energy



D. Chemical energy and Nuclear energy

Q221 Kinetic and potential energy

What will be the potential energy of a block of mass 30 kg kept at a height of 20 m?

(Take the value of $g = 10 \text{ m/s}^2$)

A. 60 J

B. 600 J

C. 6 J

D. 6000 J

**Q222 Kinetic and potential energy**

The energy stored in an object due to its position or configuration is called:

A. sound energy

B. kinetic energy

C. potential energy



D. thermal energy

Q223 Kinetic and potential energy

Which of the following is NOT true about kinetic energy?

A. It depends on motion.

B. It depends on direction of motion.



C. It can never be negative.

D. It is a scalar quantity.



Q224 Kinetic and potential energy

An object has a mass of 11 kg and is placed at a height above the ground. If its potential energy is 440 J and $g = 10 \text{ m/s}^2$, what is the height?

- A. 2 m
- B. 4 m
- C. 8 m
- D. 48,400 m

Q225 Kinetic and potential energy

If a body of mass m is raised to a height h in a gravitational field of acceleration g , its potential energy depends on:

- A. m , g and h
- B. h only
- C. g only
- D. m only

Q226 Kinetic and potential energy

What happens to the energy of an object just before it hits the ground while falling freely?

- A. Its kinetic energy becomes highest, and its potential energy becomes lowest.
- B. Both its kinetic and potential energy become zero.
- C. Its potential energy is at its highest, and its kinetic energy becomes lowest.
- D. It has equal amounts of potential and kinetic energy.

Q227 Kinetic and potential energy

Which of the following statements is true about the potential energy?

- A. It cannot be converted into other forms of energy.
- B. It is only present when an object is moving.
- C. It is energy stored due to position or condition.
- D. It depends on the object's motion.

Q228 Kinetic and potential energy

Which of the following is the energy possessed by a body by virtue of its position, shape and configuration?

- A. Kinetic Energy
- B. Potential Energy
- C. Heat Energy
- D. Muscular Energy

Q229 Kinetic and potential energy

How is the change in Gravitational Potential Energy (ΔPE_g) of a system related to the work (W_g) done by the gravitational force?

- A. The two are unrelated
- B. $W_g = -\Delta PE_g$
- C. $W_g = \Delta PE_g$
- D. $W_g = 0$

Q230 Kinetic and potential energy

The kinetic energy of an object of mass m moving with a velocity v is 25 J. What will be its kinetic energy when its velocity is increased three times ($3v$)?

- A. 75 J
- B. 150 J
- C. 225 J
- D. 125 J

Q231 Mass vs weight (distinction)

Which of the following statements is correct for the mass and weight of an object?

- A. Mass is variable and Weight is constant
- B. Mass is constant and Weight is variable
- C. Both Mass and Weight are constant
- D. Both Mass and Weight are variable

Q232 Mass vs weight (distinction)

Which of the following statements is true about mass?

- A. Mass and weight are exactly the same
- B. Mass depends on the location of the body
- C. Mass is a measure of the force acting on a body
- D. Mass is a measure of inertia of a body

Q233 Mass vs weight (distinction)

A 96 kg astronaut is standing on Earth. What is his weight on the Moon? (g on earth = 10 m/s^2)

- A. 96 N
- B. 960 N
- C. 160 N
- D. 16 N



Q234 Mass vs weight (distinction)

Which of the following is true about the mass of an object?

- A. It stays the same no matter where the object is.** ✓
- B. It changes from place to place.
- C. It increases at pole.
- D. It depends on gravity.

Q235 Mass vs weight (distinction)

Which statement is INCORRECT regarding mass and weight?

- A. Mass is the measure of inertia, weight is the force due to gravity.
- B. Mass has SI unit kg, weight has SI unit newton.
- C. Mass is scalar, weight is vector.
- D. Mass varies from place to place, weight remains constant.** ✓

Q236 Mass vs weight (distinction)

How does the weight of an object on the Moon compare to its weight on Earth?

- A. It is one-sixth of its weight on Earth.** ✓
- B. It is six times of its weight on Earth.
- C. It is the same as that on Earth.
- D. It is one-third of its weight on Earth.

Q237 Mass vs weight (distinction)

A body weighs 60 kg wt on the surface of the moon. What will be the mass and the weight, respectively, of the body on the surface of the Earth?

(Take the value of g on Earth as 10 m/s^2)

- A. 600 kg and 360 kg wt
- B. 360 kg and 360 kg wt** ✓
- C. 36 kg and 360 kg wt
- D. 60 kg and 36 kg wt

Q238 Mass vs weight (distinction)

Which of the following statements is true about weight and mass?

- A. Neither mass nor weight changes on the Moon
- B. Both mass and weight change on the Moon
- C. Only mass changes on the Moon
- D. Only weight changes on the Moon** ✓

Q239 Mirage and looming

The wavering of objects seen through a turbulent hot air stream is an example of:

- A. dispersion of light
- B. small-scale atmospheric refraction** ✓
- C. internal reflection in air layers
- D. diffraction in air

Q240 Momentum and conservation of momentum

Why does a cricket player lower his hands while catching a fast-moving ball?

- A. To increase the acceleration of the ball
- B. To increase the force acting on the ball
- C. To reduce the momentum of the ball
- D. To increase the time of impact so that the force on the hands is reduced** ✓

Q241 Momentum and conservation of momentum

The following vehicles are all moving at a velocity of 50 km/hr. All the vehicles need to be stopped at the same point. Which vehicle has to apply more force in breaks to stop the vehicle?

- A. Car
- B. Bicycle
- C. Bus** ✓
- D. Scooter

Q242 Momentum and conservation of momentum

A gun recoils backward when fired. The backward motion of the gun is due to:

- A. Air resistance
- B. Reaction force of the bullet on the gun** ✓
- C. Friction between gun and person
- D. Gravity acting on the gun

Q243 Momentum and conservation of momentum

When a gun is fired, why does the gun experience a recoil even though the bullet moves forward?

- A. Because the bullet exerts an equal and opposite force on the gun** ✓
- B. Because the bullet's acceleration is less than the gun's
- C. Because the gun's mass is smaller than the bullet's
- D. Because the gun pushes the bullet forward with less force



Q244 Momentum and conservation of momentum

When a gun is fired, the bullet moves forward, and the gun recoils backward. This is an example of _____.

- A. Newton's First Law of Motion
- B. Newton's Third Law of Motion ✓
- C. Newton's Second Law of Motion
- D. Law of Conservation of Energy

Q245 Momentum and conservation of momentum

Momentum (p) is a vector quantity. That means, momentum has both _____.

- A. speed and time
- B. magnitude and direction ✓
- C. force and acceleration
- D. mass and velocity

Q246 Momentum and conservation of momentum

Which of the following statements about momentum is true?

- A. The SI unit of momentum is kilogram per second.
- B. Momentum is the sum of mass and velocity.
- C. Momentum has magnitude only and no direction.
- D. Momentum has both magnitude and direction. ✓

Q247 Newton first law (inertia)

Newton's First Law of Motion is also called the law of:

- A. force
- B. acceleration
- C. inertia ✓
- D. action and reaction

Q248 Newton first law (inertia)

A person is standing in a bus that suddenly stops. The person tends to fall forward. Which of the following laws of motion is directly responsible for this phenomenon?

- A. Newton's First Law of Motion. ✓
- B. Newton's Third Law of Motion.
- C. The Law of Conservation of Momentum.
- D. Newton's Second Law of Motion.

Q249 Newton first law (inertia)

A passenger standing in a moving bus suddenly falls forward when the bus stops abruptly. This illustrates which of the following laws?

- A. Newton's second law
- B. Newton's third law
- C. Newton's first law ✓
- D. Law of gravitation

Q250 Newton first law (inertia)

A force that changes the state of motion of an object is called:

- A. Unbalanced force ✓
- B. Frictional force
- C. Balanced force
- D. Gravitational force

Q251 Newton first law (inertia)

A coin is placed on a card covering a glass. When the card is flicked quickly with a finger, the coin falls straight into the glass. What does this situation show?

- A. The coin moves because the card pushes it
- B. The flick applies a force directly to the coin
- C. The coin and card both move away due to inertia
- D. The coin remains at rest due to inertia when the card moves away ✓

Q252 Newton first law (inertia)

If the net force on a 10 kg object is zero, its acceleration will be:

- A. Depends on its velocity
- B. 9.8 m/s^2
- C. 0 m/s^2 ✓
- D. 10 m/s^2

Q253 Newton first law (inertia)

Which of the following statements is true according to the First Law of Motion?

- A. A car accelerates when the engine is started.
- B. A stone falling freely under gravity.
- C. A rocket launching upward.
- D. A person continues to move forward when a car stops suddenly. ✓



Q254 Newton first law (inertia)

If a book is lying on a table and is not moving, which of the forces are balanced?

A. Weight of the book and normal reaction by the table ✓

B. Weight of the book and friction

C. Normal reaction and friction

D. Only the weight of the book acts

Q255 Newton first law (inertia)

Which of the following quantities is a measure of the inertia of a body?

A. Mass ✓

B. Weight

C. Acceleration

D. Force

Q256 Newton first law (inertia)

Which of the following situations represents balanced force?

A. A ball falling freely under gravity.

B. Two people push a box from opposite sides with equal force. ✓

C. A moving car comes to rest when brakes are applied.

D. A person riding a bicycle uphill.

Q257 Newton first law (inertia)

A ball is released from rest at the top of an inclined smooth plane of length 5 cm. After reaching the bottom it travels horizontally on a smooth surface. How much distance will it travel horizontally? (Neglect the frictional forces as both the plane and surface are smooth)

A. 0 cm

B. 2.5 cm

C. Infinite. ✓

D. 5 cm

Q258 Newton first law (inertia)

In the absence of any external force, a moving body will _____.

A. Stop due to its inertia

B. Maintain a constant velocity in straight line ✓

C. Slow down and change its path

D. Continue to move with constant acceleration

Q259 Newton first law (inertia)

Which of the following statements correctly describes the relationship between mass and inertia?

A. Mass is inversely proportional to inertia

B. Mass is independent of inertia

C. Mass is directly proportional to the square of inertia

D. Mass is directly proportional to inertia ✓

Q260 Newton second law ($F=ma$, force)

A net horizontal force of 20 N acts on a 4 kg block initially at rest for 5 s. What is the block's final speed?

A. 25 m/s ✓

B. 30 m/s

C. 20 m/s

D. 50 m/s

Q261 Newton second law ($F=ma$, force)

A car moving at a speed of 720 km/hr comes to a stop in 4 seconds after the brakes are applied. If the total mass of the car and passengers is 80 kg, what is the force applied by the brakes?

A. -14,400 N

B. 4000 N

C. -4000 N ✓

D. -2000 N

Q262 Newton second law ($F=ma$, force)

What happens when an unbalanced force acts on an object?

A. The object remains at rest permanently

B. There is a change in the object's speed or direction of motion ✓

C. The object always moves in a circular path

D. The object moves without any acceleration

Q263 Newton second law ($F=ma$, force)

A 1000 kg car moving at 10 m/s is brought to rest by a constant braking force in 5 s. What is the magnitude of the force?

A. 3000N

B. 2500 N

C. 1500 N

D. 2000 N ✓



Q264 Newton second law ($F=ma$, force)

Two objects are being accelerated — one has a mass of 3 kg and is accelerated at 4 m/s^2 , and the other has a mass of 5 kg and is accelerated at 2 m/s^2 . Which one needs a greater force to move?

- ☒ A. The 3 kg object
- ☐ B. The 5 kg object
- ☐ C. Both require the same force
- ☐ D. It cannot be determined without knowing the distance

Q265 Newton second law ($F=ma$, force)

A body of mass 5 kg is moving with an acceleration of 2 m/s^2 . What is the force acting on it?

- ☒ A. 10 N
- ☐ B. 7 N
- ☐ C. 2 N
- ☐ D. 5 N

Q266 Newton second law ($F=ma$, force)

A body of mass 5 kg is initially at rest. A constant force of 20 N acts on it for 4 s. What is the final velocity of the body?

- ☐ A. 20 m/s
- ☐ B. 12 m/s
- ☐ C. 8 m/s
- ☒ D. 16 m/s

Q267 Newton second law ($F=ma$, force)

Which of the following statements is correct about the force?

- ☐ A. Force is a scalar quantity measured in Joule.
- ☐ B. Force is a vector quantity measured in Joule.
- ☒ C. Force is a vector quantity measured in Newton.
- ☐ D. Force is a scalar quantity measured in Newton.

Q268 Newton second law ($F=ma$, force)

According to Newton's second law of motion, what happens when an unbalanced force is applied to an object?

- ☐ A. The object's momentum remains unchanged
- ☐ B. The object comes to rest immediately
- ☒ C. The object's momentum changes in the direction of the applied force
- ☐ D. The object moves in a circular path

Q269 Newton second law ($F=ma$, force)

A 2 kg body accelerates at 3 m/s^2 . The force acting on it is:

- ☐ A. 5 N
- ☒ B. 6 N
- ☐ C. 2 N
- ☐ D. 3 N

Q270 Newton second law ($F=ma$, force)

In the case of unbalanced forces acting on an object, the acceleration (a) produced is in the direction of the _____.

- ☐ A. initial velocity
- ☐ B. force of friction
- ☒ C. net force (resultant force) acting on the object
- ☐ D. largest force

Q271 Newton second law ($F=ma$, force)

If the force on an object is doubled while its mass remains the same, the acceleration:

- ☐ A. remains the same
- ☐ B. becomes zero
- ☒ C. also doubles
- ☐ D. halves

Q272 Newton second law ($F=ma$, force)

A force (F) of 60 N acts on a mass (m) of 6 kg. What will be the acceleration (a) produced by this force?

- ☐ A. 360.0 m/s^2
- ☐ B. 0.10 m/s^2
- ☐ C. 6.0 m/s^2
- ☒ D. 10.0 m/s^2

Q273 Newton second law ($F=ma$, force)

If the applied force is quadrupled, how must the acceleration of the object change, assuming its mass remains constant?

- ☐ A. The acceleration increases by a factor of 2.
- ☐ B. The acceleration remains the same, but the duration of the change decreases.
- ☒ C. The acceleration increases by a factor of 4.
- ☐ D. The acceleration decreases by a factor of 4.



Q274 Newton second law ($F=ma$, force)

According to Newton's Second Law of Motion, force is given by the relation $F = ma$. If a body's velocity changes from u (initial velocity) to v (final velocity) in time t , which of the following expressions correctly gives the force acting on the body?

- A. $F=m(u-v)/t$
- B. $F=t(v-u)/m$
- C. $F=m(v-u)/t$ ✓
- D. $F=mt/(v-u)$

Q275 Newton second law ($F=ma$, force)

A body of mass ' m ' experiences a force ' F ', producing an acceleration ' a '. If the same force acts on a body of mass ' $2m$ ', the acceleration produced will be:

- A. $2a$
- B. a
- C. $a/4$
- D. $a/2$ ✓

Q276 Newton second law ($F=ma$, force)

Which quantity changes due to an unbalanced force?

- A. Velocity ✓
- B. Density
- C. Mass
- D. Time

Q277 Newton second law ($F=ma$, force)

A force of 10 N causes mass m_1 to accelerate at 20 m/s^2 and mass m_2 to accelerate at 40 m/s^2 . What acceleration will the same force produce if both masses are tied together?

- A. 26.7 m/s^2
- B. 6 m/s^2
- C. 13.3 m/s^2 ✓
- D. 10 m/s^2

Q278 Newton second law ($F=ma$, force)

Which of the following statements is true about an unbalanced force acting on an object?

- A. It always increases the mass of the object.
- B. It brings the object in motion. ✓
- C. It keeps the object at rest.
- D. It has no effect on the object's state of motion.

Q279 Newton second law ($F=ma$, force)

A car is moving at a speed of 180 km/h. After the brakes are applied, it comes to a complete stop in 5 seconds. If the total mass of the car along with its passengers is 4200 kg, what is the force applied by the brakes to stop the car?

- A. $-15,120 \text{ N}$
- B. $-50,000 \text{ N}$
- C. $-42,000 \text{ N}$ ✓
- D. $-36,000 \text{ N}$

Q280 Newton second law ($F=ma$, force)

Which of the following situations demonstrates Newton's Second Law of Motion?

- A. A man standing inside a lift
- B. A book lying still on the table
- C. A satellite moving around Earth
- D. A car speeding up on the road ✓

Q281 Newton second law ($F=ma$, force)

A force of 10 N acts on a body of mass 2 kg. The acceleration produced is:

- A. 10 m/s^2
- B. 20 m/s^2
- C. 5 m/s^2 ✓
- D. 2 m/s^2

Q282 Newton second law ($F=ma$, force)

A constant force acts on an object of mass 4 kg for a duration of 2 s. It increases the object's velocity from 2 m/s to 8 m/s. What is the magnitude of the applied force?

- A. 12 N ✓
- B. 10 N
- C. 24 N
- D. 8 N

Q283 Newton second law ($F=ma$, force)

What effect does an unbalanced force have on a moving object?

- A. It increases the weight of the object.
- B. It causes a change in speed or direction of motion. ✓
- C. It keeps the object at rest.
- D. It stops the object immediately.



Q284 Newton second law ($F=ma$, force)

What is the correct definition of one unit of force (1 newton)?

- A. The force needed to move a 1 kg object to a distance of 1 metre
- B. The force required to keep an object at rest
- C. The force that causes a 1 g object to accelerate at 1 metre
- D. The force that causes a 1 kg object to accelerate at 1 m/s^2 ✓

Q285 Newton second law ($F=ma$, force)

If the acceleration of a body is halved and mass remains constant, the force will _____.

- A. Become zero
- B. Halve ✓
- C. Remain the same
- D. Double

Q286 Newton second law ($F=ma$, force)

A block of mass M is subjected to two opposing forces F_1 and F_2 ($F_1 > F_2$). If the frictional force (F_f) acting opposite to F_1 is such that the net acceleration of the block is half the acceleration it would have experienced if friction were zero, what is the relation for F_f ?

- A. $F_f = (F_1 - F_2)/2$ ✓
- B. $F_f = 2(F_1 - F_2)$
- C. $F_f = (F_1 + F_2)/2$
- D. $F_f = (F_1 - F_2)$

Q287 Newton second law ($F=ma$, force)

A constant force acts on an object of mass 4 kg for a duration of 2 s, increasing its velocity from 2 m/s to 8 m/s. If the same force is applied for a duration of 4 s, then what would be the final velocity of the object?

- A. 20 m/s
- B. 10 m/s
- C. 12 m/s
- D. 14 m/s ✓

Q288 Newton third law (action-reaction)

When a gun is fired, the bullet moves forward because:

- A. gravity pushes it forward
- B. the recoil of the gun acts backward as reaction ✓
- C. the barrel exerts no force
- D. air resistance acts forward

Q289 Newton third law (action-reaction)

A person pushes a massive, stationary object (like a parked truck) with force F . The object pushes back with force $-F$. Why does the object NOT accelerate if the reaction force is equal and opposite, as suggested by the Third Law?

- A. The magnitude of the force F is insufficient to overcome the object's inherent potential energy.
- B. The forces act instantaneously, preventing momentum change.
- C. The net force on the object is zero because the action and reaction forces cancel out.
- D. The action and reaction forces act on different objects, but the static friction on the stationary object balances the applied push force F . ✓

Q290 Newton third law (action-reaction)

A swimmer pushes water backwards. The reaction force that propels the swimmer forward is:

- A. Water pushes the swimmer backward
- B. Gravity pushes the swimmer forward
- C. Air pushes the swimmer
- D. Water pushes the swimmer forward ✓

Q291 Newton third law (action-reaction)

Which of the following is NOT an example of action and reaction forces?

- A. When the bus stops suddenly, people fall forward ✓
- B. The swimmer pushes the water backward with her hands
- C. A rocket moving upward due to gases expelled downward
- D. Foot pushes the ground backward and ground pushes the foot forward



Q292 Newton third law (action-reaction)

Which of the following is NOT an example of action-reaction pair?

- A. Force of engine on car and car moves forward** ✓
- B. Swimmer pushes water backward and water pushes swimmer forward
- C. Bat exerts force on ball and ball exerts force on bat
- D. Gun recoils backward and bullet moves forward

Q293 Newton third law (action-reaction)

Which statement best describes the forces involved when a bird flaps its wings downward to fly upward?

- A. The bird pushes the air downward, but no equal and opposite force acts on it.
- B. The flapping of wings is the action, and the gravity pulling the bird down is the reaction.
- C. The bird's weight acts as the action force, and the air provides the reaction force.
- D. The downward push of the wings on the air is the action, and the lift produced by the air on the wings is the reaction.** ✓

Q294 Newton third law (action-reaction)

When you sit on a chair, the chair exerts an upward force on you. The reaction force in this case is:

- A. Force of air on the chair
- B. Your weight acting downward on the chair** ✓
- C. Friction between your clothes and the chair
- D. Gravitational pull of the Earth

Q295 Newton third law (action-reaction)

A rifle fires a light bullet, resulting in a large forward acceleration of the bullet and a minimal backward recoil acceleration of the rifle. If the forces are equal and opposite (Action/Reaction), why is the rifle's acceleration so much smaller than the bullet's?

- A. The acceleration is inversely proportional to the mass, and the rifle has a much greater mass than the bullet.** ✓
- B. Action and reaction forces cancel out since they act instantaneously.
- C. The action force of the rifle on the bullet is greater than the reaction force of the bullet on the rifle.
- D. The reaction force of the bullet acts for a shorter duration than the action force.

Q296 Newton third law (action-reaction)

Which of the following is true about action and reaction forces according to Newton's third law?

- A. They act in the same direction on the same object
- B. They act on two different objects at the same time** ✓
- C. They cancel each other out because they act on one object
- D. They act on the same object at different times

Q297 Newton third law (action-reaction)

When a rocket is launched upward, the forces on it are _____.

- A. Only gravitational
- B. Unbalanced** ✓
- C. Equal in all directions
- D. Balanced

Q298 Newton third law (action-reaction)

If you push a stationary wall with 80 N, the wall pushes you back with _____.

- A. 0 N
- B. 40 N
- C. 160 N
- D. 80 N** ✓

Q299 Newton third law (action-reaction)

According to Newton's Third Law of Motion, which of the following statements is true?

- A. Action and reaction are unequal and act on the same body.
- B. Action and reaction act on the same body and are equal in magnitude.
- C. Action and reaction cancel each other out because they act on one body.
- D. Action and reaction are equal and opposite but act on two different bodies.** ✓

Q300 Newton third law (action-reaction)

Which of the following is NOT an example of Newton's Third Law?

- A. A stone dropping freely toward the ground** ✓
- B. A gun moving backward after firing a bullet
- C. A horse pulling a loaded cart
- D. A rocket rising upward as gases are expelled downward



Q301 Newton third law (action-reaction)

Newton's third law of motion deals with the nature of _____.

- A. forces always occurring in pairs** ✓
- B. the relationship between mass and acceleration
- C. the force of gravity acting on a falling object
- D. a single object resisting a change in motion

Q302 Newton third law (action-reaction)

According to Newton's third law, action and reaction forces:

- A. act on the same object at the same time
- B. act on two different objects at the same time** ✓
- C. act on the same object at different times
- D. cancel each other out because they are equal

Q303 Newton third law (action-reaction)

Spring balance A is attached at one end to spring balance B, whose other end is fixed to a rigid support. A force is applied to the free end of spring balance A. Both balances show the same reading. What does this observation indicate?

- A. The force exerted by A on B is equal and opposite to the force exerted by B on A.** ✓
- B. Only spring balance A exerts force on B.
- C. Both balances exert forces in the same direction.
- D. The force exerted by A on B is greater than that by B on A.

Q304 Newton third law (action-reaction)

Which of the following best illustrates Newton's Third Law of Motion?

- A. A rocket propelling upward by expelling gases downward.** ✓
- B. A car accelerating on a road due to engine power.
- C. A pendulum oscillating back and forth.
- D. A ball falling under gravity.

Q305 Newton third law (action-reaction)

Which of the following situations clearly illustrates Newton's third law, where action and reaction forces act on two different objects and are equal and opposite?

- A. A stone resting on the ground.
- B. A sailor pushes the boat backward while jumping forward, and the boat pushes him forward.** ✓
- C. A car accelerating due to engine power.
- D. A book kept on a table remains at rest.

Q306 Newton third law (action-reaction)

When two bodies interact, the action and reaction forces _____.

- A. act on different bodies** ✓
- B. produce the same effect on both bodies
- C. act on the same body
- D. act in the same direction

Q307 Newton third law (action-reaction)

Which of the following is NOT an example of the third law of motion?

- A. Foot pushes the ground backward and ground pushes the foot forward.
- B. A rocket moving upward due to gases expelled downward.
- C. The swimmer pushes the water backward with her hands.
- D. Pushing a stationary car and making it move.** ✓

Q308 Newton third law (action-reaction)

Which of the following statements about Newton's third law of motion is incorrect?

- A. The action and reaction forces act on the same object.
- B. The forces are equal in magnitude but opposite in direction.
- C. The forces act simultaneously on two different objects.** ✓
- D. When one object exerts a force on another, the second object exerts an equal and opposite force back.

Q309 Newton third law (action-reaction)

When a person stands stationary on the ground, the force of gravity exerted by the Earth on the person (Action) and the normal force exerted by the ground on the person (Reaction) are equal and opposite. Is this an action-reaction pair, according to Newton's Third Law?

- A. Yes, because they balance each other, preventing motion.
- B. No, because the two forces act on the same object.** ✓
- C. No, because the two forces act on different objects.
- D. Yes, because the two forces are equal and opposite in magnitude.



Q310 Pascal law and hydraulic press

Which of the following statement(s) is/are true about the pressure exerted by fluids?

- (i) Fluids exert pressure on the base and walls of the container in which they are enclosed.
(ii) Pressure exerted in any confined mass of fluid is transmitted unequally in different directions.

- A. Only (ii)
B. Only (i)
C. Neither (i) nor (ii)
D. Both (i) and (ii)

Q311 Power and SI unit (watt) / horsepower

A machine does 'W' joule work in time 't' seconds. The power 'P' watt of the machine is given correctly by which of the following relations?

- A. $P = W \times t$
B. $P = W2t$
C. $P = W/t$
D. $P = W2/t$

Q312 Power and SI unit (watt) / horsepower

If a person does an amount of work W in time t, how is power calculated?

- A. Power = work ÷ time
B. Power = work + time
C. Power = time ÷ work
D. Power = work × time

Q313 Power and SI unit (watt) / horsepower

If a man of mass 75 kg climbs an 8 m staircase in 25 s, taking $g = 10 \text{ m/s}^2$, his average power is _____.

- A. 120 W
B. 24 W
C. 150 W
D. 240 W

Q314 Power and SI unit (watt) / horsepower

A person does 600 J of work in 3 minutes. What is the average power?

- A. 330 W
B. 20 W
C. 200 W
D. 3.33 W

Q315 Power and SI unit (watt) / horsepower

If Girl A takes 20 s and Girl B takes 50 s to climb a rope, both performing 3200 J of work, their difference in performance is characterised by which physical concept?

- A. Total energy consumed
B. Total displacement
C. Power
D. Gravitational force

Q316 Power and SI unit (watt) / horsepower

The SI unit of Power is watt (W). As per the relation of work-power, one watt is equivalent to _____.

- A. 1 Joule-second (1 J.s)
B. A kilowatt-hour (1 kWh)
C. 1 Joule per second (1 J/s)
D. 1 Newton per meter (1 N/m)

Q317 Power and SI unit (watt) / horsepower

If the power of an engine is doubled while the time remains constant, the work done will _____.

- A. Remain the same
B. Be quadrupled
C. Be halved
D. Be doubled

Q318 Pressure and its unit (pascal)

A bullet of small mass and high velocity can penetrate a target deeper than a heavy stone thrown at the same speed because:

- A. it is sharper
B. it has less inertia
C. it has greater mass
D. it is smaller in size

Q319 Pressure and its unit (pascal)

As Newton is to weight, _____ is to pressure.

- A. Kelvin
B. Kilogram per cubic metre
C. Kilogram
D. Pascal



Q320 Pressure and its unit (pascal)

If the thrust acting on a surface is constant but the area of contact decreases, the pressure:

- A. becomes zero
- B. increases ✓
- C. remains the same
- D. decreases

Q321 Pressure and its unit (pascal)

A person wearing shoes with total area 0.02 m^2 stands on the ground. If the person's weight is 600 N , the pressure on the ground is _____.

- A. 1200 N/m^2
- B. $30,000 \text{ N/m}^2$ ✓
- C. $12,000 \text{ N/m}^2$
- D. 600 N/m^2

Q322 Pressure and its unit (pascal)

A block exerts a thrust of 500 N on a surface of area 0.25 m^2 . The pressure exerted by the block is _____.

- A. 125 N/m^2
- B. 2000 N/m^2 ✓
- C. 250 N/m^2
- D. 500 N/m^2

Q323 Pressure and its unit (pascal)

What is the SI unit of Pressure?

- A. Pascal ✓
- B. mmHg
- C. Torr
- D. Atmosphere

Q324 Pressure and its unit (pascal)

What is the SI unit of pressure used in measuring gases?

- A. Pascal ✓
- B. Kelvin
- C. Joule
- D. Newton

Q325 Pressure and its unit (pascal)

If a person weighing 600 N stands on two feet with a total contact area of 0.05 m^2 , the pressure exerted on the sand is:

- A. $12,000 \text{ Pa}$ ✓
- B. 600 Pa
- C. 300 Pa
- D. $30,000 \text{ Pa}$

Q326 Pressure and its unit (pascal)

A force of 50 N acts perpendicular to a surface of area 0.1 m^2 . What are the values of thrust and pressure exerted on the surface?

- A. Thrust = 25.0 N ; Pressure = 100.0 Pa
- B. Thrust = 50.0 N ; Pressure = 25.0 Pa
- C. Thrust = 50.0 N ; Pressure = 500.0 Pa ✓
- D. Thrust = 100.0 N ; Pressure = 50.0 Pa

Q327 Pressure and its unit (pascal)

A wooden block has a mass of 6 kg and its size is $40 \text{ cm} \times 30 \text{ cm} \times 20 \text{ cm}$. It is placed on a table resting on its $30 \text{ cm} \times 20 \text{ cm}$ side. If $g = 10 \text{ m/s}^2$, what is the pressure it puts on the table?

- A. 300 Pa
- B. 200 Pa
- C. 100 Pa
- D. 1000 Pa ✓

Q328 Pressure and its unit (pascal)

If the thrust acting on a surface remains constant, how does the pressure change with the area of contact?

- A. Pressure increases when area increases.
- B. Pressure decreases when area decreases.
- C. Pressure increases when area decreases. ✓
- D. Pressure does not depend on area.

Q329 Pressure and its unit (pascal)

If the surface area increases for the same thrust (force), then the pressure on the surface _____.

- A. becomes zero
- B. remains the same
- C. increases
- D. decreases ✓



Q330 Pressure and its unit (pascal)

A wooden block weighs 49 N (thrust). If this block is placed on a table with a contact area of 0.02 m^2 , what is the resulting pressure exerted on the table?

A. 2450 Nm⁻² ✓

B. 980 Nm⁻²

C. 612.5 Nm⁻²

D. 49 Pa

Q331 Pressure and its unit (pascal)

Truck and motorbus tyres are designed to be much wider than car tyres, while cutting tools and nails are designed with sharp, small tips. This contrast in design illustrates the principle that _____.

A. thrust is directly proportional to the area of contact

B. pressure is inversely proportional to the mass of the object

C. the same thrust acting on a smaller area exerts a larger pressure ✓

D. larger thrust always results in lower pressure

Q332 Pressure and its unit (pascal)

What is the correct formula for calculating pressure, where thrust is the force applied and area is the surface it acts on?

A. Pressure = Thrust ÷ Area ✓

B. Pressure = Thrust + Area

C. Pressure = Area ÷ Thrust

D. Pressure = Thrust × Area

Q333 Twinkling of stars

The twinkling of stars is more pronounced when _____.

A. the star is near the horizon ✓

B. the moon is bright

C. the sky is cloudy

D. the star is at the zenith

Q334 Twinkling of stars

Stars appear to twinkle in the night sky because _____.

A. Light from stars undergoes atmospheric refraction ✓

B. The distance between stars and Earth keeps varying

C. Stars move rapidly in the sky

D. They change their brightness continuously

Q335 Twinkling of stars

Which of the following statements is true regarding the twinkling of the stars?

(i) The stars twinkle as they have light of their own.

(ii) The stars twinkle due to reflection of light.

(iii) There is apparent change in the position of the star during the night time.

(iv) The stars twinkle due to atmospheric refraction.

A. Both (i) and (iv)

B. Both (iii) and (iv) ✓

C. Both (ii) and (iii)

D. Both (i) and (ii)

Q336 Universal law of gravitation

Which of the following statements is true about gravitational force of the Earth?

A. It is a non-central force.

B. It is independent of distance from Earth's centre.

C. It depends on the mass of the object. ✓

D. It acts away from the centre of Earth.

Q337 Universal law of gravitation

If the mass of the moon is doubled while keeping the distance between Earth and the moon constant, the gravitational force between Earth and the moon would:

A. Double ✓

B. Remain the same

C. Become zero

D. Half

Q338 Universal law of gravitation

What is the formula to calculate the acceleration due to gravity (g), where G is the universal gravitational constant, M is the mass of the Earth, and R is the radius of the Earth?

A. $g = GM/R^2$ ✓

B. $g = GM^2/R$

C. $g = GM/R$

D. $g = GR/M^2$



Q339 Universal law of gravitation

Why is the gravitational force considered a weak force in everyday terrestrial interactions, such as between you and a friend sitting nearby?

- A. Because the mass of human objects is much greater than the Earth's mass.
- B. Because the distance between the objects is negligibly small.
- C. Because the force is only significant when large masses (like planets or celestial bodies) are involved. ✓
- D. Because the force is only experienced when the objects are in free fall.

Q340 Universal law of gravitation

If the mass of two objects is halved and the distance between them is also halved, the gravitational force

- A. becomes double
- B. becomes half as much
- C. becomes one-fourth as much
- D. remains same as before ✓

Q341 Universal law of gravitation

Which of the following is true about the universal gravitational constant G ?

- A. It is a universal constant, same everywhere. ✓
- B. It varies from place to place on Earth.
- C. It depends on the medium between two masses.
- D. It is equal to the acceleration due to gravity.

Q342 Universal law of gravitation

If the distance (d) between the Earth and the Moon decreases gradually, then what will happen to the gravitational force (F) between them?

- A. Decreases
- B. Increases ✓
- C. Remains constant
- D. First increases and then decreases

Q343 Universal law of gravitation

The gravitational force between the Earth and a body of mass ' m ' kg is ' F ' N. What will be the gravitational force between the body and the Earth if the mass of the body is increased to ' $4m$ ' kg? (Keep all the other parameters the same)

- A. $F/2$ N
- B. $F/4$ N
- C. F N
- D. $4F$ N ✓

Q344 Universal law of gravitation

Based on the accepted values for the masses of the Earth and the Moon and the distance between them, what is the calculated gravitational force exerted by the Earth on the Moon?

- A. 2.02×10^{20} N ✓
- B. 7.4×10^{22} N
- C. 6.67×10^{-11} N
- D. 9.8 N

Q345 Universal law of gravitation

Which of the following is NOT explained by the law of gravitation?

- A. Falling of raindrops to the Earth
- B. Artificial satellites revolving around the Earth
- C. The electrostatic attraction between two charged bodies ✓
- D. Tides in oceans

Q346 Universal law of gravitation

What happens to the gravitational force between two objects if both of their masses are doubled?

- A. The force becomes half
- B. The force becomes quadruple
- C. The force becomes double
- D. The force becomes four times greater ✓



Q347 Universal law of gravitation

Two objects of mass 100 kg each are separated by a distance of 1 m. What will be the magnitude of the gravitational force between the two objects? (Take the value of G as $6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$)

- A. $6.67 \times 10^{-9} \text{ N}$
- B. $6.67 \times 10^{-7} \text{ N}$ ✓
- C. $6.67 \times 10^9 \text{ N}$
- D. $6.67 \times 10^7 \text{ N}$

Q348 Universal law of gravitation

Which of the following statements is correct about gravitational force?

- A. It depends on the medium between the objects.
- B. It is always attractive in nature. ✓
- C. It depends on the charge of the objects.
- D. It can be both attractive and repulsive.

Q349 Universal law of gravitation

What happens to the gravitational force between two objects, if the distance between them is doubled and everything else remains the same?

- A. The force becomes double
- B. The force becomes half
- C. The force becomes one-fourth ✓
- D. The force becomes four times

Q350 Universal law of gravitation

Which phenomenon, successfully explained by the universal law of gravitation, relies on the combined and differential gravitational attraction exerted by both the moon and the sun on the earth?

- A. The occurrence of ocean tides ✓
- B. The decrease in the value of g from poles to equator
- C. The motion of planets around the Sun
- D. The centripetal force keeping the stone in a circular path

Q351 Universal law of gravitation

Which of the following natural phenomena CANNOT be explained by the Universal Law of Gravitation?

- A. Attraction between magnets ✓
- B. Revolution of the Moon around the Earth
- C. Falling of an apple from a tree
- D. Tides in the ocean

Q352 Universal law of gravitation

The Law of Gravitation helped in establishing that:

- A. the Earth is flat
- B. the Sun revolves around the Earth
- C. the same force governs both falling bodies on Earth and motion of planets ✓
- D. gravitation acts only on terrestrial objects

Q353 Universal law of gravitation

If the radius of the Earth is halved and the masses of both interacting objects are tripled, while keeping the distance between them unchanged, how will the gravitational force between them change?

- A. Increases 36 times
- B. Decreases 3 times
- C. Increases 3 times
- D. Increases 9 times ✓

Q354 Universal law of gravitation

If the value of the Universal Gravitational Constant (G), the mass of the Earth (M), and the radius of the Earth (R) are known, which equation is used to calculate the acceleration due to gravity (g) near the Earth's surface?

- A. $g = GM/R^2$ ✓
- B. $R^2/(GM)$
- C. $g = GR/M^2$
- D. $g = GM/R$

Q355 Value of G and g (numeric facts)

The weight of a body on the moon is less than on Earth because:

- A. Gravitational acceleration on the moon is smaller ✓
- B. Mass of the body decreases on the moon
- C. Mass of the moon is equal to Earth's mass
- D. The moon has no atmosphere

Q356 Value of G and g (numeric facts)

A stone falls freely and covers a distance (s) 20 m in time (t) 2.0 s. What is the value of acceleration due to gravity (g)?

- A. 10.0 m/s^2 ✓
- B. 12.0 m/s^2
- C. 8.0 m/s^2
- D. 20.0 m/s^2



Q357 Value of G and g (numeric facts)

What is the SI unit of universal gravitational constant (G)?

A. Nm^2/kg^2 ✓

B. N/kg^2

C. kg/N

D. Nm/kg

Q358 Value of G and g (numeric facts)

The SI unit of the universal gravitational constant G is

A. $\text{N}\cdot\text{m}^2/\text{kg}^2$ ✓

B. $\text{N}\cdot\text{Kg}^2/\text{m}^2$

C. kg/m^3

D. N/m^2

Q359 Work definition and SI unit (joule)

Work done by a force is said to be positive when:

A. the angle between force and displacement is 90°

B. the displacement of the body is zero

C. the force has a component in the direction of displacement ✓

D. the force opposes the motion of the body

Q360 Work definition and SI unit (joule)

A baby pulls a toy car along the ground. If the force and displacement are in the same direction, the work done is:

A. equal to zero

B. negative

C. equal to the speed of the car

D. equal to the product of force and displacement ✓

Q361 Work definition and SI unit (joule)

Work done by a constant force is zero if:

A. force is variable

B. force is large

C. displacement is small

D. displacement is zero or perpendicular to force ✓

Q362 Work definition and SI unit (joule)

A force (F) of 10 N is applied on a body, causing it to move 5 m in the direction of the force. The work done (W) is

A. 5 J

B. 15 J

C. 2 J

D. 50 J ✓

Q363 Work definition and SI unit (joule)

If a constant force of 10 N moves an object 5 m in the same direction as the force, the work done is:

A. 15 J

B. 5 J

C. 50 J ✓

D. 2 J

Q364 Work definition and SI unit (joule)

A man lifts a stone of mass 22 kg through a vertical height of 4 m. Calculate the work done. (Take $g = 10 \text{ m/s}^2$)

A. 55 J

B. 220 J

C. 400 J

D. 880 J ✓

Q365 Work definition and SI unit (joule)

If a porter carrying a load on his head moves on a horizontal road with uniform speed, the work done by the gravitational force on the load:

A. is zero ✓

B. is minimum

C. is maximum

D. cannot be determined

Q366 Work definition and SI unit (joule)

Which of the following is NOT necessary for work to be done on a body?

A. The force must have a component along the direction of displacement.

B. The body must get displaced.

C. A force must be applied on the body.

D. The body must move at a constant speed. ✓



Q367 Work definition and SI unit (joule)

A body undergoes a displacement of 5 m under the action of a constant force of 5 N, in the same direction as the force. How much work will be done under the action of this force?

A. 1 J

B. 25 J



C. 1/5 J

D. 5 J

Q368 Work definition and SI unit (joule)

Work done by a constant force depends on which of the following?

A. Mass of the object

B. Displacement only

C. Both force and displacement, and the angle between them



D. Magnitude of force only

Q369 Work definition and SI unit (joule)

A retarding force of 10 N acts on a body. The work done due to this force is -200 J. What will be the magnitude and direction of the displacement of the body under the action of this force?

A. 20 m; opposite to the direction of the force



B. 2000 m; in the same direction as the force

C. 2000 m; opposite to the direction of the force

D. 20 m; in the same direction as the force

Q370 Work definition and SI unit (joule)

Which of the following gives the correct relation between the work done (W) in terms of force (F) acting on the body and the displacement (S) of the body in the same direction as the force?

A. $W = F/S$

B. $W = F \times S$



C. $W = F - S$

D. $W = F + S$

Q371 Work definition and SI unit (joule)

If a constant force (F) of 20 N moves an object through a displacement (d) of 5 m in the same direction, then what will be the work (W) done?

A. 200 J

B. 25 J

C. 100 J



D. 50 J

Q372 Work definition and SI unit (joule)

A force of 7 N acts on an object and displaces it through 8 m in the direction of the force. What is the work done in this case?

A. 56 J



B. 15 Nm

C. 56 N

D. 7 J

Q373 Work definition and SI unit (joule)

A body undergoes a displacement of 10 m under the action of a constant force of 2.5 N, in the opposite direction to the direction of force. What will be the work done under the action of this force?

A. +2.5 J

B. -2.5 J

C. +25 J

D. -25 J

**Q374 Work definition and SI unit (joule)**

How is the work done by a force calculated?

A. Work = force $\times$ displacement



B. Work = force $\div$ displacement

C. Work = displacement $\div$ force

D. Work = force + displacement



Q375 Work definition and SI unit (joule)

Kamali spends a lot of time studying for examinations, including reading books and organising thoughts. Why would a scientist argue that this 'hard work' involves very little 'work' in the scientific sense?

- A. Because energy is conserved, so work done must be zero.
- B. Because displacement is necessary, and studying involves zero or minimal physical displacement of the body. ✓
- C. Because mental effort does not involve force.
- D. Because the activity is considered useful physical labour.

Q376 Work definition and SI unit (joule)

When a raised hammer falls on a nail and drives it into wood, the work done by the force of the hammer on the nail is positive. In this same scenario, which statement would describe negative work?

- A. The work done by the force exerted by the nail on the hammer. ✓
- B. The work done by the force of gravity acting on the hammer as it falls.
- C. The work done by the potential energy stored in the hammer.
- D. The work done by the force of gravity acting on the nail as it moves into the wood.

Q377 Work definition and SI unit (joule)

Which of the following statement(s) is /are true regarding the work done by a constant force acting on a body?

- (i) The work done by the force can never be zero.
- (ii) If the direction of the force and displacement of the body is same, the work done will be positive.
- (iii) The S.I. unit of work done is joule.

- A. Both (ii) and (iii) ✓
- B. Only (i)
- C. Both (i) and (iii)
- D. Only (ii)

Q378 Work definition and SI unit (joule)

Which of the following is the correct unit for measuring the work done by a force?

- A. Pascal
- B. Coulomb
- C. Newton
- D. Joule ✓

Q379 Work definition and SI unit (joule)

When is the work done by a force considered negative?

- A. When the force acts opposite to the direction of displacement ✓
- B. When there is no displacement
- C. When the force acts in the same direction as displacement
- D. When the force is zero

Q380 Work definition and SI unit (joule)

Work is said to be positive when _____.

- A. no displacement occurs
- B. force is perpendicular to the displacement
- C. force and displacement are in the same direction ✓
- D. force and displacement are opposite

Q381 Work definition and SI unit (joule)

When is the work done by a constant force on an object maximum?

- A. When the force is in the same direction as the displacement ✓
- B. When the force is opposite to the displacement
- C. When the force makes an angle of 45° with the displacement
- D. When the force is perpendicular to the displacement

Q382 Work definition and SI unit (joule)

A constant force of 'X' N acts on a body such that the body undergoes a displacement of 5 m in the same direction as the force. If the work done due to the force is 500 J, then what is the value of X?

- A. 2500 N
- B. 250 N
- C. 100 N ✓
- D. 1/100 N

Q383 Work definition and SI unit (joule)

How much work is required to move a box through a distance of 3 m in the direction of a force of 25 N?

- A. 750.0 J
- B. 0 J
- C. 25.0 J
- D. 75.0 J ✓



Q384 Work definition and SI unit (joule)

Which of the following is an example of negative work?

- ☒ A. Friction acting on a moving object
- ☐ B. Lifting a bag upwards
- ☐ C. Pushing a moving car forward.
- ☐ D. Gravity acting on a falling ball

Q385 Work definition and SI unit (joule)

Which of the following statements is true about work done by a constant force?

- ☐ A. It is always positive
- ☐ B. It depends on the path of motion
- ☒ C. It depends only on the initial and final positions
- ☐ D. It is independent of displacement

Q386 Work definition and SI unit (joule)

Which of the following statements is/are NOT true regarding the work done by a constant force acting on a body?

- (i) The work done by the force can never be negative.
- (ii) If the direction of the force and displacement of the body is same, the work done will be positive.
- (iii) The S.I. unit of work done is Pascal.

- ☐ A. Only (i)
- ☐ B. Only (ii)
- ☒ C. Both (i) and (iii)
- ☐ D. Both (ii) and (iii)

Q387 Work definition and SI unit (joule)

Which of the following is NOT an example of work done?

- ☐ A. Pulling a trolley along a flat surface
- ☐ B. Sliding luggage on the floor
- ☒ C. Pushing a wall
- ☐ D. Lifting a brick from the floor

Q388 Work definition and SI unit (joule)

When a force is applied at 90° to the direction of displacement of an object, the work done:

- ☐ A. is minimum but not zero
- ☒ B. is zero
- ☐ C. cannot be determined
- ☐ D. is maximum

Q389 Work definition and SI unit (joule)

Which of the following conditions must be satisfied for work to be done according to science?

- ☐ A. Only a force is applied, even if the object does not move.
- ☒ B. A force must act on an object, and the object must be displaced.
- ☐ C. The object is at rest, and a force is applied.
- ☐ D. Only the object moves, even if no force is applied.

Q390 Work definition and SI unit (joule)

A boy lifts an object above his head by exerting a force. Which of the following works is negative?

- ☐ A. Work done by the object
- ☐ B. Work done by the boy
- ☐ C. Work done by the applied force
- ☒ D. Work done by the force of gravity

Q391 Work definition and SI unit (joule)

Which of the following statements about work is FALSE?

- ☐ A. Work can be positive, negative, or zero.
- ☐ B. Work is energy in transit.
- ☐ C. Work has the same units as energy.
- ☒ D. Work is a path-independent quantity for all forces.

Q392 Work, Energy & Power

Which of the following statements is correct?

- ☒ A. Work done can be positive or negative depending on the direction of force.
- ☐ B. Work done does not depend on force or displacement.
- ☐ C. Work done can only be negative.
- ☐ D. Work done can only be positive.

Q393 Work, Energy & Power

Power measures:

- ☐ A. the energy stored in an object
- ☒ B. how fast or slow work is done
- ☐ C. the height of an object
- ☐ D. the total work done



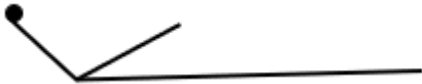
Q394 General Science

Which of the following statements is true for a velocity-time graph of uniform velocity?

- A. The graph is a curve
- B. Area under curve = speed, not displacement
- C. Slope = Acceleration $\neq 0$
- D. Slope = Acceleration = 0

**Q395 Conservation of energy**

A smooth ball is resting on an ideal frictionless plane inclined on both sides. The ball is released from the left and the angle of right plane inclination is small in Case-I and zero in Case-II (flat). The ball travels _____ compared to the equally inclined case.



- A. farther distance in Case-I and moves forever in Case-II
- B. equal distance in Case-I and moves forever in Case-II
- C. equal distance in Case-I and farther distance in Case-II
- D. small distance in Case-I and equal distance in Case-II

**Q396 Distance, displacement, speed, velocity**

An athlete runs on a circular track with a diameter of 300 m and completes one round in 50 seconds. If the athlete runs for 2 minutes and 30 seconds, what is the total distance covered from the starting point?

(Use $\pi = 3.14$)

- A. Distance = 471 m
- B. Distance = 942 m
- C. Distance = 2826 m
- D. Distance = 1500 m

**Q397 Free fall and weightlessness**

A ball is dropped from a height of 10 m from the surface of the earth. What will be the speed with which the ball will strike the ground?

(Take $g = 10 \text{ m/s}^2$)

- A. 20 m/s
- B. 10 m/s
- C. $10\sqrt{2}$ m/s
- D. 200 m/s



Q398 Kinetic and potential energy

A ball of mass 3 kg is placed on a shelf 2 m above the ground. The gravitational potential energy of the ball is (take $g = 10 \text{ m/s}^2$):

A. 300 J

B. 6 J

C. 60 J



D. 30 J

Q399 Work definition and SI unit (joule)

A porter lifts a luggage of mass 25 kg from the ground to a height of 2.0 m. What is the work done by him on the luggage? (Take $g = 10 \text{ m/s}^2$)

A. 500 J



B. 50 J

C. 250 J

D. 100 J

Q400 General Science

A satellite is moving in a uniform circular orbit around the Earth. Which of the following statements about its motion is correct?

A. The satellite has a constant velocity and a constant acceleration.

B. The satellite has a constant speed and no acceleration.

C. The satellite has a constant speed, but its velocity is not constant.



D. The satellite has a constant velocity, but its speed is not constant.



Q1 Absorption and role of small intestine

Which of the following is a process in which absorbed substances from alimentary canal is transported to different organs where they are used to build complex substances?

- A. Transpiration
- B. Assimilation
- C. Photosynthesis
- D. Digestion

Q2 Absorption and role of small intestine

Which of the following statements is/are true about villi in the small intestine?

Statements:

- A: Increase surface area for absorption
- B: Contain blood vessels
- C: Help in excretion
- D: Absorb digested nutrients

- A. Only Statement B
- B. Only Statements A, B, and D
- C. Only Statements A, B and C
- D. Only Statement A

Q3 Arteries, veins, capillaries

Which type of blood vessel has thick, elastic walls to withstand high pressure?

- A. Vein
- B. Artery
- C. Venule
- D. Capillary

Q4 Blood composition (RBC/WBC/platelets)

Which component(s) of blood is/are mainly responsible for transporting food, carbon dioxide and nitrogenous wastes?

- A. White blood cells
- B. Platelets
- C. Red blood corpuscles
- D. Plasma

Q5 Blood composition (RBC/WBC/platelets)

What is the function of plasma in human blood?

- A. It transports food, carbon dioxide and waste materials.
- B. It maintains the oxygen-rich blood supply to tissues.
- C. It helps in clotting blood during injuries.
- D. It carries oxygen from lungs to all parts of the body.

Q6 Blood composition (RBC/WBC/platelets)

Which component of blood serves as the fluid matrix in which cells are suspended?

- A. Plasma
- B. White blood cells
- C. Platelets
- D. Red blood cells

Q7 Blood pressure and heartbeat

The doctor feels our heartbeats with the help of an instrument called _____.

- A. microscope
- B. radiography
- C. stethoscope
- D. reflex hammer

Q8 Brain parts and functions

The main thinking part of the human brain is located in the:

- A. Mid-brain
- B. Spinal cord
- C. Fore-brain
- D. Medulla

Q9 Brain parts and functions

What makes the brain suitable for thinking activities?

- A. Its complex arrangement of many neurons
- B. Its location near the ears
- C. Its smooth surface
- D. Its connection to the heart



Q10 Brain parts and functions

Which part of the brain directly controls the movement of voluntary muscles?

- A. Medulla oblongata
- B. Sensory area
- C. Association area
- D. Motor area

**Q11 Brain parts and functions**

Which part of the brain controls involuntary actions such as blood pressure, salivation, and vomiting?

- A. Thalamus
- B. Cerebrum
- C. Medulla oblongata
- D. Cerebellum

**Q12 Brain parts and functions**

Which part of the human brain controls thinking and learning abilities of a person?

- A. Cerebellum
- B. Hypothalamus
- C. Cerebrum
- D. Medulla

**Q13 Brain parts and functions**

The sensation of feeling full after eaten enough is perceived in which part of our body?

- A. Fore-brain
- B. Heart
- C. Mid-brain
- D. Buccal cavity

**Q14 Brain parts and functions**

Which part of the brain is primarily responsible for higher-level thought processes and complex interpretation of sensory information?

- A. The forebrain
- B. The cerebellum
- C. The brainstem
- D. The spinal cord

**Q15 Cellular respiration (aerobic/anaerobic)**

Which of the following life processes leads to the breakdown of glucose in the absence of oxygen?

- A. Digestion
- B. Aerobic respiration
- C. Fermentation
- D. Excretion

**Q16 Cellular respiration (aerobic/anaerobic)**

Which of the following represents an end product of anaerobic respiration in animals?

- A. Lactic acid
- B. Carbon monoxide
- C. Glucose
- D. Oxygen

**Q17 Cellular respiration (aerobic/anaerobic)**

Why do we experience muscle cramps after heavy exercise?

- A. Because blood flow completely stops during exercise
- B. Due to a decrease in body temperature
- C. Because muscles stop contracting
- D. Due to accumulation of lactic acid

**Q18 Cellular respiration (aerobic/anaerobic)**

Muscle cells show higher mitochondrial activity after exercise. The result indicates which of the following?

- A. Cell division stops.
- B. Cells are becoming larger.
- C. Mitochondria cause fatigue.
- D. More energy is required during activity.

**Q19 Cellular respiration (aerobic/anaerobic)**

Life on earth depends on _____ molecules as the main source of energy for all organisms.

- A. carbon-based
- B. oxygen-based
- C. protein-based
- D. nitrogen-based



Q20 Cellular respiration (aerobic/anaerobic)

Match the following statements about respiration with their correct features.

a. Aerobic respiration	i. Does not require oxygen
b. Anaerobic respiration	ii. Mitochondria
c. Pyruvate breakdown in the presence of oxygen takes place in the	iii. Cytoplasm
d. Glucose breakdown in the absence of oxygen takes place in the	iv. Requires oxygen

A. a - iv, b - i, c - iii, d - ii

B. a - iv, b - i, c - ii, d - iii

C. a - i, b - iii, c - ii, d - iv

D. a - i, b - iv, c - ii, d - iii

Q21 Cellular respiration (aerobic/anaerobic)

When the terminal phosphate linkage in ATP is broken using water, the energy equivalent to ____ kJ/mol is released.

A. 50

B. 71.5

C. 30.5

D. 5

Q22 Cellular respiration (aerobic/anaerobic)

A decrease in oxygen availability in the environment is most likely to first impact which step of aerobic respiration in animal cells?

A. Electron transport chain

B. Glycolysis

C. Krebs cycle

D. Lactic acid fermentation

Q23 Central vs peripheral nervous system

Which of the following facilitates the communication between the central nervous system and the other parts of the body?

A. Peripheral nervous system

B. Voluntary muscles

C. Involuntary muscles.

D. Spinal cord

Q24 Central vs peripheral nervous system

Which of the following is a part of the central nervous system in human?

A. Spinal nerves

B. Pharynx

C. Cranial nerves

D. Spinal cord

Q25 Central vs peripheral nervous system

Which of the following is a part of the central nervous system of our body?

A. Pancreas

B. Spinal cord

C. Liver

D. Stomach

Q26 Circulatory System (Heart, Blood)

Which is the main transport system in animals?

A. Circulatory system

B. Respiratory system

C. Muscular system

D. Nervous system

Q27 Circulatory System (Heart, Blood)

In multicellular organisms, why can't simple diffusion alone meet the requirements of all cells?

A. Because diffusion only transports oxygen

B. Because all cells are directly exposed to air

C. Because body size and complexity increase

D. Because diffusion requires light



Q28 Digestive enzymes and functions

Which of the following is an enzyme that is secreted in the stomach during the process of digestion?

- A. Trypsin
- B. Mucus
- C. Pepsin
- D. Amylase

**Q29 Digestive enzymes and functions**

What is the function of salivary amylase present in human saliva?

- A. It converts amino acids into protein.
- B. It converts simple sugars into starch.
- C. It converts proteins into amino acids.
- D. It converts starch into simple sugars.

**Q30 Digestive enzymes and functions**

Which of the following enzymes is present in saliva?

- A. No enzyme
- B. Salivary Amylase
- C. Salivary Lipase
- D. Salivary Protease

**Q31 Digestive enzymes and functions**

Which enzyme is responsible for the breakdown of complex sugar molecules into simple glucose in human beings?

- A. Pepsin
- B. Lipase
- C. Amylase
- D. Bile Juice

**Q32 Digestive enzymes and functions**

Which enzyme present in saliva helps break down starch?

- A. Amylase
- B. Lipase
- C. Trypsin
- D. Pepsin

**Q33 Digestive tract organs and sequence**

The tongue helps in digestion mainly by _____.

- A. absorbing nutrients
- B. crushing food into smaller pieces
- C. secreting digestive enzymes
- D. mixing food with saliva

**Q34 Digestive tract organs and sequence**

In multicellular organisms like humans, digestion occurs in:

- A. specialised digestive organs
- B. nucleus
- C. food vacuoles
- D. entire cell surface

**Q35 Digestive tract organs and sequence**

What is the role of peristaltic movements in the human digestive system?

- A. To absorb nutrients into the blood
- B. To produce digestive enzymes
- C. To digest proteins in the stomach
- D. To push food forward along the digestive tract

**Q36 Endocrine glands and locations**

Which of the following organs releases growth hormone releasing factor, which stimulates the pituitary gland to release growth hormone?

- A. Thymus
- B. Pancreas
- C. Adrenal glands
- D. Hypothalamus

**Q37 Endocrine glands and locations**

Which of the following organs in human females can produce hormones?

- A. Ovaries
- B. Fallopian tubes
- C. Salivary glands
- D. Cervix



Q38 Excretory System (Kidney)

What is the method of removal of metabolic waste in many unicellular organisms?

- A. Through the use of special organs
- B. Through filtration through kidneys
- C. Through osmosis
- D. Through a simple diffusion process ✓

Q39 Excretory organs (skin/lungs/kidney)

Why is a transportation system essential for excretion in multicellular organisms?

- A. To help with reproduction
- B. To move waste products to the organs that remove them ✓
- C. To circulate digestive enzymes
- D. To produce oxygen in cells

Q40 Fertilization and development basics

Where is the embryo implanted after fertilisation in the human female body under normal conditions?

- A. Cervix
- B. Oviduct
- C. Ovary
- D. Uterus lining ✓

Q41 Fertilization and development basics

Which of the following functions is NOT performed by the placenta?

- A. Produces hormones to support pregnancy
- B. Removes carbon dioxide and waste from fetal blood
- C. Allows oxygen and nutrients to pass from mother to fetus
- D. Secretes oxytocin to start childbirth ✓

Q42 Fertilization and development basics

Where does fertilisation usually occur in the female reproductive system?

- A. Cervix
- B. Vagina
- C. Uterus
- D. Oviduct ✓

Q43 Fertilization and development basics

In which part of the female reproductive system is the egg fertilised by sperm?

- A. Ovary
- B. Uterus
- C. Fallopian tube ✓
- D. Vagina

Q44 Fertilization and development basics

What is the type of reproduction beginning from the fusion of male and female gametes called?

- A. Binary fission
- B. Cloning
- C. Budding
- D. Sexual reproduction ✓

Q45 Fertilization and development basics

Which of the following statements about sexual reproduction is INCORRECT?

- A. It combines DNA from two parents.
- B. It helps organisms adapt to changing environments.
- C. It generates variations for species survival.
- D. It produces identical clones. ✓

Q46 Fertilization and development basics

How long does an unfertilised egg typically survive in the female reproductive tract?

- A. 72 hours
- B. 24 hours ✓
- C. 10 hours
- D. 60 hours

Q47 Fertilization and development basics

Which of the following statements about sexual reproduction in animals is correct?

- A. Fertilisation in animals always occurs outside the female body.
- B. Sexual reproduction involves only one parent and produces identical offspring.
- C. All animals reproduce sexually during their entire life span.
- D. Sexual reproduction involves the fusion of male and female gametes. ✓



Q48 Fertilization and development basics

External fertilisation is found in which of the following organisms?

- A. Hen
- B. Cow
- C. Fish ✓
- D. Human

Q49 Fertilization and development basics

Which of the following is essential for animals to participate in the process of mating?

- A. They must be tall
- B. Sexual immaturity
- C. Physical maturity ✓
- D. They must have attractive eyes

Q50 Fertilization and development basics

The process by which the developing embryo gets associated with the lining of the uterus is called _____.

- A. abortion
- B. fertilisation
- C. implantation ✓
- D. embryogenesis

Q51 Fertilization and development basics

When fertilisation takes place inside the female body, it is called _____.

- A. test-tube babies
- B. in vitro fertilisation
- C. internal fertilisation ✓
- D. external fertilisation

Q52 Fertilization and development basics

Which of the following is NOT an outcome of fertilisation?

- A. Embryo formation
- B. Placenta formation
- C. Egg formation ✓
- D. Zygote formation

Q53 Fertilization and development basics

In humans, after fertilisation, the embryo is implanted in which part of the body?

- A. Fallopian tube
- B. Uterus ✓
- C. Stomach
- D. Ovary

Q54 Fertilization and development basics

A special tissue through which the foetus receives nutrition is called which of the following?

- A. Placenta ✓
- B. Uterus
- C. Cervix
- D. Fallopian tube

Q55 Fertilization and development basics

Which of the following best explains the importance of fertilisation in sexual reproduction?

- A. It allows the formation of an embryo ✓
- B. It cleanses the reproductive tract
- C. It increases the number of eggs in females
- D. It helps the uterus for menstrual flow

Q56 Fertilization and development basics

Which of the following is the correct sequence of events of sexual reproduction?

- A. Embryo → Zygote → Fertilisation → Foetus
- B. Fertilisation → Zygote → Embryo → Foetus ✓
- C. Zygote → Fertilisation → Embryo → Foetus
- D. Foetus → Embryo → Zygote → Fertilisation

Q57 Fertilization and development basics

What happens after fertilisation in the human female reproductive system?

- A. The embryo develops in the ovary and is nourished by the cervix.
- B. The fertilised egg divides to form an embryo, which implants in the uterine lining. ✓
- C. The zygote immediately becomes a foetus in the vagina.
- D. The fertilised egg stays in the fallopian tube and develops there.



Q58 Fertilization and development basics

In which part of the female reproductive system does fertilisation take place?

A. Oviduct (fallopian tube) ✓

B. Ovary

C. Cervix

D. Uterus

Q59 Fertilization and development basics

If a fertilised egg reaches the uterus but finds the lining thin and not spongy, what could happen?

A. The egg survives longer than usual.

B. The egg gets fertilised again.

C. Menstruation is delayed but still occurs.

D. The embryo fails to implant properly and is expelled. ✓

Q60 Fertilization and development basics

Arrange the following in the correct sequences of development after fertilisation in humans.

Embryo, Zygote and Foetus

A. Zygote - Foetus - Embryo

B. Embryo - Foetus - Zygote

C. Zygote - Embryo - Foetus ✓

D. Foetus - Embryo - Zygote

Q61 Fertilization and development basics

What role does the placenta play during the development of the embryo in the human female reproductive system?

A. It is the location where fertilisation of egg and sperm occurs.

B. It produces eggs needed for fertilisation.

C. It facilitates the exchange of nutrients and wastes between mother and embryo. ✓

D. It unites the two oviducts into the uterus.

Q62 Fertilization and development basics

Fertilization in females usually occurs in which region of the reproductive system?

A. Fallopian Tube ✓

B. Vagina

C. Uterus

D. Ovary

Q63 Haemoglobin and its role

In blood, oxygen is transported by _____.

A. Lymph

B. Red blood corpuscles ✓

C. Blood platelets

D. White blood corpuscles

Q64 Heart structure and chambers

Fish have hearts with _____ chambers and their blood passes through the heart only _____ in one complete cycle.

A. two; once ✓

B. three; twice

C. two; twice

D. four; once

Q65 Heart structure and chambers

Animals with high energy needs and constant body temperature, like birds and mammals, have _____ chambered hearts.

A. One

B. Three

C. Two

D. Four ✓

Q66 Hormones and functions (match)

Which of the following is secreted directly into the blood and carried to different parts of the body?

A. Saliva

B. Pancreatic juice

C. Bile juice

D. Adrenaline ✓

Q67 Hormones and functions (match)

Hormone named testosterone is secreted from which of the following parts of a human being?

A. Fallopian tube

B. Testis ✓

C. Uterus

D. Ureter



Q68 Hormones and functions (match)

Which of the following chemical secretions helps our body in control and coordination?

A. Hormones



B. Sebum

C. Saliva

D. Gastric mucosa

Q69 Hormones and functions (match)

Which gland in the human body secretes the growth hormone?

A. Pituitary gland



B. Thyroid gland

C. Pancreas

D. Adrenal gland

Q70 Hormones and functions (match)

Which hormone triggers sexual maturation in boys?

A. Estrogen

B. Oxytocin

C. Testosterone



D. Progesterone

Q71 Hormones and functions (match)

In animals, which of the following hormones are secreted during a scary situation?

A. Growth hormone

B. Adrenaline



C. Insulin

D. Thyroxin

Q72 Insulin and diabetes

Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Insulin helps lower blood glucose levels.

Reason (R): Insulin converts glucose into glycogen for storage in the liver.

A. A is false, but R is true.

B. Both A and R are true, but R is not the correct explanation of A.

C. Both A and R are true, and R is the correct explanation of A.



D. A is true, but R is false.

Q73 Insulin and diabetes

A person shows high blood sugar levels even after eating small amounts of food. What may be the cause?

A. Low thyroxine

B. Excess growth hormone

C. Lack of insulin



D. Excess estrogen

Q74 Kidney structure and function

What is the exact location of the kidneys in human beings?

A. In the chest region, just below the heart

B. In the chest region, on either side of the lungs

C. In the abdomen, on either side of the back bone



D. In the abdomen, on either side of the intestine

Q75 Kidney structure and function

What is the primary function of the kidneys in human beings?

A. To transport glucose and hormones throughout the body

B. To absorb oxygen and release carbon dioxide

C. To regulate digestion and nutrient absorption

D. To filter nitrogenous waste materials from the blood



Q76 Kidney structure and function

Through which of the following structures does urine go into the urinary bladder from kidneys?

A. Vena cava

B. Artery

C. Ureters



D. Vein

Q77 Liver, pancreas, gall bladder roles

What is the main function of bile in human digestion?

A. To digest proteins completely in the stomach

B. To mix food with saliva for easy swallowing

C. To make food alkaline and break down large fat globules



D. To convert glucose into glycogen in the liver



Q78 Lungs and alveoli function

The alveoli are surrounded by an extensive network of _____, where the exchange of _____ takes place.

A. capillaries; gases



B. bronchi; air

C. nerves; impulses

D. muscles; pressure

Q79 Male and female reproductive organs

What is the main function of the vas deferens in the male reproductive system?

A. Transporting sperm from the epididymis to the urethra



B. Regulating body temperature

C. Sperm production

D. Seminal fluid secretion

Q80 Male and female reproductive organs

Which of the following is a part of the human male reproductive system?

A. Uterus

B. Prostate gland



C. Vagina

D. Fallopian tube

Q81 Male and female reproductive organs

A man undergoes a minor surgical procedure that prevents sperm from mixing with semen. Which structure was most likely altered?

A. Urethra

B. Vas deferens



C. Testis

D. Penis

Q82 Male and female reproductive organs

Through which part of the female reproductive system does the egg travel from the ovary to the uterus?

A. Fallopian tube



B. Ureter

C. Cervix

D. Vagina

Q83 Male and female reproductive organs

Why are the testes positioned externally rather than inside the abdominal cavity?

A. To form a common passage for urine and sperms

B. To maintain a lower temperature for sperm formation



C. To regulate testosterone production

D. To facilitate sperm transport

Q84 Male and female reproductive organs

Why are the testes located outside the abdominal cavity in human males?

A. Because sperm formation requires higher temperature

B. Because testosterone is produced only outside the body

C. Because sperm formation requires a lower temperature than body temperature



D. To protect them from physical damage

Q85 Male and female reproductive organs

By how many degrees Celsius is the temperature of the scrotum lower than the normal body temperature?

A. About 12°C

B. About 3°C



C. About 7°C

D. About 6°C

Q86 Male and female reproductive organs

What is the role of the prostate gland and seminal vesicles in the human male reproductive system?

A. To secrete testosterone

B. To provide fluids for transporting sperm



C. To produce sperm cells

D. To lower the temperature of the testes

Q87 Male and female reproductive organs

Which of the following organs is a part of the human female reproductive system?

A. Testis

B. Uterus



C. Vas Deferens

D. Prostate Gland



Q88 Male and female reproductive organs

Which of the following glands add their secretions to make easier transport and to provide nutrition for sperms?

- A. Prostate only
- B. Pineal
- C. Seminal vesicles only
- D. Prostate and seminal vesicles ✓

Q89 Male and female reproductive organs

Testes are located outside the abdominal cavity, called _____.

- A. Penis
- B. Ureter
- C. Scrotum ✓
- D. Bladder

Q90 Male and female reproductive organs

What is the correct path of the egg in the female reproductive system?

- A. Uterus → Ovary → Fallopian tube
- B. Fallopian tube → Ovary → Uterus
- C. Ovary → Fallopian tube → Uterus ✓
- D. Ovary → Vagina → Uterus

Q91 Male and female reproductive organs

In human females, which of the following structures carries egg from the ovary to the womb?

- A. Cervix
- B. Uterus
- C. Fallopian tube ✓
- D. Vaginal tube

Q92 Male and female reproductive organs

In the male reproductive system, where does sperm formation take place?

- A. Seminal vesicles
- B. Scrotum
- C. Vas deferens
- D. Testes ✓

Q93 Male and female reproductive organs

What is the primary reason that the testes are located outside the abdominal cavity in the scrotum?

- A. To facilitate sperm formation as it requires a lower temperature than body temperature ✓
- B. To reduce the risk of infection
- C. To facilitate easier hormone secretion
- D. To allow proper mixing of sperm and urine

Q94 Male and female reproductive organs

A male patient has low sperm motility. Which glands are most likely to be NOT functioning properly?

- A. Testis and bladder
- B. Thyroxine and Pineal Glands
- C. Pancreas and adrenal glands
- D. Prostate gland and seminal vesicles ✓

Q95 Male and female reproductive organs

Which of the following statements is/are correct regarding the female reproductive system?

Statement A: The egg is carried from the ovary to the womb through a thin oviduct or fallopian tube.
Statement B: The uterus opens into the vagina through the cervix.

- A. Only statement A
- B. Neither statement A nor B
- C. Only statement B
- D. Both statement A and B ✓

Q96 Male and female reproductive organs

What is the function of the secretions from the prostate gland and seminal vesicles in the male reproductive system?

- A. To destroy weak sperms
- B. To prevent mixing of urine and sperms
- C. To eliminate waste from sperms
- D. To provide nutrition and aid in sperm transport ✓



Q97 Male and female reproductive organs

Which of the following statements is correct regarding the female reproductive system?

- A. The uterus produces eggs that travel through the vagina.
- B. The cervix connects the ovaries to the uterus.
- C. The fallopian tubes carry the egg from the ovary to the uterus. ✓
- D. A girl starts producing eggs only after she reaches puberty.

Q98 Male and female reproductive organs

During the birth, the ovaries of a girl child contain _____.

- A. No eggs
- B. Both mature and immature eggs
- C. Only mature eggs
- D. Only immature eggs ✓

Q99 Mechanism of breathing / gaseous exchange

Why do aquatic organisms breathe faster than terrestrial organisms?

- A. Because water exerts less resistance on breathing organs
- B. Because diffusion of oxygen in water is faster than in air
- C. Because they absorb oxygen directly from sunlight through gills
- D. Because the amount of dissolved oxygen in water is very low ✓

Q100 Mechanism of breathing / gaseous exchange

As the chest cavity becomes larger, air is _____ into the lungs and fills the expanded _____.

- A. absorbed; diaphragm
- B. pushed; bronchi
- C. forced; ribs
- D. pulled; alveoli ✓

Q101 Mechanism of breathing / gaseous exchange

Why do we continue to breathe even when we are sitting or sleeping?

- A. To supply oxygen for life processes ✓
- B. To make breathing movements
- C. To give rest to the heart
- D. To let digestion go on

Q102 Menstrual cycle basics

In human female, when egg is not fertilised, which of the following process takes place?

- A. Zygote formation
- B. Menstruation ✓
- C. Parturition
- D. Embryo development

Q103 Menstrual cycle basics

Which of the following human female body part prepares itself every month to receive a fertilised egg?

- A. Uterus ✓
- B. Pharynx
- C. Pancreas
- D. Kidney

Q104 Menstrual cycle basics

Which of the following is correct if the egg is NOT fertilised with the sperm?

- A. Uterus lining is unaffected
- B. Uterus lining becomes thick and spongy
- C. Uterus lining becomes thin
- D. Uterus lining slowly breaks, sheds as blood and mucous ✓

Q105 Menstrual cycle basics

Why is the female body specifically prepared every month for pregnancy?

- A. To improve blood circulation
- B. To remove waste products
- C. To nourish the potential embryo ✓
- D. To release more sperm

Q106 Menstrual cycle basics

Which of the following events directly triggers the process of menstruation?

- A. Maturation of the egg
- B. Non fertilisation of egg and hormonal changes ✓
- C. Release of sperm into the vagina
- D. Fertilisation of the egg



Q107 Menstrual cycle basics

Why does the uterine lining become thick and spongy every month?

- A. To prevent menstruation
- B. To support egg development
- C. To absorb nutrients
- D. To nourish the embryo if fertilisation occurs ✓

Q108 Menstrual cycle basics

What happens to the egg if it is NOT fertilised?

- A. It lives for about one day and then disintegrates. ✓
- B. It implants in the uterus.
- C. It becomes an embryo.
- D. It survives for a week.

Q109 Menstrual cycle basics

What happens in the female body if the egg is NOT fertilised?

- A. The egg remains in the uterus and turns into an embryo.
- B. The thick uterine lining is retained permanently.
- C. The uterine lining breaks down and is expelled as blood and mucus. ✓
- D. The ovary stops releasing eggs permanently.

Q110 Menstrual cycle basics

In human females, if the egg is not fertilised, the monthly shedding of the uterine lining is called which of the following?

- A. Maturation
- B. Fertilisation
- C. Menstruation ✓
- D. Maintenance

Q111 Menstrual cycle basics

Even though ovulation occurs regularly in a female, the uterus lining is shed during menstruation each month. What does this suggest about fertilisation?

- A. The ovary is not releasing eggs
- B. Fertilisation is occurring each time
- C. Fertilisation is not occurring ✓
- D. The uterus is rejecting the embryo

Q112 Menstrual cycle basics

Which process involves the breakdown of uterine walls when the egg is NOT fertilised?

- A. Menopause
- B. Incubation
- C. Menstruation ✓
- D. Fertilisation

Q113 Menstrual cycle basics

What happens to the uterus lining if the egg is not fertilised?

- A. It breaks down and is discharged through the vagina. ✓
- B. It gets absorbed by the body.
- C. It becomes thickened.
- D. It is unaffected.

Q114 Menstrual cycle basics

The regular changes in the ovary and uterus during egg formation is called _____.

- A. fertilisation cycle
- B. estrous cycle
- C. menstrual cycle ✓
- D. circadian rhythm

Q115 Menstrual cycle basics

What happens to the uterine lining in human females if the egg is not fertilized?

- A. It breaks down and is discharged as blood and mucus. ✓
- B. It is reabsorbed into the body.
- C. It thickens further for another week.
- D. It remains intact for the next cycle.

Q116 Muscle types (skeletal/smooth/cardiac)

Which of the following movements is brought about by voluntary muscles?

- A. Movement of tongue ✓
- B. Movement of heart
- C. Movement in intestines
- D. Movement in the stomach walls



Q117 Muscle types (skeletal/smooth/cardiac)

Which type of muscle is found in the walls of internal organs like the stomach and intestines?

- A. Voluntary muscle
- B. Skeletal muscle
- C. Smooth muscle ✓
- D. Striated muscle

Q118 Muscle types (skeletal/smooth/cardiac)

Which of the following characteristics correctly describes skeletal (striated) muscles?

- A. Short, cylindrical, branched cells with intercalated discs
- B. Spindle-shaped, uninucleate cells, involuntary control
- C. Branched, uninucleate cells, involuntary control
- D. Long, cylindrical, unbranched, multinucleate cells, voluntary control ✓

Q119 Muscle types (skeletal/smooth/cardiac)

Which of the following types of human muscles show alternate light and dark bands when stained appropriately?

- A. Skeletal muscles ✓
- B. Muscles of the alimentary canal
- C. Involuntary muscles
- D. Visceral muscles

Q120 Muscle types (skeletal/smooth/cardiac)

Which of the following is INCORRECT about striated muscle?

- A. Also called voluntary muscles
- B. These are present in limbs
- C. Mostly attached to bones and help in body movement
- D. Each striated muscle fibre contains a single nucleus ✓

Q121 Muscle types (skeletal/smooth/cardiac)

Which of the following cause(s) movement in muscular tissue?

- A. Ligaments
- B. Enzymes
- C. Contractile proteins ✓
- D. Cartilage

Q122 Muscle types (skeletal/smooth/cardiac)

Which statement is NOT true about smooth muscles?

- A. They are uninucleate
- B. They control involuntary movements
- C. They are spindle-shaped cells
- D. They have striations ✓

Q123 Muscle types (skeletal/smooth/cardiac)

Which type of muscle is voluntary and shows light and dark bands?

- A. Striated muscle ✓
- B. Unstriated muscle
- C. Cardiac muscle
- D. Smooth muscle

Q124 Muscle types (skeletal/smooth/cardiac)

Which type of muscular tissue is present in the wall of the stomach?

- A. Cardiac muscle tissue
- B. Fluid connective tissue
- C. Smooth muscle tissue ✓
- D. Skeletal muscle tissue

Q125 Muscle types (skeletal/smooth/cardiac)

Which of the following is the main function of skeletal muscles in a human body?

- A. Circulation
- B. Respiration
- C. Excretion
- D. Movement in our body ✓

Q126 Nephron and urine formation

Which substances are selectively reabsorbed in the nephron?

- A. Urea and carbon dioxide
- B. Platelets and enzymes
- C. Glucose, amino acids, and water ✓
- D. Bile and hydrochloric acid



Q127 Nephron and urine formation

Which of the following structures acts as the basic filtration unit in the kidney?

- A. Alveolus
- B. Tracheid
- C. Villus
- D. Nephron

**Q128 Nephron and urine formation**

_____ is/are NOT selectively re-absorbed from the filtrate in the nephron.

- A. Urea
- B. Amino acids
- C. Glucose
- D. Salts

**Q129 Nephron and urine formation**

Fill in the blanks with the correct sequence of organs.

Urine is formed in the _____ → passes through the _____ → stored in the _____ → and finally released through the _____.

- A. Kidney → Ureter → Urinary bladder → Urethra
- B. Urinary bladder → Kidney → Ureter → Urethra
- C. Ureter → Kidney → Urethra → Urinary bladder
- D. Urethra → Urinary bladder → Ureter → Kidney

**Q130 Nervous System & Brain**

In animals, sensitivity or responsiveness is mainly controlled by the:

- A. nervous system
- B. respiratory system
- C. digestive system
- D. circulatory system

**Q131 Nervous System & Brain**

Which of the following is NOT correct about nervous tissue?

- A. Cells are called nerve cells or neurons
- B. Nerve cells are very small in length
- C. Examples are brain and spinal cord
- D. Neuron is made up of axon and dendrites

**Q132 Nervous System & Brain**

Read the following statements carefully and select the INCORRECT one.

- A. Cerebellum helps in maintaining body posture and balance.
- B. Medulla oblongata controls reflex actions like pulling hand away from a hot object.
- C. Spinal cord acts as a relay between the brain and the rest of the body and also controls reflex actions.
- D. Cerebrum is the largest part of the human brain and is responsible for thinking and voluntary actions.

**Q133 Nervous System & Brain**

A patient is unable to move his left hand, but brain scans show no damage. Which part of the nervous system is most likely to be affected?

- A. Autonomic nervous system
- B. Peripheral nervous system
- C. Central nervous system
- D. Parasympathetic nervous system

**Q134 Nervous System & Brain**

Which of the following correctly pairs a nerve type with its origin?

- A. Cranial nerves – Brain
- B. Spinal nerves – Heart
- C. Cranial nerves – Spinal cord
- D. Spinal nerves – Brain

**Q135 Nervous System & Brain**

When a person touches a hot object, there is a delay in the muscle response. Which part of the nervous tissue is directly responsible for carrying the nerve impulse to the muscle to bring about a quick movement?

- A. Connective tissue
- B. Dendrite
- C. Nucleus
- D. Axon

**Q136 Neuron structure and function**

Neurons have many short, branched parts or processes attached to cell body called _____.

- A. nerve endings
- B. dendrites
- C. axons
- D. nuclei



Q137 Neuron structure and function

Which part of the neuron contains the nucleus and the cytoplasm?

A. Cell body



B. Nerve endings

C. Axon

D. Dendrites

Q138 Neuron structure and function

Which of the following cells has dendrite on one end?

A. Neuron



B. Monocyte

C. Red blood cell

D. Platelet

Q139 Neuron structure and function

Which part in the neuron i.e. nervous tissue is responsible for protein synthesis?

A. Axon

B. Nissl granules



C. Synaptic bulb

D. Dendrites

Q140 Neuron structure and function

The _____ is the longest cell in the human body.

A. osteocyte

B. platelet

C. muscle fibre

D. neuron



Q141 Neuron structure and function

What are the main components of a neuron?

A. Dendrites, cell body, axon and nerve endings

B. Dendrites, cell body and axon



C. Dendrites, cell body and nerve endings

D. Cell body, dendrites, nerve endings and synapse

Q142 Neuron structure and function

In which part of the neurons, is the first electrical impulse created?

A. Nerve ending

B. Axon

C. Dendrite



D. Cell body

Q143 Neuron structure and function

What is the primary function of the dendrites in a neuron?

A. To protect the neuron

B. To transmit signals from the axon to the cell body



C. To create an electrical impulse

D. To form a synapse

Q144 Neuron structure and function

What is the name of the long, fibre-like part of a neuron that carries signals away from the cell body?

A. Dendrite

B. Synapse

C. Nucleus

D. Axon



Q145 Neuron structure and function

What will happen if the dendrites of neurons do not function?

A. Muscles will contract more strongly

B. Neurons will produce more electrical impulses

C. Signals from other neurons will not be received



D. Signals will be transmitted faster

Q146 Neuron structure and function

Which of the following generally forms the longest part of a neuron?

A. Axon



B. Nerve ending

C. Synapse

D. Cell body



Q147 Neuron structure and function

Which of the following statements about neurons is INCORRECT?

A. Neurons lack a nucleus. ✓

B. A neuron is made of three parts: dendrites, cell body and axon.

C. Dendrites receive signals.

D. Axon sends signals out.

Q148 Neuron structure and function

Which part of a neuron carries the nerve impulse away from the cell body?

A. Axon ✓

B. Dendrite

C. Synapse

D. Nucleus

Q149 Neuron structure and function

What is the gap between two neurons called?

A. Synapse ✓

B. Stroma

C. Lumen

D. Intermembrane space

Q150 Neuron structure and function

A neuron receives nerve impulse from another neuron through ____.

A. Dendrite ✓

B. Synapse

C. Axon

D. Cell body

Q151 Neuron structure and function

During a nerve impulse transmission, neurotransmitters are released from one neuron and received by another. Which part of neurons are primarily involved in this chemical communication?

A. Axon → Myelin sheath of nerve

B. Cell body → Axon of same neuron

C. Axon terminal → Dendrite of another neuron ✓

D. Dendrite → Axon terminal of same neuron

Q152 Reproductive System

Which of the following methods of reproduction ensures rapid increase in population?

A. Asexual reproduction ✓

B. Internal fertilisation

C. Cross pollination

D. Self pollination

Q153 Reproductive System

In which of the following forms of reproduction, both sexes, males and females are needed to produce new generations?

A. Spore formation

B. Budding

C. Sexual reproduction ✓

D. Fragmentation

Q154 Reproductive System

Waste generated by developing human embryo is removed with the help of which of the following organs?

A. Ovaries

B. Scrotum

C. Fallopian tube

D. Placenta ✓

Q155 Reproductive System

What is prevented when the fallopian tubes in females are blocked?

A. Fertilisation ✓

B. Menstrual cycle

C. Childbirth

D. Egg production

Q156 Reproductive System

Which of the following statements is correct about reproduction?

1. Bulls alone can produce a calf.

2. Hens alone can not produce new chicks.

A. Both statements are correct.

B. Statement 2 is correct but Statement 1 is false. ✓

C. Both statements are false.

D. Statement 1 is correct but Statement 2 is false.



Q157 Reproductive System

Which of the following is a psychological change associated with sexual maturity?

- A. Development of brain
- B. Hair growth on skin
- C. Desire of independence and mood swings ✓
- D. Increased physical activity

Q158 Reproductive System

What is the longevity period of egg in the fallopian tube in case of failure of fertilisation in human females?

- A. 3-4 days
- B. 1-2 days ✓
- C. 4-5 days
- D. 6-7 days

Q159 Reproductive System

Which of the following best describes the process of sexual maturation in humans?

- A. It is a gradual process during adolescence involving physical and hormonal changes ✓
- B. It occurs only in females and stops once menstruation begins
- C. It begins after adulthood and leads to immediate readiness for parenthood
- D. It occurs suddenly and marks the end of body growth

Q160 Reproductive System

Read the given assertion (A) and reason (R) and select the most appropriate option.

(A): The onset of puberty in females occurs earlier than in males, but both attain their final height by 18–20 years of age.

(R): Although puberty begins later in males, their growth spurt is more rapid than in females.

- A. Both (A) and (R) are true but (R) is not the correct explanation of (A) ✓
- B. (A) is true but (R) is false
- C. Both (A) and (R) are true and (R) is the correct explanation of (A)
- D. (A) is false but (R) is true

Q161 Reproductive System

Which of the following is a characteristic of the onset of puberty in boys?

- A. Growth of liver
- B. Growth of hairs on head
- C. Growth of pineal gland
- D. Growth of a moustache ✓

Q162 Reproductive System

Which of the following is the phase during which reproductive tissues in humans start maturing?

- A. Puberty ✓
- B. Childhood
- C. Fertilization
- D. Menstruation

Q163 Reproductive System

Which of the following changes can be regarded as part of sexual maturation in human males?

- A. Cracking of voice ✓
- B. Increase in weight
- C. Increase in height
- D. Deposition of fat in hips

Q164 Reproductive health / contraception basics

In reproductive health, the aim of contraception is _____.

- A. to make twin babies
- B. to have more babies
- C. to prevent unplanned pregnancies ✓
- D. to make babies healthy

Q165 Reproductive health / contraception basics

Which of the following statements best explains why hormonal contraceptive pills can have side effects?

- A. They destroy the egg inside the ovary.
- B. They prevent the sperm from reaching the egg mechanically.
- C. They interfere with the body's immune system.
- D. They disrupt the natural hormonal balance, affecting other physiological functions. ✓



Q166 Reproductive health / contraception basics

Which of the following is NOT a contraceptive method?

- A. Preventing sperm from reaching the egg by using condoms
- B. Aborting the foetus** ✓
- C. Inserting Copper-T into the uterus
- D. Altering hormonal balance to prevent release of eggs from the ovary

Q167 Reproductive health / contraception basics

Which of the following is related to human females in the same manner as vasectomy is related to human males?

- A. Tubectomy** ✓
- B. Copper-T
- C. Cervical caps
- D. Coitus interruptus

Q168 Reproductive health / contraception basics

Which of the following helps in maintaining reproductive health?

- A. Early marriage
- B. Health education and medical care** ✓
- C. Junk food
- D. Ignoring hygiene

Q169 Reproductive health / contraception basics

Which of the following is a safe sex method to help prevent the transmission of HIV (human immunodeficiency virus)?

- A. Using condoms during sexual intercourse** ✓
- B. Taking antibiotics after sex
- C. Taking multivitamins regularly
- D. Sharing needles carefully

Q170 Reproductive health / contraception basics

Which of the following is a T-shaped intra-uterine contraceptive device that offers long-term (multi-year) birth control?

- A. Birth control pill
- B. Male condom
- C. Copper-T** ✓
- D. Diaphragm

Q171 Reproductive health / contraception basics

Which of the following contraceptive devices/methods prevent(s) spreading of STDs (Sexually Transmitted Diseases) such as AIDS?

- A. Vasectomy/Tubectomy
- B. Copper T
- C. Condoms** ✓
- D. Oral Pills

Q172 Reproductive health / contraception basics

Which one of the following statements is TRUE about vasectomy?

- A. It blocks the vas deferens to prevent sperm release.** ✓
- B. It removes the seminal vesicles.
- C. It stops testosterone production.
- D. It kills the sperm cells reaching the uterus.

Q173 Reproductive health / contraception basics

Contraceptive devices such as the loop or the copper-T are placed in which part of the human body?

- A. Heart
- B. Ovary
- C. Uterus** ✓
- D. Kidney

Q174 Reproductive health / contraception basics

Which of the following birth control methods can cause hormonal imbalance, and probably health issues?

- A. Copper-T
- B. Condoms
- C. Tubectomy
- D. Oral contraceptive pills** ✓

Q175 Reproductive health / contraception basics

How can the transmission of certain sexually transmitted infections (STIs) be reduced during sexual activity?

- A. By only engaging in sexual activity during daytime
- B. By taking antibiotics before every sexual act
- C. By avoiding physical contact with all individuals
- D. By using protection such as condoms during intercourse** ✓



Q176 Reproductive health / contraception basics

What is the effect of oral contraceptive pills in the body of human females?

- ☒ A. They prevent maturation of primary oocyte.
- ☐ B. They block the passage of sperms in vagina.
- ☐ C. They are toxic to the incoming sperms.
- ☐ D. They create a physical barrier in fallopian tube.

Q177 Reproductive health / contraception basics

Which of the following methods ensures prevention of transmission of sexually transmitted diseases during sexual intercourse?

- ☐ A. Using oral pills
- ☐ B. Tubectomy
- ☐ C. Vasectomy
- ☒ D. Using condoms

Q178 Reproductive health / contraception basics

Which of the following contraceptive devices is placed in the uterus to prevent pregnancy?

- ☐ A. Hormonal patch
- ☐ B. Oral pills
- ☐ C. Condom
- ☒ D. Copper-T

Q179 Reproductive health / contraception basics

Which statement is INCORRECT about contraceptive pills?

- ☐ A. They contain synthetic hormones (estrogen and progesterone) that prevent ovulation,
- ☐ B. They are a highly effective form of birth control when taken correctly.
- ☒ C. They protect against sexually transmitted infections.
- ☐ D. They can cause side effects like irregular bleeding or nausea in some users.

Q180 Reproductive health / contraception basics

A woman using a copper-T complains of abdominal pain and discomfort. What is the likely reason?

- ☐ A. Infection in the stomach
- ☒ B. Uterine irritation caused by the IUD
- ☐ C. Blockage in fallopian tube
- ☐ D. Hormonal imbalance due to tablets

Q181 Reproductive health / contraception basics

Read the given assertion (A) and reason (R) and select the most appropriate option.

(A): Oral contraceptive pills are a permanent method of contraception.

(R): They change hormone levels and prevent ovulation.

- ☐ A. Both A and R are false
- ☐ B. Both A and R are true, but R is not the correct explanation of A
- ☒ C. A is false, but R is true
- ☐ D. Both A and R are true, and R is the correct explanation of A

Q182 Reproductive health / contraception basics

Why is practicing safe sex important for reproductive health?

- ☒ A. It prevents sexually transmitted diseases like HIV-AIDS
- ☐ B. It ensures hormonal balance in the body
- ☐ C. It guarantees pregnancy
- ☐ D. It increases fertility

Q183 Reproductive health / contraception basics

In which of the following cases is pregnancy least likely to occur?

- ☒ A. Egg not released from ovary
- ☐ B. Fertilisation happens in the oviduct
- ☐ C. Embryo implants in the uterus
- ☐ D. Sperm meets egg in the uterus

Q184 Reproductive health / contraception basics

Which contraceptive method provides dual protection against pregnancy and most sexually transmitted diseases?

- ☒ A. Male condom
- ☐ B. Copper -T
- ☐ C. Oral contraceptive pills
- ☐ D. Surgical methods



Q185 Reproductive health / contraception basics

Which of the following statements suits best for the role of chemical methods of birth control in family planning?

- A. They alter the hormone levels to inhibit ovulation and uterus preparation. ☒
- B. They increase estrogen levels to promote ovulation and make fertilisation less likely.
- C. They prevent sperm from entering the uterus by thickening the vaginal wall.
- D. They mechanically block the fallopian tubes and suppress menstruation entirely.

Q186 Reproductive health / contraception basics

Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Vasectomy leads to loss of sexual drive in males.

Reason (R): It involves removal of the testes.

- A. Both A and R are true, but R is not the correct explanation of A
- B. A is false, but R is true
- C. Both A and R are false ☒
- D. Both A and R are true, and R is the correct explanation of A

Q187 Reproductive health / contraception basics

Which of the following is a basic requirement for maintaining good reproductive health?

- A. Safe sex practices and awareness about contraception ☒
- B. Ignoring changes during adolescence
- C. Avoiding all medicines
- D. Sharing personal hygiene products

Q188 Reproductive health / contraception basics

Which of the following is most important for child-bearing and women's health?

- A. Intake of too much caffeine
- B. Proper diet and prenatal care ☒
- C. Smoking daily
- D. Skipping meals

Q189 Reproductive health / contraception basics

Which contraceptive method is most appropriate for a couple who wishes to avoid both hormonal and surgical methods?

- A. Using barrier methods like condoms ☒
- B. Natural methods (periodic abstinence)
- C. Taking oral pills
- D. Inserting a copper-T

Q190 Respiratory organs and pathway

Which gas is used by animals to live under water?

- A. Carbon dioxide
- B. Nitrogen
- C. Dissolved oxygen ☒
- D. Dry carbon dioxide

Q191 Respiratory organs and pathway

Which of the following correctly represents the pathway of air during respiration in human beings?

- A. Nostrils → Throat → Lungs → Alveoli ☒
- B. Nostrils → Food pipe → Heart → Lungs
- C. Mouth → Heart → Lungs → Diaphragm
- D. Mouth → Stomach → Lungs → Alveoli

Q192 Sense organs (eye/ear/skin/tongue/nose)

Which of the following muscular structures is/are responsible for modifying the curvature and thus changing the focal length of the fibrous, jelly-like eye lens?

- A. Retina
- B. Iris
- C. Pupil
- D. Ciliary muscles ☒

Q193 Sense organs (eye/ear/skin/tongue/nose)

Which of the following is detected by gustatory receptors in our body?

- A. Light
- B. Sound
- C. Smell
- D. Taste ☒



Q194 Sense organs (eye/ear/skin/tongue/nose)

Which part of the eye is responsible for converting light into electrical signals?

A. Retina



B. Lens

C. Cornea

D. Iris

Q195 Skeletal & Muscular System

Which of the following correctly describes the sequence of events leading to muscle movement?

A. Nerve impulse → Muscle protein response → Muscle contraction



B. Blood flow → Protein activation → Nerve impulse → Movement

C. Digestion → Blood circulation → Movement

D. DNA replication → Protein synthesis → Muscle movement

Q196 Skeletal & Muscular System

What makes cartilage more flexible than bone in the human body?

A. It contains a matrix filled with fat.

B. It joins muscles to bones.

C. It contains a fluid-like matrix.



D. It contains a solid, protein-rich matrix.

Q197 Skeletal & Muscular System

Which proteins are essential for muscle contraction and relaxation?

A. Myoglobin and haemoglobin

B. Contractile proteins



C. Elastin and fibrin

D. Keratin and collagen

Q198 Spinal cord and reflex action

Which of the following organs is involved in the function of reflex action?

A. Middle ear

B. Spleen

C. Kidney

D. Spinal cord



Q199 Spinal cord and reflex action

When touching a hot object with the hand, human beings are able to remove their hand immediately because:

A. human beings are more intelligent than others

B. every living organism can do so

C. human beings are sensitive to the stimulus of touch



D. human beings are the supreme creatures of the living world

Q200 Spinal cord and reflex action

In the context of a reflex arc, which part of the nervous system is responsible for receiving and transmitting signals from external stimuli?

A. Motor neurons

B. Effector muscle

C. Sensory neurons



D. Relay neurons

Q201 Spinal cord and reflex action

In a reflex arc, which of the following represents the correct path of the impulse?

A. Receptor → Spinal cord → Brain → Muscle

B. Receptor → Brain → Spinal cord → Muscle

C. Receptor → Motor neuron → Spinal cord → Muscle

D. Receptor → Spinal cord → Motor neuron → Muscle



Q202 Spinal cord and reflex action

Quickly pulling a hand back on touching a hot object is an example of _____.

A. Reflex action



B. Hormonal action

C. Thinking action

D. Conditioned action

Q203 Spinal cord and reflex action

Which of the following performs the function of reflex action?

A. Hypothalamus

B. Cranium

C. Pituitary gland

D. Spinal cord



Q204 Spinal cord and reflex action

Where is a reflex arc formed in the body?

- A. Fore brain
- B. Spinal cord
- C. Hind brain
- D. Muscle

Q205 Spinal cord and reflex action

While cooking, steam escapes from a boiling pot and hits the cook's hand. Why does she pull away her hand before feeling the burn?

- A. Her hand muscles detect the steam.
- B. The spinal cord initiated a reflex action.
- C. The heat evaporated quickly.
- D. The brain delayed the response.

Q206 Thyroid, adrenaline, pituitary (master)

Which of the following statements about adrenaline is INCORRECT?

- A. It increases heart rate and breathing rate to supply more oxygen to the muscles.
- B. It helps the body respond to stress or emergency by triggering the 'fight or flight' response.
- C. It reduces blood supply to the digestive system and directs it toward the skeletal muscles.
- D. It promotes digestion by increasing blood flow to the stomach.

Q207 Thyroid, adrenaline, pituitary (master)

Over-secretion of growth hormone in adults results in which of the following?

- A. Graves' disease
- B. Addison's disease
- C. Dwarfism
- D. Acromegaly

Q208 Thyroid, adrenaline, pituitary (master)

Which gland secretes the growth hormone (GH) in humans?

- A. Thyroid gland
- B. Pituitary gland
- C. Pancreas
- D. Adrenal gland

Q209 Thyroid, adrenaline, pituitary (master)

Which of the following glands secretes growth hormones in human beings?

- A. Pituitary gland
- B. Thyroid
- C. Pineal gland
- D. Pancreas

Q210 Thyroid, adrenaline, pituitary (master)

What happens to metabolic activities in the absence of thyroxine?

- A. They only affect digestion
- B. They stop completely
- C. They slow down or become imbalanced
- D. They speed up uncontrollably

Q211 Thyroid, adrenaline, pituitary (master)

Which element is necessary for the thyroid gland to secrete the thyroxine hormone?

- A. Bromine
- B. Fluorine
- C. Iodine
- D. Chlorine

Q212 Types of joints

Which of the following statements is true about ligaments?

- A. Ligaments connect bones to bones and are very elastic with little matrix.
- B. Ligaments are not highly flexible connective tissues connecting two bones.
- C. Ligaments do not connect bones to bones and are very elastic.
- D. Ligaments connect muscles to bones and are highly flexible.

Q213 General Science

Which of the following organs is present in chest cavity?

- A. Liver
- B. Pharynx
- C. Pancreas
- D. Lungs



Q214 General Science

Which of the following characteristics of connective tissue is INCORRECT?

- A. Blood is a type of connective tissue.
- B. Matrix may be jelly-like, fluid, dense or rigid.
- C. Cells are embedded in an intercellular matrix.
- D. Cells are tightly arranged. 

Q215 General Science

What is the meaning of 'Different parts of the human body perform different functions'?

- A. All cells perform same function
- B. Presence of division of labour 
- C. Absence of division of labour
- D. Different cells perform same function



Q1 Animal tissues (epithelial/connective/muscular/nervous)

In the connective tissues of animals, the fat cells are arranged into lobules, which are separated by partitions of:

- A. collagen and elastin fibres** ✓
- B. reticular fibres and plasma
- C. skeletal fibres and tendons
- D. yellow fibres and lymph

Q2 Animal tissues (epithelial/connective/muscular/nervous)

Based on function, which of the following combinations represent all types of animal tissues found in humans?

- A. Epithelial tissue, Connective tissue, Muscular tissue and Nervous tissue** ✓
- B. Epithelial tissue, Connective tissue and Reproductive tissue
- C. Epithelial tissue, Connective tissue and Skeletal tissue
- D. Epithelial tissue, Muscular tissue and Glandular tissue

Q3 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following tissues is very elastic and used to connect two bones in our body?

- A. Mast cell
- B. Macrophage
- C. Ligament** ✓
- D. Adipocyte

Q4 Animal tissues (epithelial/connective/muscular/nervous)

In the connective tissue, what is the relative position of the cells with respect to each other?

- A. Tightly packed
- B. Far away from each other** ✓
- C. Loosely packed
- D. One above the other

Q5 Animal tissues (epithelial/connective/muscular/nervous)

What is the primary function of epithelial tissue?

- A. Support
- B. Protection** ✓
- C. Control
- D. Movement

Q6 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following statements about nervous tissue is correct?

- A. Nervous tissue consists of neurons and is found in the brain, spinal cord and nerves** ✓
- B. Nervous tissue is composed of epithelial cells that form protective layers.
- C. Nervous tissue is responsible for voluntary movement and is attached to bones.
- D. Nervous tissue is made up of muscle fibres responsible for movement.

Q7 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following tissues have contractile proteins that contract and relax to cause movement?

- A. Squamous epithelium tissue
- B. Muscular tissue** ✓
- C. Nervous tissue
- D. Cuboidal epithelium tissue

Q8 Animal tissues (epithelial/connective/muscular/nervous)

What type of epithelial tissue is the outer skin made of?

- A. Cuboidal epithelium
- B. Columnar epithelium
- C. Stratified squamous epithelium** ✓
- D. Simple squamous epithelium

Q9 Animal tissues (epithelial/connective/muscular/nervous)

Match the following connective tissues with their correct features.

a. Areolar tissue	i. fills spaces between organs
b. Skeletal tissues	ii. provide structural support and reduce friction.
c. Ligaments	iii. fibrous tissues that maintain muscle-to-bone
d. Tendons	iv. fibrous tissues that maintain bone-to-bone connection

- A. a i, b iv, c ii, d iii
- B. a iv, b i, c iii, d ii
- C. a i, b iv, c iii, d ii
- D. a i, b ii, c iv, d iii** ✓



Q10 Animal tissues (epithelial/connective/muscular/nervous)

Which type of epithelial tissue is found lining the kidney tubules?

- A. Cuboidal Epithelium** ✓
- B. Glandular Epithelium
- C. Skeletal Epithelium
- D. Columnar Epithelium

Q11 Animal tissues (epithelial/connective/muscular/nervous)

Match the following animal tissues with their correct features.

a. Squamous Epithelium	i. Cells are thin and flat and form a delicate lining of the oesophagus
b. Stratified Squamous Epithelium	ii. It forms the inner lining of the respiratory tract
c. Cuboidal Epithelium	iii. It forms the lining of kidney tubules and ducts of salivary glands
d. Ciliated Columnar Epithelium	iv. Cells are arranged in many layers, as in skin

- A. a i, b iv, c iii, d ii** ✓
- B. a iv, b i, c iii, d ii
- C. a i, b iii, c ii, d iv
- D. a iv, b i, c ii, d iii

Q12 Animal tissues (epithelial/connective/muscular/nervous)

Which tissue is specialised for transmitting rapid electrical impulses that enable muscle movement?

- A. Epithelial tissue
- B. Nervous tissue** ✓
- C. Adipose tissue
- D. Connective tissue

Q13 Animal tissues (epithelial/connective/muscular/nervous)

In which of the following parts of the human body do the epithelial cells have cilia?

- A. Food pipe
- B. Respiratory tract** ✓
- C. Stomach wall
- D. Buccal cavity

Q14 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following are the covering or protective tissues in the animal body?

- A. Parenchyma tissues
- B. Nervous tissues
- C. Sclerenchyma tissues
- D. Epithelial tissues** ✓

Q15 Animal tissues (epithelial/connective/muscular/nervous)

Which connective tissue smoothens bone surfaces at joints and is present in the ear and trachea?

- A. Areolar
- B. Adipose
- C. Ligament
- D. Cartilage** ✓

Q16 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following structures are made up of nervous tissue?

- A. Kidneys and liver
- B. Lungs and heart
- C. Bones and muscles
- D. Brain, spinal cord and nerves** ✓

Q17 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following is NOT a type of connective tissue?

- A. Bone
- B. Epithelium** ✓
- C. Cartilage
- D. Blood

Q18 Animal tissues (epithelial/connective/muscular/nervous)

Which type of connective tissue connects muscles to bones?

- A. Tendon** ✓
- B. Ligament
- C. Joints
- D. Blood



Q19 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following best describes the function of nervous tissue?

- A. It protects internal organs from mechanical injury.
- B. It stores energy in the form of fat globules.
- C. It transmits information rapidly from one body part to another. ✓
- D. It provides rigidity and strength to the body framework.

Q20 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following is a correct match of tissue type and its example?

- A. Connective tissue – Blood ✓
- B. Muscular tissue – Neurons
- C. Nervous tissue – Muscles
- D. Epithelial tissue – Blood

Q21 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following statements about epithelial tissue is correct?

- A. Epithelial tissue forms a protective covering and regulates material exchange. ✓
- B. Epithelial tissue mainly connects bones and muscles.
- C. Epithelial tissue does not play any role in material exchange in the body.
- D. Epithelial tissue cells have large intercellular spaces and form a loose sheet.

Q22 Animal tissues (epithelial/connective/muscular/nervous)

Why do epithelial tissues have very little space between their cells?

- A. To facilitate movement of muscles
- B. To allow rapid blood flow
- C. To enable them to transmit electrical signals
- D. To create an effective barrier regulating permeability of substances ✓

Q23 Animal tissues (epithelial/connective/muscular/nervous)

What is the main function of epithelial tissue in animals?

- A. It connects muscles and bones for body movement.
- B. It covers and protects organs and cavities of the body. ✓
- C. It provides mechanical support and shape to organs.
- D. It transports gases and hormones throughout the body.

Q24 Animal tissues (epithelial/connective/muscular/nervous)

The skin on the face is primarily made up of which epithelial tissue?

- A. Ciliated
- B. Squamous ✓
- C. Cuboidal
- D. Columnar

Q25 Animal tissues (epithelial/connective/muscular/nervous)

Match the following body parts with the types of epithelial tissue found in them.

Body parts	Epithelial tissue
A. Kidney tubules	1. Stratified squamous epithelial
B. Surface of skin	2. Cuboidal epithelium
C. Lung alveoli	3. Ciliated columnar epithelium
D. Respiratory tract lining	4. Simple squamous epithelium

- A. A-4, B-2, C-3, D-1
- B. A-1, B-2, C-3, D-4
- C. A-2, B-1, C-4, D-3 ✓
- D. A-2, B-3, C-4, D-1

Q26 Animal tissues (epithelial/connective/muscular/nervous)

The epithelial tissue forming the lining of kidney tubules and salivary gland ducts is which of the following?

- A. Cuboidal epithelium ✓
- B. Columnar epithelium
- C. Ciliated epithelium
- D. Stratified epithelium

Q27 Animal tissues (epithelial/connective/muscular/nervous)

What is the main function of muscular tissue in the human body?

- A. It provides protection and structural support to organs.
- B. It transmits impulses between different body organs.
- C. It produces movement by contracting and relaxing. ✓
- D. It stores energy and maintains body temperature.



Q28 Animal tissues (epithelial/connective/muscular/nervous)

Which tissue or tissues can help animals respond quickly to changes in their surroundings?

- A. Digestive and excretory systems working together
- B. Bone and cartilage working together
- C. Nerve impulses and muscle tissue working together ✓
- D. Muscle tissue alone

Q29 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following is NOT the characteristic of epithelial tissue?

- A. Cells have no intercellular spaces.
- B. Skin, kidney tubules are made up of epithelial tissue.
- C. Cells form a continuous sheet.
- D. Cells are loosely arranged. ✓

Q30 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following features enables simple squamous epithelium to efficiently carry out diffusion?

- A. Flat, thin, and closely packed cells ✓
- B. Presence of multiple layers of cells
- C. Thick cytoplasm with large nuclei
- D. Cells with cilia for movement

Q31 Animal tissues (epithelial/connective/muscular/nervous)

Which one of the following is NOT a tissue?

- A. Blood
- B. Nerves
- C. Muscles
- D. Red blood cells ✓

Q32 Animal tissues (epithelial/connective/muscular/nervous)

Inside the lungs, rapid exchange of gases takes place between the air and the blood. Which type of epithelial tissue helps in this process?

- A. Simple squamous epithelium ✓
- B. Ciliated columnar epithelium
- C. Stratified squamous epithelium
- D. Cuboidal epithelium

Q33 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following is NOT made up of connective tissue?

- A. Muscles ✓
- B. Bone
- C. Blood
- D. Cartilage

Q34 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following feature enables muscular tissue to produce movement in animals?

- A. Presence of contractile proteins ✓
- B. Secretion of digestive enzymes
- C. Storage of fat droplets
- D. Ability to transmit nerve impulses

Q35 Animal tissues (epithelial/connective/muscular/nervous)

Which of the following best explains the division of labour seen in multicellular organisms?

- A. All cells perform the same function in an organism
- B. Each body part is made up of a single cell
- C. Different cells have specialized functions ✓
- D. Multicellular organisms have only one type of cell

Q36 Animal tissues (epithelial/connective/muscular/nervous)

Which connective tissue is known for supporting internal organs?

- A. Areolar tissue ✓
- B. Tendon
- C. Ligament
- D. Squamous epithelium

Q37 Blood and bone as connective tissue

Bone is classified as connective tissue primarily because it:

- A. Transports oxygen
- B. Lacks any matrix substance
- C. Contains cells dispersed in a mineralised extracellular matrix ✓
- D. Produces nerve impulses



Q38 Blood and bone as connective tissue

Blood is called a connective tissue because _____.

A. it connects and transports material throughout the body



B. it is red in colour

C. it supports bones

D. it is found only in muscles

Q39 Chlorophyll and pigments

Which plastids contain pigments that give plants their yellow, orange or red colours?

A. Leucoplasts

B. Chloroplasts

C. Chromoplasts



D. Amyloplasts

Q40 Chlorophyll and pigments

Which cell organelles in a leaf contain chlorophyll necessary for photosynthesis?

A. Vacuole

B. Chloroplasts



C. Mitochondria

D. Nucleus

Q41 Movements in plants (tropisms)

Which structure is used by pea plant to climb up other plants?

A. Sucker

B. Runner

C. Shoot

D. Tendrils

**Q42 Movements in plants (tropisms)**

The process of swelling or shrinking in plant cells, leading to changes in shape and movement, is directly caused by which factor?

A. The stiffening of their cell walls.

B. The alteration of their internal water content.



C. The formation of new protein structures.

D. The rapid breakdown of cellulose.

Q43 Movements in plants (tropisms)

Which of the following is responsible for positive geotropism movement in plants?

A. Water

B. Gravity



C. Chemical

D. Light

Q44 Movements in plants (tropisms)

How do plant cells respond immediately to a stimulus without specialized proteins like animal muscle cells?

A. By producing immune responses

B. By changing water content to cause swelling or shrinking



C. By breaking down food to release energy instantly

D. By secreting enzymes only

Q45 Movements in plants (tropisms)

Which of the following statements is correct about plant's response to environmental stimulus?

A. Some plants can respond to the stimulus of touch.



B. Plants have very weak muscles to respond environmental stimulus.

C. Plants have special connective tissues to receive environmental stimulus.

D. Plants have very fine nerves to receive environmental stimulus.

Q46 Movements in plants (tropisms)

Which mechanism leads to the folding of Mimosa pudica leaves when they are touched?

A. Change in pH of leaf cells

B. Change in the water content of leaf cells



C. Change in temperature of the leaves

D. Change in light intensity at leaf surface



Q47 Movements in plants (tropisms)

How does the Mimosa pudica (touch-me-not) plant transmit the touch stimulus from the point of contact to the motor cells responsible for movement?

- A. Through specialised nerve tissues connecting the points
- B. Through electrical and chemical signals passed between general plant cells ✓
- C. By releasing hormones that travel through specialised tubes
- D. Through growth of new supportive cells at the touch site

Q48 Movements in plants (tropisms)

A student says, "Plants don't have a nervous system, so they cannot respond to anything." What would be the correct scientific response?

- A. The student is right; plants are non-living.
- B. Plants respond using hormonal and electrical-chemical signals. ✓
- C. Only animals can show responses.
- D. Plants use nerves like animals do.

Q49 Movements in plants (tropisms)

Which of the following shows movement but not locomotion?

- A. Human
- B. Plant ✓
- C. Bird
- D. Dog

Q50 Movements in plants (tropisms)

Which of the following statements is true about movement in the plant 'Touch me not'?

- A. Plant movement takes place because roots absorb minerals.
- B. Plant movement happens due to growth of new xylem cells.
- C. Plant movement occurs because phloem transports food.
- D. Plant movement happens due to changes in water content in cells. ✓

Q51 Movements in plants (tropisms)

In what way is tendril movement similar to other tropic movements in plants?

- A. It always occurs during night.
- B. It involves directional growth in response to a stimulus. ✓
- C. It is based on internal water.
- D. It is random and sudden pressure only.

Q52 Movements in plants (tropisms)

The non-directional movement of plants due to stimulus of sunlight is called:

- A. photonasty ✓
- B. phototropism
- C. thigmotropism
- D. thigmonasty

Q53 Movements in plants (tropisms)

Which of the following are generally sensitive to touch and help plants in climbing?

- A. Flowers
- B. Thorns
- C. Seeds
- D. Tendrils ✓

Q54 Photosynthesis

Which of the following statements is correct for life processes in plants?

- A. Environment is under the control of most plants.
- B. The environmental sources of energy are uniform.
- C. Environment is under the control of very few plants.
- D. Environment is not under the control of plants. ✓

Q55 Photosynthesis

Pair the term to complete the analogy.

Chlorophyll : Green pigment :: Starch : ____.

- A. Oxygen carrier
- B. Energy storage ✓
- C. Protein
- D. Water source



Q56 Photosynthesis (process, site, equation)

Which of the following plant tissue performs photosynthesis?

- A. Chlorenchyma ✓
- B. Xylem
- C. Phloem
- D. Sclerenchyma

Q57 Photosynthesis (process, site, equation)

In a starch test using a variegated leaf, what is the purpose of adding iodine solution at the end?

- A. To identify the areas without chloroplasts
- B. To stain the starch present in the leaf ✓
- C. To dissolve starch
- D. To remove chlorophyll from green areas

Q58 Photosynthesis (process, site, equation)

During photosynthesis, plants take in carbon dioxide and water in the presence of _____.

- A. oxygen and light
- B. glucose and water
- C. energy and starch
- D. sunlight and chlorophyll ✓

Q59 Photosynthesis (process, site, equation)

Which event does NOT directly occur during photosynthesis in green plants?

- A. Breakdown of carbohydrates to release energy ✓
- B. Conversion of light energy into chemical energy
- C. Reduction of carbon dioxide to carbohydrates
- D. Absorption of light energy by chlorophyll

Q60 Photosynthesis (process, site, equation)

Carbohydrates produced in photosynthesis but not immediately used are stored as _____ in plants.

- A. glucose
- B. starch ✓
- C. cellulose
- D. protein

Q61 Plant Hormones

Which meristematic tissue has the highest levels of Auxin?

- A. Apical Meristematic tissue ✓
- B. Xylem
- C. Intercalary Meristematic tissue
- D. Lateral Meristematic tissue

Q62 Plant Hormones

Which of the following terms is used to describe the ability of a plant to recover its lost parts by growth?

- A. Regeneration ✓
- B. Budding
- C. Fertilisation
- D. Binary fission

Q63 Plant Tissues & Transport

Which of the following is NOT an example of a tissue of an organism?

- A. Bone
- B. Neuron ✓
- C. Muscle
- D. Blood

Q64 Plant Tissues & Transport

What is the benefit of seed dispersal in plants?

- A. It promotes the availability of mineral nutrients to plants.
- B. It enables plants to expand their distribution. ✓
- C. It increases competition between plants for sunlight.
- D. It makes more water available to plants.

Q65 Plant nutrition (macro/micronutrients)

Which of the following nutrients is required in large quantities by plants?

- A. Iron
- B. Copper
- C. Phosphorus ✓
- D. Zinc



Q66 Plant nutrition (macro/micronutrients)

Which of the following statements regarding the need for macronutrients in plants is correct?

- A. Macronutrients are harmful to plants if absorbed.
- B. Macronutrients are required by plants in large quantities. ✓
- C. Macronutrients are needed only during flowering.
- D. Macronutrients are not required by plants at all.

Q67 Plant nutrition (macro/micronutrients)

Which of the following nutrients in plants is generally supplied by soil?

- A. Boron ✓
- B. Carbon
- C. Hydrogen
- D. Oxygen

Q68 Plant nutrition (macro/micronutrients)

Which of the following plant nutrients is supplied from air?

- A. Carbon ✓
- B. Iron
- C. Nitrogen
- D. Hydrogen

Q69 Plant nutrition (macro/micronutrients)

Why are micro-nutrients important for plants?

- A. They support essential functions even in small amounts. ✓
- B. They increase the size of the plant roots.
- C. They are only needed for decorative plants.
- D. They help in the absorption of sunlight.

Q70 Plant nutrition (macro/micronutrients)

Which of the following statements best describes autotrophic nutrition?

- A. It involves direct absorption of organic compounds from other organisms.
- B. It depends entirely on consuming other living organisms for food.
- C. It requires digestion of complex substances outside the body.
- D. It involves making food using carbon dioxide and water in the presence of sunlight. ✓

Q71 Plant nutrition (macro/micronutrients)

Which of the following is NOT a consequence of nutrient deficiency in plants?

- A. Low yield
- B. Affected reproduction
- C. Poor growth
- D. Increased resistance to diseases ✓

Q72 Plant nutrition (macro/micronutrients)

Which of the following statements explains why insectivorous plants evolved to trap insects?

- A. To supplement nitrogen and other nutrients ✓
- B. To compete with herbivores for space
- C. To take cellulose from plant tissues
- D. To survive in habitats with low sunlight

Q73 Plant nutrition (macro/micronutrients)

Which activity of insects directly causes the loss of plant nutrients?

- A. Sucking the cell sap ✓
- B. Eating only fallen leaves
- C. Laying eggs on the plant
- D. Boring into the soil

Q74 Plant tissues (meristematic/permanent)

Why does growth in plants occur only in specific regions?

- A. Gravity prevents growth in certain regions.
- B. Only some parts of the plant receive sunlight.
- C. Water reaches only the upper parts of the plant.
- D. Meristematic tissue is located only in specific regions. ✓

Q75 Plant tissues (meristematic/permanent)

Which of the following meristems is responsible for the lengthwise growth at the ends of shoots and roots?

- A. Permanent meristem
- B. Intercalary meristem
- C. Apical meristem ✓
- D. Lateral meristem



Q76 Plant tissues (meristematic/permanent)

Which of the following is the most common simple permanent tissue in plants?

A. Parenchyma



B. Sclerenchyma

C. Chlorenchyma

D. Aerenchyma

Q77 Plant tissues (meristematic/permanent)

Cells of the meristematic tissue lack vacuoles because:

A. Meristematic cells are dead and do not need vacuoles

B. Meristematic cells are actively dividing and need a dense cytoplasm



C. Vacuoles block respiratory enzymes

D. Vacuoles cause cell death

Q78 Plant tissues (meristematic/permanent)

Which type of meristematic tissue is responsible for increase in the height of plants?

A. Secondary meristem

B. Lateral meristem

C. Cambium

D. Apical meristem



Q79 Plant tissues (meristematic/permanent)

Which statement correctly represents the location of the meristematic tissue in a plant body?

A. At the tips of the leaves

B. All over the plant body

C. At some specific regions

D. At the base of the stem



Q80 Plant tissues (meristematic/permanent)

Why does growth in plants occur only at specific regions?

A. Because meristematic tissues are located only in specific regions



B. Because permanent tissues keep dividing throughout the plant

C. Because all plant tissues can divide only once

D. Because all plant cells stop growing after maturity

Q81 Plant tissues (meristematic/permanent)

Which plant tissue is mostly found in the husk of a coconut, and what is its main function?

A. Collenchyma – providing flexibility

B. Parenchyma – storage of food

C. Sclerenchyma – providing strength and rigidity



D. Xylem – conducting water and minerals

Q82 Plant tissues (meristematic/permanent)

Which of the following statements about meristematic tissues is INCORRECT?

A. Meristematic cells are dead at maturity.



B. Cells are small, thin-walled, and densely cytoplasmic with large nuclei.

C. Enable lifelong growth in plants.

D. Meristematic tissues consist of actively dividing cells.

Q83 Plant tissues (meristematic/permanent)

Which of the following parts of a plant has the dividing tissue region which helps in growth?

A. Sieve tube

B. Vessels

C. Apical meristem



D. Sclerenchyma

Q84 Plant tissues (meristematic/permanent)

Which of the following tissues makes the plant hard and stiff?

A. Chlorenchyma

B. Sclerenchyma



C. Aerenchyma

D. Collenchyma

Q85 Plant tissues (meristematic/permanent)

Why does the growth of an onion root stop after its tip is cut?

A. The lateral meristem gets damaged.

B. The meristematic cells lose their vacuoles.

C. The intercalary meristem starts working.

D. The apical meristem that produces new cells is removed.



Q86 Plant tissues (meristematic/permanent)

Which of the following is an example of complex permanent tissue?

- A. Collenchyma
- B. Aerenchyma
- C. Lateral meristem
- D. Phloem



Q87 Plant tissues (meristematic/permanent)

Which of the following simple permanent tissues have its cell walls lignified?

- A. Sclerenchyma
- B. Phloem
- C. Parenchyma
- D. Collenchyma



Q88 Plant tissues (meristematic/permanent)

Which of the following is parenchyma type and present in aquatic plants, with large air cavities to help them float?

- A. Companion cell
- B. Tracheid
- C. Chlorenchyma
- D. Aerenchyma



Q89 Plant tissues (meristematic/permanent)

Which of the following is true about the cells of meristematic tissue?

- A. They are active cells with dense cytoplasm, thin walls, prominent nuclei and no vacuoles.
- B. They are inactive with large vacuoles and thick walls.
- C. They are dead cells with no nucleus or cytoplasm.
- D. They are loosely packed, mature cells with large intercellular spaces.



Q90 Plant tissues (meristematic/permanent)

Which of the following statement is INCORRECT about simple permanent tissue?

- A. Food storage occurs in simple permanent tissue
- B. Sclerenchyma is the most common simple permanent tissue
- C. Simple permanent tissue is generally composed of living cells
- D. It founds few layers beneath the epidermis



Q91 Plant tissues (meristematic/permanent)

Which of the following is INCORRECT about meristematic tissues?

- A. Actively dividing cells
- B. Thin walled
- C. Presence of vacuoles
- D. Lack of vacuoles



Q92 Plant tissues (meristematic/permanent)

The parenchyma cells in plants are:

- A. living and loosely arranged with intercellular spaces
- B. dead and compactly arranged without spaces
- C. dead and elongated with lignified walls
- D. living and thickened at corners without spaces



Q93 Plant tissues (meristematic/permanent)

Parenchyma cells contain large intercellular spaces for:

- A. Gas exchange and storage
- B. Protection and transpiration
- C. Photosynthesis and support
- D. Conduction and secretion



Q94 Plant tissues (meristematic/permanent)

Which of the following correctly describes parenchyma, a simple permanent tissue?

- A. Parenchyma cells are highly specialised and tightly packed with no space between them.
- B. Parenchyma is made of living, loosely arranged cells with thin walls that store food.
- C. Parenchyma consists of dead, thick-walled cells without intercellular spaces.
- D. Parenchyma is a complex tissue found only in vascular bundles.



Q95 Plant tissues (meristematic/permanent)

Which statement correctly distinguishes between plant and animal tissues?

- A. Animal tissues are mostly dead, while plant tissues are mostly living
- B. Both plant and animal tissues have equal growth throughout the body
- C. Plant tissues have dead supportive cells, while animal tissues are mostly living
- D. Plant tissues have no supportive structure, while animals lack living tissues



Q96 Plant tissues (meristematic/permanent)

Which of the following is a characteristic feature of meristematic cells?

- A. Thick walls and large vacuoles
- B. Thin walls with lignin deposits
- C. Dead cells with empty spaces
- D. Dense cytoplasm and lack of vacuoles ✓

Q97 Plant tissues (meristematic/permanent)

Which of the following statements is correct about the definition of complex permanent tissues?

- A. Complex permanent tissues are made up of different types of cells performing different tasks. ✓
- B. Complex permanent tissues are made up of similar type of cells.
- C. Complex permanent tissues are made of simple permanent tissues.
- D. Complex permanent tissues are made up of different types of cells performing similar tasks.

Q98 Plant tissues (meristematic/permanent)

The simple permanent tissue that provides mechanical support and flexibility to plant parts such as stems and tendrils is _____.

- A. parenchyma
- B. xylem
- C. sclerenchyma
- D. collenchyma ✓

Q99 Plant tissues (meristematic/permanent)

Meristematic tissues are found only in a specific region. On the basis of position, which is NOT a meristematic tissue type?

- A. Apical
- B. Intercalary
- C. Basal ✓
- D. Lateral

Q100 Plant tissues (meristematic/permanent)

Complex tissues are made up of:

- A. one type of cells
- B. only one cell
- C. more than one type of cells ✓
- D. no cells

Q101 Plant tissues (meristematic/permanent)

A botanist observes a plant exhibiting rapid growth at its shoot tip. Which type of plant tissue is most likely responsible for this growth?

- A. Intercalary meristem
- B. Apical meristem ✓
- C. Lateral meristem
- D. Permanent tissue

Q102 Plant tissues (meristematic/permanent)

Which meristem is located near the nodes in some plants?

- A. Apical meristem
- B. Root meristem
- C. Intercalary meristem ✓
- D. Lateral meristem

Q103 Plant tissues (meristematic/permanent)

A flexible support to developing plant parts is provided by _____.

- A. Chlorenchyma
- B. Phloem
- C. Collenchyma ✓
- D. Xylem

Q104 Reproduction in Plants

Which one of the following is an advantage of vegetative propagation in flowering plants?

- A. They can flower and fruit later than those produced by seeds.
- B. They can show completely new characters than those produced by seeds.
- C. They are completely different from their parent plants.
- D. They can flower and fruit earlier than those produced by seeds. ✓

Q105 Reproduction in Plants

Roots of which of the following plants can give rise to new plants?

- A. Maize
- B. Potato
- C. Gram
- D. Sweet potato ✓



Q106 Reproduction in Plants

In Spirogyra, each fragment develops into a complete individual. What can be the possible reason for this?

- A. Each fragment has complex organs.
- B. Each fragment has roots.
- C. Each cell is capable of independent growth. ✓
- D. Fragmentation happens only under laboratory conditions.

Q107 Reproduction in Plants

Seed dispersal is important for plants because it:

- A. prevents overcrowding and competition ✓
- B. ensures seed death after fertilisation
- C. prevents pollination
- D. increases the size of seeds

Q108 Reproduction in Plants

Which of the following statements is correct about reproduction in plants?

- A. Spores are produced only during sexual reproduction.
- B. Spores can alone produce new offspring. ✓
- C. Gametes can alone produce new offspring.
- D. Spores need fusion with another spore to produce new offspring.

Q109 Reproduction in Plants

Which of the following methods is an example of asexual reproduction in plants?

- A. Fertilisation
- B. Germination
- C. Pollination
- D. Vegetative propagation ✓

Q110 Reproduction in Plants

At maturity, an organism breaks into smaller pieces, which grow into new individuals. What is this process called?

- A. Fragmentation ✓
- B. Fusion
- C. Fission
- D. Budding

Q111 Reproduction in Plants

What is the advantage of fragmentation as a mode of reproduction in plants?

- A. Forms spores for dispersal
- B. Increases genetic diversity
- C. Promotes bud formation
- D. Brings about rapid multiplication ✓

Q112 Reproduction in Plants

What happens right after the formation and maturation of seeds in flowering plants?

- A. Seed dispersal ✓
- B. Pollination
- C. Seed germination
- D. Fertilisation

Q113 Reproduction in Plants

Which of the following is the correct sequence of events in flowering plant reproduction?

- A. Embryo → Seedling → Pollination → Fertilisation
- B. Fertilisation → Pollination → Embryo → Seedling
- C. Pollination → Fertilisation → Seedling → Embryo
- D. Pollination → Fertilisation → Embryo → Seedling ✓

Q114 Reproduction in Plants

Which of the following plants can have buds in the margins of leaves?

- A. Peepal
- B. Neem
- C. Mango
- D. Bryophyllum ✓

Q115 Reproduction in Plants

In plants, asexual reproduction involves _____.

- A. fusion and fertilisation
- B. fusion of male and female gametes
- C. both parent organisms
- D. only one parent organism ✓



Q116 Reproduction in Plants

Which of the following statements is/are correct regarding vegetative propagation?

Statement A: Root, stem and leaves develop into new plants under appropriate conditions.

Statement B: Vegetative propagation is used in sugarcane, roses and grapes.

- A. Only Statement B
- B. Neither Statement A nor B
- C. Only Statement A
- D. Both Statement A and B

**Q117 Reproduction in Plants**

Which of the following techniques is used for vegetative propagation in plants?

- A. Cutting
- B. Fertilisation
- C. Pollination
- D. Seed dispersal

**Q118 Reproduction in Plants**

Which of the following describes reproduction involving only one parent and no gametes?

- A. Internal fertilisation in mammals
- B. Fertilisation in frogs
- C. Seed formation in flowering plants
- D. Binary fission in Amoeba

**Q119 Reproduction in Plants**

What is the immediate result of the fusion between the male and female germ cells in plants?

- A. Pollen tube
- B. Zygote
- C. Ovule
- D. Seed coat

**Q120 Reproduction in Plants**

Which of the following is NOT a typical characteristic of plants produced through vegetative propagation?

- A. They do not require pollination.
- B. They show variation in characteristics among offspring.
- C. They flower and fruit earlier than seed-grown plants.
- D. They are genetically identical to the parent.

**Q121 Reproduction in Plants**

Which of the following spiny seeds with hooks are dispersed by animals by attaching to their bodies?

- A. Drumstick
- B. Madar
- C. Sunflower
- D. Xanthium

**Q122 Reproduction in Plants**

The phenomenon in which different parts of the plant, like root, stem and leaves, develop into new plants under appropriate conditions is called _____.

- A. Regeneration
- B. Fertilisation
- C. Sexual reproduction
- D. Vegetative propagation

**Q123 Reproduction in Plants**

The process of seed dispersal helps in:

- A. increasing seed size
- B. promoting self-pollination
- C. colonising new habitats
- D. forming new flowers on the same plant

**Q124 Reproduction in Plants**

Burrs with hooks or spines are commonly dispersed by which of the following?

- A. Gravity
- B. Water
- C. Animals
- D. Air

**Q125 Reproduction in Plants**

Select the correct statement for asexual reproduction in plants.

- A. It occurs rapidly during unfavourable conditions.
- B. It involves formation of gametes.
- C. It is found in both lower and higher plants.
- D. It involves male and female flowers.



Q126 Reproduction in Plants

Which of the following is a key feature of offsprings produced through vegetative propagation?

- A. They require fertilisation to develop.
- B. They are genetically diverse from the parent plant.
- C. They are genetically identical to the parent plant. ✓
- D. They always grow slower than seed-grown plants.

Q127 Reproduction in Plants

What occurs when a detached leaf of Bryophyllum comes into contact with moist soil?

- A. It decomposes.
- B. It shows a loss of chlorophyll.
- C. It absorbs water and grows larger.
- D. It produces new plantlets from notches on the leaf margin. ✓

Q128 Reproduction in Plants

The emergence of a new plant from a seed under favourable environmental conditions is termed as _____.

- A. photosynthesis
- B. fertilisation
- C. germination ✓
- D. pollination

Q129 Reproduction in Plants

Which of the following modifications of seeds help in wind dispersal?

- A. Large size
- B. Spiny or hook-like outgrowths
- C. Wing-like or hairy outgrowths ✓
- D. Thick and fibrous coat

Q130 Reproduction in Plants

Which flower parts usually shrivel and fall off after fertilisation?

- A. Embryo and cotyledon
- B. Roots and leaves
- C. Petals, sepals, stamens, style and stigma ✓
- D. Ovule and ovary

Q131 Reproduction in Plants

What advantage does asexual reproduction provide in a stable environment?

- A. Genetic variation
- B. Adaptation to new environment
- C. Sexual diversity
- D. Rapid and identical reproduction ✓

Q132 Reproduction in Plants

What type of reproduction is involved when buds from the leaf margins of Bryophyllum develop into new plants?

- A. Asexual reproduction by vegetative propagation ✓
- B. Asexual reproduction by spores
- C. Sexual reproduction
- D. Budding through stem nodes

Q133 Reproduction in Plants

Which part of the Bryophyllum plant produces buds for vegetative propagation?

- A. Flower
- B. Leaf margins ✓
- C. Pedicel
- D. Tip of the leaf

Q134 Reproduction in Plants

Which part of Bryophyllum develops new plantlets for vegetative propagation?

- A. Stem
- B. Flower
- C. Leaf margin ✓
- D. Root

Q135 Reproduction in Plants

Which of the following is true for the plants raised by vegetative propagation?

Statement A: Vegetatively propagated plant can bear flowers and fruits earlier than those produced from seeds.
Statement B: Vegetatively propagated plants are genetically dissimilar to the parent plant.

- A. Both Statement A and statement B is incorrect
- B. Both Statement A and statement B is correct
- C. Statement A is correct but statement B is incorrect ✓
- D. Statement A is incorrect but statement B is correct



Q136 Reproduction in Plants

In plants that reproduce by budding, which process directly initiates the formation of a new individual?

- A. Random cell death in tissues
- B. Development of seeds from flowers
- C. Localized repeated cell division at a specific site ✓
- D. Fusion of gametes from different individuals

Q137 Reproduction in Plants

Arrange the following steps in correct sequence during the process of fragmentation-based reproduction:

1. Growth of lost body parts through mitosis
2. Breakdown of body/filament into fragments
3. A Mature organism lives independently
4. Each fragment develops into a complete organism

- A. 4 – 2 – 1 – 3
- B. 2 – 1 – 4 – 3 ✓
- C. 2 – 4 – 1 – 3
- D. 1 – 2 – 4 – 3

Q138 Reproduction in Plants

What is the most important condition for successful fragmentation reproduction in Spirogyra?

- A. Availability of a fully developed vascular system
- B. The ability of fragments to form seeds
- C. Each fragment possessing the capability to perform basic life functions ✓
- D. Presence of reproductive organs in each fragment

Q139 Reproduction in Plants

Which condition is essential for a dispersed seed to successfully undergo germination and develop into a seedling?

- A. Exposure to sunlight only
- B. Presence of appropriate environmental conditions ✓
- C. Physical separation from the parent flower
- D. Complete decay of the fruit enclosing the seed only.

Q140 Reproduction in Plants

Which of the following is an advantage of sexual reproduction in plants?

- A. It occurs only in root systems.
- B. It prevents fertilisation from occurring.
- C. It always requires two plants of different species.
- D. It helps in producing seeds with genetic diversity. ✓

Q141 Reproduction in plants / pollination

Which of the following plants reproduces asexually by budding along the margins of a leaf?

- A. Hydra
- B. Bryophyllum ✓
- C. Mango
- D. Spirogyra

Q142 Reproduction in plants / pollination

A student cuts the style of a flower before pollination. What will be the most likely outcome?

- A. Pollination will be faster.
- B. The ovule will turn into a seed.
- C. Fertilisation will not occur. ✓
- D. The pollen tube will grow more quickly.

Q143 Reproduction in plants / pollination

What is the need for sexual reproduction in plants?

- A. To eliminate the need for pollination
- B. To produce identical clones
- C. To avoid growing flowers
- D. To increase genetic variation for better adaptation ✓

Q144 Reproduction in plants / pollination

What is the role of the pollen tube in plant fertilisation?

- A. To transport the male germ cell to the female germ cell ✓
- B. To form the zygote
- C. To transport pollen grains to the stigma
- D. To produce the male germ cell

Q145 Reproduction in plants / pollination

In the process of sexual reproduction in flowering plants, what is the primary role of the pistil?

- A. Attracts pollinators with colorful petals
- B. Produces pollen grains
- C. Supports the flower with nutrients
- D. Receives pollen and houses the ovules for fertilisation ✓



Q146 Reproduction in plants / pollination

What is the primary advantage of cross-pollination over self-pollination?

- A. Does not depend on pollinating agents for producing progeny
- B. Produces progeny that is identical to parent
- C. Introduces genetic variations, which improves chances of survival in progeny ✓
- D. Requires less energy input for generating the progeny

Q147 Reproduction in plants / pollination

In flowering plants, the fusion of the male and female gametes within the ovule is called _____.

- A. germination
- B. fertilisation ✓
- C. pollination
- D. transpiration

Q148 Reproduction in plants / pollination

Which one of the following is NOT an agent of cross pollination?

- A. Light ✓
- B. Water
- C. Wind
- D. Animals

Q149 Reproduction in plants / pollination

Which of the following is an advantage of vegetative propagation?

- A. All new plants are genetically different from the parent.
- B. It requires cross-pollination to occur.
- C. It allows propagation of seedless plants such as banana. ✓
- D. Plants grown this way take longer to bear fruits.

Q150 Reproduction in plants / pollination

From the given alternatives, which method of asexual reproduction involves the formation of a new plant from the broken portion of the parent plant?

- A. Fragmentation ✓
- B. Binary fission
- C. Fertilisation
- D. Spore formation

Q151 Reproduction in plants / pollination

Which of the following is NOT correct regarding sexual reproduction in plant?

- A. Transfer of pollen from one flower to another is achieved by different agents.
- B. Female germ-cells are present in the ovary.
- C. Pollen grain directly travels in the ovary. ✓
- D. Pollen needs to be transferred from the stamen to the stigma.

Q152 Reproduction in plants / pollination

Which of the following plants is unisexual?

- A. Mustard
- B. China rose
- C. Pea
- D. Papaya ✓

Q153 Reproduction in plants / pollination

From the given alternatives, which part of the flower finally changes into a fruit in the flowering plant?

- A. Flower
- B. Seed
- C. Ovule
- D. Ovary ✓

Q154 Reproduction in plants / pollination

What does the seed contain that is essential for the growth of a new plant?

- A. Chlorophyll
- B. Nectar
- C. Embryo ✓
- D. Sepal

Q155 Reproduction in plants / pollination

Which of the following defines cross-pollination correctly?

- A. Transfer of pollen from the anther of one flower to the stigma of another flower ✓
- B. Fertilisation of an ovule without pollen transfer
- C. Transfer of pollen from one plant to a non-flowering plant
- D. Transfer of pollen within the same flower



Q156 Reproduction in plants / pollination

For fertilization, the pollen grain should land on which suitable part of the flower?

- A. Petal
- B. Stigma
- C. Filament
- D. Sepal



Q157 Reproduction in plants / pollination

How does pollination contribute to seed formation in plants?

- A. By producing nectar to attract pollinators
- B. By forming a protective seed coat around the ovule
- C. By transferring pollen from the anther to the stigma, enabling fertilisation
- D. By dispersing seeds to new locations



Q158 Reproduction in plants / pollination

Which of the following statements is/are correct regarding sexual reproduction in plants?

Statement A: After fertilisation, the zygote divides several times to form an embryo within the ovule
Statement B: The ovule develops a tough coat and is gradually converted into a seed.

- A. Only statement B
- B. Only statement A
- C. Neither statement A nor B
- D. Both statements A and B



Q159 Reproduction in plants / pollination

Which part in the ovule helps in guiding the pollen tube (carrying sperm nuclei) towards the female gamete?

- A. Endosperm
- B. Antipodal cells
- C. Style
- D. Synergids



Q160 Reproduction in plants / pollination

Which of the following options best describes a component of a flower's reproductive system?

- A. Pollen is created in the ovule.
- B. Stamen includes both anther and filament.
- C. Pistil functions as the male part.
- D. Ovary is located in the stamen.



Q161 Reproduction in plants / pollination

Which of the following is NOT a function of the stigma in the Hibiscus flower?

- A. Providing a sticky surface
- B. Receiving pollen grains
- C. Producing male germ cells
- D. Facilitating pollen tube growth



Q162 Reproduction in plants / pollination

In which of the following plants, seed is dispersed by the bursting of fruits?

- A. Castor
- B. Sunflower
- C. Xanthium
- D. Urena



Q163 Reproduction in plants / pollination

A gardener wants to grow stronger plants with better fruit. Which pollination method should they encourage?

- A. Geitonogamy
- B. Self-pollination
- C. Cross-pollination
- D. Test Pollination



Q164 Reproduction in plants / pollination

After fertilisation, when other parts of the flower fall off, the ovary grows into what form?

- A. Fruit
- B. Style
- C. Anther
- D. Pollen tube



Q165 Reproduction in plants / pollination

Which of the following organisms may help in pollination of a flower?

- A. Euglena
- B. Honey bee
- C. Amoeba
- D. Plasmodium



Q166 Reproduction in plants / pollination

What would you call the middle elongated part of the female reproductive part of a flower?

- ☒ A. Style
- ☐ B. Ovary
- ☐ C. Stigma
- ☐ D. Pollen grain

Q167 Reproduction in plants / pollination

The type of pollination where pollen grains are transferred from one flower to another of the same species through wind is called _____.

- ☒ A. anemophily
- ☐ B. ornithophily
- ☐ C. hydrophily
- ☐ D. entomophily

Q168 Reproduction in plants / pollination

Which of these processes begins after pollen lands on the stigma of a flower?

- ☐ A. The petals open wider.
- ☐ B. It develops into a seed directly.
- ☒ C. A pollen tube grows through the style to reach the ovary.
- ☐ D. The leaves begin photosynthesis immediately.

Q169 Reproduction in plants / pollination

Which of the following correctly matches a floral part with its primary biological function in reproduction?

- ☐ A. Pistil – attraction of pollinators
- ☐ B. Petals – production of female gametes
- ☐ C. Sepals – development of ovules
- ☒ D. Stamens – production of pollen grains

Q170 Reproduction in plants / pollination

If the stamens of a flower are non-functional, which process will NOT be done?

- ☒ A. Pollen production
- ☐ B. Ovule development
- ☐ C. Fruit dispersal
- ☐ D. Bud protection

Q171 Reproduction in plants / pollination

Which of the following processes occurs before fertilisation in sexually reproducing plants?

- ☐ A. Embryo formation
- ☐ B. Seed development
- ☐ C. Fruit formation
- ☒ D. Pollination

Q172 Reproduction in plants / pollination

Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Sexual reproduction is essential in plants for maintaining the continuity of the species for many generations.

Reason (R): Sexual reproduction leads to genetic variation that enhances adaptability and evolutionary fitness.

- ☐ A. Assertion (A) is true, but Reason (R) is false.
- ☒ B. Both Assertion (A) and Reason (R) are true, and (R) is the correct explanation of Assertion (A).
- ☐ C. Assertion (A) is false, but Reason (R) is true.
- ☐ D. Both Assertion (A) and Reason (R) are true but (R) is NOT the correct explanation of Assertion (A).

Q173 Reproduction in plants / pollination

Which part of a flower encloses and shields the developing bud?

- ☒ A. Sepal
- ☐ B. Stamen
- ☐ C. Petal
- ☐ D. Pistil

Q174 Reproduction in plants / pollination

What is the transfer of pollen grain from one flower to another flower called?

- ☐ A. Auto pollination
- ☒ B. Cross pollination
- ☐ C. Autogamy
- ☐ D. Self pollination



Q175 Reproduction in plants / pollination

What helps flowering plants to grow new plants in the next generation?

- A. Growth of petals
- B. Seed formation and germination
- C. Formation of stigma
- D. Formation of roots

**Q176** Reproduction in plants / pollination

Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Vegetative propagation helps grow plants that do not produce seeds.

Reason (R): It uses flowers to grow new plants.

- A. Both A and R are true, but R is not the correct explanation of A
- B. Both A and R are true, and R is the correct explanation of A
- C. A is true, but R is false
- D. A is false, but R is true

**Q177** Reproduction in plants / pollination

What happens after fertilisation in a flowering plant?

- A. The petals and stamens become the seed, and the ovary forms the embryo.
- B. The entire flower dries up and falls off without forming any new structures.
- C. The ovule becomes the seed, and the ovary becomes the fruit.
- D. The ovule becomes a fruit, and the ovary forms the seed.

**Q178** Reproduction in plants / pollination

Match the following.

Column A	Column B
1. Calyx	a. Carpels
2. Corolla	b. Stamens
3. Androecium	c. Petals
4. Gynoecium	d. Sepals

- A. 1 - c, 2 - d, 3 - b, 4 - a
- B. 1 - d, 2 - b, 3 - c, 4 - a
- C. 1 - a, 2 - c, 3 - b, 4 - d
- D. 1 - d, 2 - c, 3 - b, 4 - a

**Q179** Reproduction in plants / pollination

Which part of the flower protects the ovule and later transforms into the fruit?

- A. Stigma
- B. Petal
- C. Sepal
- D. Ovary

**Q180** Reproduction in plants / pollination

If the stigma of a flower is damaged, which process would most likely be affected?

- A. Formation of petals and sepals
- B. Fruit ripening
- C. Seed dispersal
- D. Pollination and fertilisation

**Q181** Reproduction in plants / pollination

In plants, how does sexual reproduction leads to better survival in offspring?

- A. Offspring show new genetic recombination
- B. Offspring are born faster
- C. Offspring are exact clones
- D. Offspring do not show any variation

**Q182** Reproduction in plants / pollination

What do the ovary and ovule form after fertilisation in plants?

- A. Ovary forms the seed and ovule forms the embryo.
- B. Ovary forms the fruit and ovule forms the seed.
- C. Ovary forms the fruit and ovule forms the cotyledons.
- D. Ovary forms the plumule and ovule forms the radicle.

**Q183** Reproduction in plants / pollination

The process of transfer of pollen grains from one flower to the stigma of another flower is called ____.

- A. pollination
- B. gestation
- C. guttation
- D. germination



Q184 Reproduction in plants / pollination

Identify the correct matches mentioned in column A with column B.

Column A	Column B
(p) Sepal and petal	(i) Reproductive part
(q) Stamen and pistil	(ii) Accessory part
(r) Stigma	(iii) Stamen
(s) Pollen grain	(iv) Pistil

A. p – ii, q – i, r – iv, s – iii



B. p – i, q – ii, r – iii, s – iv

C. p – iii, q – i, r – iv, s – ii

D. p – iv, q – iii, r – ii, s – i

Q185 Reproduction in plants / pollination

A tube that grows out of the pollen grain travels through the style to reach which of the following parts of the flower?

A. Petal

B. Ovary



C. Filament

D. Sepal

Q186 Reproduction in plants / pollination

In plants, after fertilisation, the ovule develops into which of the following?

A. Embryo

B. Seed



C. Endosperm

D. Fruit

Q187 Reproduction in plants / pollination

A scientist observed a multicellular organism undergoing reproduction. Which of the following methods would the plant NOT be using?

A. Vegetative Propagation

B. Budding

C. Binary Fission



D. Fragmentation

Q188 Reproduction in plants / pollination

Which change in a flower signals that fertilisation has occurred?

A. Development of a pollen tube

B. Petals become larger and brighter

C. Formation of new stamens

D. Ovule matures into seed and ovary into fruit

**Q189** Reproduction in plants / pollination

Match the following plants with their correct modes of seed dispersal.

Column A	Column B
1. Dandelions	a. Water
2. Lotus	b. Explosion
3. Mango	c. Wind
4. Castor	d. Animal

A. 1 – c, 2 – d, 3 – a, 4 – b

B. 1 – a, 2 – d, 3 – b, 4 – c

C. 1 – b, 2 – a, 3 – d, 4 – c

D. 1 – c, 2 – a, 3 – d, 4 – b

**Q190** Transpiration

An uprooted plant was left in the sun. After a few hours, the plant looked wilted and weak. What could be the most likely reason?

A. Food translocation through phloem began

B. Water conduction through xylem was started

C. Food translocation through xylem was blocked

D. Water conduction through xylem was blocked

**Q191** Xylem and phloem functions

What are the primary functions of xylem and phloem tissues in a plant?

A. Both xylem and phloem transport food.

B. Xylem transports water and minerals, phloem transports food.



C. Both xylem and phloem transport water and minerals.

D. Xylem transports food, phloem transports water and minerals.



Q192 Xylem and phloem functions

Which of the following is a component of phloem tissue?

- A. Xylem fibres
- B. Sieve tubes ✓
- C. Vessels
- D. Tracheids

Q193 Xylem and phloem functions

Which component of phloem is basically responsible for the translocation of food?

- A. Sieve elements ✓
- B. Phloem fibres
- C. Companion cells
- D. Phloem parenchyma

Q194 Xylem and phloem functions

Which of the following statements about complex permanent tissue is correct?

- A. Complex tissues are made of identical cells performing different functions.
- B. Complex tissues consist of loosely packed parenchyma cells for storage.
- C. Complex tissues are only found in animals for transporting oxygen.
- D. Xylem and phloem are complex tissues that help in conduction and form vascular bundles. ✓

Q195 Xylem and phloem functions

Xylem is a complex permanent tissue. Which of the following is correct regarding its composition?

- A. Vessels, xylem collenchyma and xylem fibres
- B. Companion cells, tracheids and xylem fibres
- C. Tracheids, sieve cells and phloem parenchyma
- D. Tracheids, xylem parenchyma and xylem fibres ✓

Q196 Xylem and phloem functions

Which of the following correctly lists the components of the vascular tissue known as xylem?

- A. Tracheids, vessels, xylem parenchyma, xylem fibres ✓
- B. Companion cells, sieve cells, vessels, tracheids
- C. Tracheids, vessels, sieve tubes, xylem parenchyma
- D. Sieve tubes, companion cells, phloem fibres, phloem parenchyma

Q197 Xylem and phloem functions

Which of the following plant tissues allows the movement of materials in both directions?

- A. Phloem ✓
- B. Sclerenchyma
- C. Fibres
- D. Xylem

Q198 Xylem and phloem functions

Which of the following plant tissues is made up of cells that are dead at maturity?

- A. Sclerenchyma ✓
- B. Aerenchyma
- C. Collenchyma
- D. Parenchyma

Q199 Xylem and phloem functions

Which of the following statements about phloem is correct?

- A. Phloem is made entirely of dead cells.
- B. Phloem transports water upward only.
- C. Phloem transports minerals from roots to leaves.
- D. Phloem transports food from leaves to other parts. ✓

Q200 Xylem and phloem functions

Which of the following happens when the distances between roots and leaves become large in plants?

- A. Roots absorb no water.
- B. More chlorophyll is produced.
- C. Diffusion becomes insufficient. ✓
- D. Diffusion becomes faster.

Q201 Xylem and phloem functions

What helps in the upward movement of water and minerals in plants?

- A. Transpiration pull and root pressure ✓
- B. Active transport in leaf cells
- C. Diffusion of gases in stomata
- D. Conversion of sunlight into starch



Q202 Xylem and phloem functions

Which cells in xylem are primarily responsible for the vertical transport of water and minerals in plants?

- A. Xylem fibres
- B. Tracheids and vessels ✓
- C. Sieve tubes
- D. Companion cells

Q203 Xylem and phloem functions

In plants, food made in leaves is transported to other parts by the complex tissue called _____.

- A. Phloem ✓
- B. Xylem
- C. Collenchyma
- D. Sclerenchyma

Q204 Xylem and phloem functions

The complex tissue that transports food in plants is called _____, and it consists of living cells like sieve tubes and _____.

- A. Xylem, tracheids
- B. Collenchyma, sclerenchyma
- C. Xylem, xylem fibres
- D. Phloem, companion cells ✓

Q205 Xylem and phloem functions

Which part of the food-conducting complex tissue in plants is tubular and has perforated walls?

- A. Companion cell
- B. Sieve tube ✓
- C. Phloem parenchyma
- D. Sieve plate

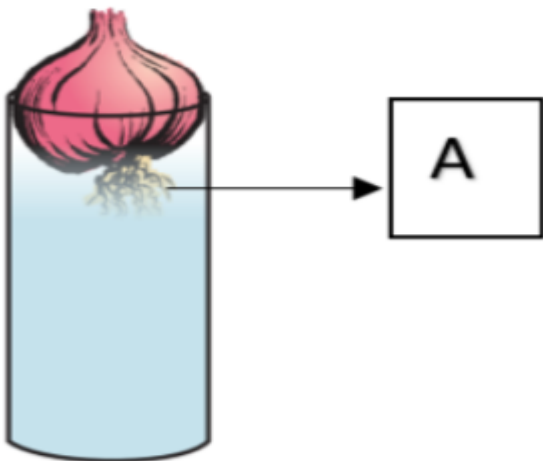
Q206 General Science

How do plants excrete their waste products?

- A. By storing them in vacuoles or excreting through falling leaves and resins ✓
- B. By converting all wastes into oxygen and carbon dioxide
- C. By removing wastes directly through root hairs only
- D. By releasing them through special excretory organs called nephrons

Q207 Plant tissues (meristematic/permanent)

Study the experimental set up containing a water filled jar and an onion with growing roots set vertically up. Which type of tissue is present in the portion A of roots tips?



- A. Meristematic tissue ✓
- B. Collenchyma
- C. Sclerenchyma
- D. Parenchyma



Q1 Dispersion and spectrum / rainbow

When white light falls on a glass prism, out of all its constituent colours, violet colour undergoes maximum bending. Why?

- A. Violet has minimum wavelength and hence maximum refractive index ✓
- B. Violet has maximum wavelength and hence minimum refractive index
- C. Violet has minimum wavelength and hence minimum refractive index
- D. Violet has maximum wavelength and hence maximum refractive index

Q2 Dispersion and spectrum / rainbow

Which of the following is responsible for the dispersion of white light through a glass prism?

- A. Different colours of light travel at the same speed in glass.
- B. The prism absorbs some colours.
- C. White light contains only one colour.
- D. Different colours of light travel at different speeds in glass. ✓

Q3 Dispersion and spectrum / rainbow

The band of seven colours obtained on a screen due to dispersion is called _____.

- A. Spectrum ✓
- B. Shadow
- C. Image
- D. Reflection pattern

Q4 Dispersion and spectrum / rainbow

A triangular glass prism has how many rectangular lateral surfaces?

- A. Two
- B. Four
- C. One
- D. Three ✓

Q5 Dispersion and spectrum / rainbow

What is the term for the process in which white light breaks up into different colours?

- A. Refraction
- B. Reflection
- C. Dispersion ✓
- D. Scattering

Q6 Dispersion and spectrum / rainbow

The angle between the incident ray and the emergent ray of a prism is called:

- A. Angle of incidence
- B. Angle of refraction
- C. Angle of emergence
- D. Angle of deviation ✓

Q7 Dispersion and spectrum / rainbow

White light is incident obliquely on a glass prism, which of the following statement(s) is/are true?

- (i) Red colour undergoes maximum deviation.
- (ii) The speed of violet colour is the least while travelling through the prism.
- (iii) The refractive index of violet is minimum.
- (iv) The refractive index of red is minimum.

- A. Both (ii) and (iv) ✓
- B. Both (i) and (iii)
- C. Both (i) and (iv)
- D. Both (ii) and (iii)

Q8 Dispersion and spectrum / rainbow

The angle between the incident ray and the emergent ray from a prism is called _____.

- A. Angle of prism
- B. Angle of incidence
- C. Critical angle
- D. Angle of deviation ✓



Q9 Dispersion and spectrum / rainbow

When Newton placed a second inverted prism after the first one, the emergent beam obtained was:

- A. only red light
- B. white light ✓
- C. a rainbow of colours
- D. only violet light

Q10 Dispersion and spectrum / rainbow

Dispersion of white light through a glass prism takes place because:

- A. different colours travel with the same speed in glass
- B. the prism absorbs some colours and transmits others
- C. white light splits due to reflection inside the prism
- D. different colours travel with different speeds in glass ✓

Q11 Dispersion and spectrum / rainbow

In the spectrum formed by dispersion of sunlight through a prism, which colour deviates the most?

- A. Red
- B. Green
- C. Violet ✓
- D. Yellow

Q12 Dispersion and spectrum / rainbow

Which of the following statements correctly explains the phenomenon of dispersion?

- A. Dispersion is the scattering of light by colloidal particles.
- B. Dispersion is the bending of light as a light ray of single wavelength goes from one medium to another.
- C. Dispersion is the splitting of white light into its seven constituent colours as it passes through a glass prism. ✓
- D. Dispersion is the bouncing back of light when it strikes a surface.

Q13 Dispersion and spectrum / rainbow

The phenomenon of dispersion of light was first explained by _____.

- A. Christiaan Huygens
- B. James Clerk Maxwell
- C. Isaac Newton ✓
- D. Albert Einstein

Q14 Dispersion and spectrum / rainbow

A rainbow, which is a natural spectrum appearing in the sky after a rain shower, is primarily caused by which action of water droplets on sunlight?

- A. Refraction and dispersion, followed by internal reflection, and then final refraction ✓
- B. Only total internal reflection
- C. Internal reflection followed by scattering
- D. Light bending due to changes in air density

Q15 Dispersion and spectrum / rainbow

A rainbow is formed in the sky after rain, which is due to _____.

- A. refraction and dispersion of light by raindrops ✓
- B. scattering of light by air
- C. reflection only
- D. absorption of light by water

Q16 Dispersion and spectrum / rainbow

Which of the following phenomena CANNOT be explained without dispersion of light?

- A. Advanced sunrise.
- B. Rainbow formation. ✓
- C. Mirages.
- D. Twinkling of stars.

Q17 Dispersion and spectrum / rainbow

Which of the following correctly represents the sequence of colours observed on the screen when white light passes through a prism in its standard orientation?

- A. GYORVIB
- B. BYVROIG
- C. ROYGBIV
- D. VIBGYOR ✓

Q18 Human Eye & Defects

When a person looks at a nearby object, the ciliary muscles:

- A. Relax and make the lens thinner
- B. Contract and make the lens thinner
- C. Contract and make the lens thicker ✓
- D. Relax and make the lens thicker



Q19 Human Eye & Defects

Which of the following eye defects is mainly due to the weakening of the power of accommodation with age?

- A. Hypermetropia
- B. Myopia
- C. Astigmatism
- D. Presbyopia

**Q20 Human Eye & Defects**

The defect in which a person cannot see distant objects clearly but can see nearby objects is called _____.

- A. astigmatism
- B. myopia
- C. hypermetropia
- D. presbyopia

**Q21 Human Eye & Defects**

The crystalline lens of the eye mainly helps in:

- A. Controlling the amount of light entering the eye
- B. Detecting colour of objects
- C. Providing fine adjustment of focal length
- D. Sending signals to the brain

**Q22 Human Eye & Defects**

A student cannot clearly see objects placed at a distance but can read a book comfortably. The defect in the eye is:

- A. myopia
- B. astigmatism
- C. hypermetropia
- D. presbyopia

**Q23 Human Eye & Defects**

A student complains of difficulty in reading the blackboard clearly while sitting at the back of the class, but can read a book at 25 cm without difficulty. Which statement is correct for his condition?

- A. He has presbyopia and needs bifocals
- B. He has cataract and needs surgery
- C. He has hypermetropia and needs a convex lens
- D. He has myopia and needs a concave lens

**Q24 Human Eye & Defects**

Which of the following lenses can be used to correct the eye defect myopia?

- A. Convex lens
- B. Plano-convex lens
- C. Cylindrical lens
- D. Concave lens

**Q25 Human Eye & Defects**

If the power of accommodation of a normal human eye is maximum, which of the following is correct for the ciliary muscles?

- A. Fully relaxed
- B. Partially contracted
- C. Fully contracted
- D. Partially relaxed

**Q26 Human Eye & Defects**

The defect of hypermetropia can be corrected by using which of the following?

- A. Prism
- B. Convex lens
- C. Concave lens
- D. Cylindrical lens

**Q27 Human Eye & Defects**

Which of the following statements about Presbyopia is correct?

- A. The near point becomes less than 25 cm.
- B. It usually occurs in young children.
- C. It is corrected only by concave lenses.
- D. It occurs due to weakening of ciliary muscles and loss of lens flexibility.

**Q28 Human Eye & Defects**

Which of the following best describes a person with hypermetropia?

- A. They are unable to see anything without glasses
- B. Their vision is equally blurred for both near and distant objects
- C. They can see nearby objects clearly but distant ones appear blurry
- D. They can see faraway objects clearly but struggle to see things up close



Q29 Human Eye & Defects

The image formed on the retina of the human eye is _____.

A. real and inverted ✓

B. real and erect

C. virtual and erect

D. virtual and inverted

Q30 Human Eye & Defects

Which part of the eye controls the size of the pupil by adjusting to light?

A. Retina

B. Iris ✓

C. Cornea

D. Crystalline lens

Q31 Human Eye & Defects

At what minimum distance should an object be held from the eyes for clear and comfortable viewing?

A. 25 m

B. 25 cm ✓

C. 250 cm

D. 50 cm

Q32 Human Eye & Defects

The process by which the eye lens changes its focal length to focus on near or distant objects is called _____.

A. Adaptation

B. Reflection

C. Accommodation ✓

D. Adjustment

Q33 Lenses (convex/concave, uses)

The power of a lens is defined as:

A. The product of its focal length and refractive index

B. The ratio of image distance to object distance

C. The square of its focal length

D. The reciprocal of its focal length in meters ✓

Q34 Lenses (convex/concave, uses)

A convex lens is also called a converging lens because:

A. it does not bend light rays at all

B. it brings parallel rays to a focus at a point ✓

C. it always forms virtual images

D. it diverges rays of light away from each other

Q35 Lenses (convex/concave, uses)

According to the New Cartesian Sign Convention, if a light ray travels from the object to the lens, the object is always placed such that:

A. The object distance (u) is always positive

B. The object is placed to the left of the lens ✓

C. The light falls on the lens from the right-hand side

D. The object is always placed above the principal axis

Q36 Lenses (convex/concave, uses)

Magnification produced by a lens is related to object distance (u) and image distance (v) by the formula:

A. $m = v - u$

B. $m = u + v$

C. $m = u / v$

D. $m = v / u$ ✓

Q37 Lenses (convex/concave, uses)

Which of the following is NOT true regarding the image formed by a concave lens?

(i) The image formed by a concave lens cannot be obtained on a screen.

(ii) The image formed by a concave lens can be obtained on a screen.

(iii) The image formed is always smaller in size in comparison to the size of the object.

(iv) The image formed is always bigger in size in comparison to the size of the object.

A. Both (i) and (iii)

B. Both (i) and (iv)

C. Both (ii) and (iii)

D. Both (ii) and (iv) ✓



Q38 Lenses (convex/concave, uses)

What is the effective diameter of the circular outline of a spherical lens called?

- A. Aperture ✓
- B. Optical centre
- C. Focal length
- D. Radius of curvature

Q39 Lenses (convex/concave, uses)

Where should an object be placed in front of a convex lens to get a real image of the size of the object?

- A. At infinity
- B. Between infinity and the principal focus of the lens
- C. At the principal focus of the lens
- D. At twice the focal length ✓

Q40 Lenses (convex/concave, uses)

Which of the following statements about a spherical lens is NOT correct?

- A. The line joining the two centres of curvature is called the principal axis.
- B. Every spherical lens has two centres of curvature.
- C. A concave lens also possesses two centres of curvature.
- D. The optical centre coincides with the centre of curvature. ✓

Q41 Lenses (convex/concave, uses)

Which of the following statements is true for a concave lens?

- A. Image is always virtual and on the opposite side
- B. Image is always real
- C. Image is always virtual, erect, and on the same side as the object ✓
- D. Image is much larger than object

Q42 Lenses (convex/concave, uses)

A concave lens has a focal length of 15 cm. An object is placed at a distance of 30 cm from the lens. What is the magnification produced by the lens?

- A. +0.66
- B. -0.33
- C. +0.33 ✓
- D. -0.66

Q43 Lenses (convex/concave, uses)

When a ray of light passes through the optical centre of a spherical lens, it _____.

- A. Gets deviated away from the normal
- B. Emerges undeviated ✓
- C. Bends toward the focus
- D. Always reflects back

Q44 Lenses (convex/concave, uses)

A concave lens produces an image one-third the size of the object. If the focal length is 12 cm, the object distance is:

- A. 12 cm
- B. 18 cm
- C. 36 cm
- D. 24 cm ✓

Q45 Lenses (convex/concave, uses)

In the sign convention for lenses, all distances are measured from:

- A. The optical centre of the lens ✓
- B. The principal axis only
- C. The focus of the lens
- D. The pole of the lens

Q46 Lenses (convex/concave, uses)

A convex lens has a focal length of 25 cm. What is the power of this convex lens?

- A. -4.0 D
- B. -2.0 D
- C. +3.0 D
- D. +4.0 D ✓

Q47 Lenses (convex/concave, uses)

Which of the following expressions is representing the correct lens formula?

- A. $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ ✓
- B. $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$
- C. $\frac{1}{v} + \frac{1}{u} = f$
- D. $\frac{1}{v} - \frac{1}{u} = f$



Q48 Lenses (convex/concave, uses)

A convex lens is thicker at the middle compared to the edges. Due to this shape, how does it affect parallel light rays passing through it?

- A. It causes the rays to reflect back along the same path
- B. It causes the rays to meet at a point, performing a converging action ✓
- C. It causes the rays to spread out, performing a diverging action
- D. It causes the rays to scatter randomly

Q49 Lenses (convex/concave, uses)

A ray of light passing through the principal focus of a convex lens emerges:

- A. parallel to the principal axis ✓
- B. without deviation
- C. towards the optical centre
- D. back to the source

Q50 Lenses (convex/concave, uses)

A student places an object at a distance greater than twice the focal length from a convex lens. What kind of image is formed?

- A. Virtual, erect, and smaller than the object
- B. Real, inverted, and larger than the object
- C. Virtual, erect, and larger than the object
- D. Real, inverted, and smaller than the object ✓

Q51 Lenses (convex/concave, uses)

The lens formula is given by:

- A. $f = v + u$
- B. $1/f = 1/v - 1/u$ ✓
- C. $f = uv$
- D. $1/f = u/v$

Q52 Lenses (convex/concave, uses)

What happens to a light ray when it passes through the optical centre of a lens?

- A. It will emerge without any deviation ✓
- B. It passes through the principal focus on the other side of the lens
- C. It will emerge parallel to the principal axis
- D. It bends toward the principal axis

Q53 Lenses (convex/concave, uses)

Which of the following statements is NOT true according to the sign convention for spherical lenses?

- A. The focal length of a concave lens is negative.
- B. Object distance is negative.
- C. The focal length of a convex lens is positive.
- D. Object height is negative when the object is placed above the principal axis. ✓

Q54 Lenses (convex/concave, uses)

Three rays of light parallel and close to the principal axis are incident on a convex lens, these rays will converge at which point after passing through the lens?

- A. At the optical centre
- B. At any point beyond the focus
- C. At the focus of the lens ✓
- D. At any point between the optical centre and the focus

Q55 Lenses (convex/concave, uses)

According to the sign convention for lenses, all distances measured in the direction of incident light are taken as:

- A. zero
- B. depends on the type of lens
- C. negative
- D. positive ✓

Q56 Lenses (convex/concave, uses)

An object placed between F and 2F of a convex lens forms an image _____.

- A. Beyond 2F, real, inverted, and enlarged ✓
- B. Between F and the lens, virtual, erect, and diminished
- C. At 2F, real, inverted, and diminished
- D. At infinity, real, inverted and same size

Q57 Lenses (convex/concave, uses)

A convex lens produces a magnification of (-2) , when an object is placed at a distance X cm from it. If the image distance is 40 cm, then what is the value of X?

- A. -80 cm
- B. $+80$ cm
- C. $+20$ cm
- D. -20 cm ✓



Q58 Lenses (convex/concave, uses)

Which of the following is a converging lens?

A. Convex lens



B. Concave lens

C. Planoconcave lens

D. Cylindrical lens

Q59 Lenses (convex/concave, uses)

The image formed by a concave lens for an object at infinity is:

A. real, inverted, and large

B. real, erect, and magnified

C. virtual, inverted, and diminished

D. virtual, erect, and point-sized



Q60 Lenses (convex/concave, uses)

The power of a lens is given as the reciprocal of its:

A. Focal length (in metres)



B. Diameter

C. Radius

D. Thickness

Q61 Lenses (convex/concave, uses)

An object is placed anywhere along the principal axis of a concave lens. The image is always formed _____.

A. at the focus (F)

B. beyond twice the focal length (2F)

C. between the focus (F) and the optical centre (O)



D. at twice the focal length (2F)

Q62 Lenses (convex/concave, uses)

A convex lens forms a real image of an object placed at a distance of 30 cm from it. If the image is formed at 60 cm on the other side of the lens, the focal length of the lens is:

A. 30 cm

B. 10 cm

C. 15 cm

D. 20 cm



Q63 Lenses (convex/concave, uses)

If an object is placed at a distance 'u' from a convex lens, 'u' _____.

A. depends on the type of image

B. is taken as negative



C. is taken as positive

D. is taken as zero

Q64 Lenses (convex/concave, uses)

When an object is placed at the principal focus of a convex lens, the image is formed:

A. Between F and O, virtual and erect.

B. At infinity, real, inverted, and highly enlarged.



C. At 2F, inverted, and magnified.

D. At the focus, inverted, and of same size.

Q65 Lenses (convex/concave, uses)

The sign convention for focal length of a concave lens _____.

A. depends on object position

B. is negative



C. is zero

D. is positive

Q66 Lenses (convex/concave, uses)

An object is placed 10 cm from a concave lens of focal length 15 cm. Which statement about the image is correct?

A. Image is real, inverted and smaller than the object.

B. Image is real, inverted and larger than the object.

C. Image is virtual, erect and smaller than the object.



D. Image is virtual, erect and larger than the object.

Q67 Lenses (convex/concave, uses)

When an object is placed at infinity in front of a convex lens, the image formed is:

A. At the optical centre, virtual and enlarged

B. At the focus (F), real and highly diminished



C. Between F and 2F, real and inverted

D. At 2F, real and of same size



Q68 Lenses (convex/concave, uses)

When an object is placed at the focus of a convex lens, the formation of image is _____.

- A. on the same side as the object
- B. between F and 2F
- C. at infinity ✓
- D. at the centre of curvature

Q69 Lenses (convex/concave, uses)

The principal focus of a convex lens is _____.

- A. always at infinity
- B. the point where diverging rays meet
- C. the point behind the lens where rays diverge
- D. the point where parallel rays converge ✓

Q70 Lenses (convex/concave, uses)

A lens with a shorter focal length (f) has _____.

- A. More power ✓
- B. Equal power as a lens with a longer focal length (f)
- C. Zero power
- D. Less power

Q71 Lenses (convex/concave, uses)

When a parallel beam of light passes through a convex lens, after refraction it:

- A. diverges away from the axis
- B. forms a virtual image at infinity
- C. converges to a point on the principal axis ✓
- D. passes undeviated

Q72 Lenses (convex/concave, uses)

An object is placed at a distance of 40 cm from a convex lens of focal length 10 cm, such that an image is formed at a distance of X cm from the lens. What is the value of X?

- A. +40/3 ✓
- B. +8
- C. -40/3
- D. -8

Q73 Lenses (convex/concave, uses)

If an object is kept at the focus F of a convex lens, where will the image be formed?

- A. At infinity, virtual and magnified
- B. At infinity, highly magnified, real ✓
- C. At 2F, real and same size as object
- D. Between F and 2F, real and magnified

Q74 Lenses (convex/concave, uses)

When applying the sign conventions for spherical lenses to measure object and image distances, where are all measurements taken from?

- A. The principal focus
- B. The centre of curvature
- C. The optical centre of the lens ✓
- D. The pole of the lens

Q75 Lenses (convex/concave, uses)

If magnification is positive, the image formed is:

- A. on the screen
- B. real
- C. virtual and erect ✓
- D. inverted

Q76 Lenses (convex/concave, uses)

A person is prescribed spectacles of +2 D. What type of lens is used in the spectacles?

- A. Convex lens ✓
- B. Cylindrical lens
- C. Concave lens
- D. Prism lens

Q77 Lenses (convex/concave, uses)

What does a lens with a power of 1 dioptre indicate?

- A. It has a focal length of 100 m.
- B. It has a focal length of 1 metre. ✓
- C. It has a magnification of 1.
- D. It has a focal length of 1 cm.



Q78 Lenses (convex/concave, uses)

In the case of a convex lens, under what specific object position is the image formed at $2F$ (F is the focal length) and has the same size as the object?

A. At $2F$ ✓

B. Beyond $2F$

C. At focus F

D. At infinity

Q79 Lenses (convex/concave, uses)

The distance between the optical centre of a lens and its principal focus is called _____.

A. focal length ✓

B. radius of curvature

C. aperture

D. magnification

Q80 Lenses (convex/concave, uses)

Which of the following statements is/are NOT true according to the sign convention for spherical lenses?

- (i) All distances parallel to the principal axis are measured from the focus of the lens.
- (ii) All the distances measured to the right of the origin are taken as positive.
- (iii) Distances measured perpendicular to and above the principal axis are taken as negative.
- (iv) The object is always placed to the left of the lens.

A. Both (ii) and (iii)

B. Both (i) and (iv)

C. Both (i) and (iii) ✓

D. Both (ii) and (iv)

Q81 Lenses (convex/concave, uses)

An object is placed at infinity in front of a convex lens. The image formed is:

A. at infinity, highly magnified

B. at $2F$, same size

C. at the focal point, highly diminished (point-sized) ✓

D. between F and $2F$, inverted

Q82 Lenses (convex/concave, uses)

If an object is at infinity in front of a convex lens, the image is formed:

A. at F ✓

B. at $2F$

C. at infinity

D. between F and $2F$

Q83 Lenses (convex/concave, uses)

Which of the following is NOT correct according to the sign convention for spherical lenses?

A. Distances measured to the right of the optical centre are positive.

B. Object is always placed on the left of the lens.

C. Focal length of a concave lens is taken as negative.

D. Focal length of a convex lens is taken as negative. ✓

Q84 Lenses (convex/concave, uses)

A convex lens forms an image of an object placed 30 cm away. The image is formed at 60 cm on the other side. The magnification is:

A. $+1/2$

B. $+2$

C. -2 ✓

D. $-1/2$

Q85 Lenses (convex/concave, uses)

The magnification (m) produced by a lens is defined as the ratio of _____.

A. the object height to the image height

B. the object distance to the image distance

C. the image height to the object height ✓

D. the focal length to the object distance

Q86 Lenses (convex/concave, uses)

Lenses are used in spectacles to correct vision because they work on the principle of _____.

A. Refraction ✓

B. Reflection

C. Diffraction

D. Polarization



Q87 Lenses (convex/concave, uses)

Which of the following statement(s) is/are true regarding a concave lens?

- (i) A concave lens is also called a diverging lens.
- (ii) A concave lens always forms a real and inverted image of the object placed anywhere in front of it.
- (iii) A concave lens always forms a virtual and erect image of the object placed anywhere in front of it.

- A. Only (ii)
- B. Both (i) and (ii)
- C. Only (iii)
- D. Both (i) and (iii) ✓

Q88 Lenses (convex/concave, uses)

If the power of a lens is -4 D , which of the following is true about the lens?

- A. It is a concave lens of focal length 25 cm. ✓
- B. It is a convex lens of focal length 2.5 m.
- C. It is a convex lens of focal length 25 cm.
- D. It is a concave lens of focal length 0.4 m.

Q89 Lenses (convex/concave, uses)

What type of image is always formed by a concave lens, no matter where the object is placed?

- A. Real, inverted, and enlarged
- B. Real, erect, and same size
- C. Virtual, erect, and diminished ✓
- D. Virtual, inverted, and enlarged

Q90 Lenses (convex/concave, uses)

A student shows a concave lens forming a diminished real image on the screen. The mistake is:

- A. Concave lens does not refract light
- B. Concave lens always converges light
- C. Concave lens cannot form a magnified image
- D. Concave lens cannot form a real image ✓

Q91 Lenses (convex/concave, uses)

A ray passing through which of the following parts of a lens emerges undeviated?

- A. Between focus and centre
- B. Optical centre ✓
- C. Principal focus
- D. Centre of curvature

Q92 Lenses (convex/concave, uses)

If several rays of light parallel to the principal axis are falling on a convex lens, which of the following statements is correct for the refracted ray?

- A. They pass without any deviation.
- B. They converge at a point on the opposite side of the lens. ✓
- C. They diverge as if coming from the principal focus.
- D. They meet at the infinity.

Q93 Lenses (convex/concave, uses)

An object is placed at 80 cm on the left of a convex lens of focal length 40 cm. Where should a screen be placed to right of the lens so that the image formed is real, inverted and same sized?

- A. The screen should be placed 80 cm from the lens. ✓
- B. The screen should be placed anywhere between 20 cm and 40 cm from the lens.
- C. The screen should be placed anywhere between 40 cm and 80 cm from the lens.
- D. The screen should be placed at 40 cm from the lens.

Q94 Mirrors & Lenses

Which of the following correctly shows the relationship between magnification (M), the object distances (u) and image- distance (v)?

- A. Magnification = u/v
- B. Magnification = v/u ✓
- C. Magnification = $v \times u$
- D. Magnification = $u + v$

Q95 Mirrors & Lenses

Which of the following is NOT correct?

- A. A 5D lens has focal length 20 m. ✓
- B. The SI unit of power of lens is Dioptre (D).
- C. A 2D lens has focal length 0.5 m.
- D. 1 Dioptre = focal length of 1 m.



Q96 Mirrors & Lenses

If the height of an image (h') is measured perpendicular to and below the principal axis (along the $-y$ -axis), then what sign is assigned to its value according to the convention?

A. Negative



B. Neutral

C. Positive

D. Dependent on the magnification

Q97 Mirrors (plane/concave/convex, uses)

The distance between the pole and the centre of curvature of a convex mirror is $+40$ cm. What will be the distance between the pole and the focus of this mirror?

A. -40 cm

B. -20 cm

C. $+40$ cm

D. $+20$ cm

**Q98 Mirrors (plane/concave/convex, uses)**

Which of the following statements are NOT true regarding the principal axis of a spherical mirror?

(i) It is an imaginary straight line passing through the pole and the centre of curvature of a spherical mirror.

(ii) Principal axis is normal to the mirror at its pole.

(iii) A ray parallel to the principal axis after reflection from the mirror passes through the centre of curvature of the mirror.

(iv) The focus of a spherical mirror does not lie on its principal axis.

A. Both (i) and (ii)

B. Both (i) and (iv)

C. Both (ii) and (iii)

D. Both (iii) and (iv)

**Q99 Mirrors (plane/concave/convex, uses)**

An object is placed 30 cm in front of a concave mirror of focal length 15 cm. What will be the image distance v ?

A. -30 cm



B. $+30$ cm

C. -15 cm

D. $+15$ cm

Q100 Mirrors (plane/concave/convex, uses)

For concave mirror, the height of an image above the principal axis _____.

A. is considered positive



B. depends on object position

C. is considered negative

D. is considered zero

Q101 Mirrors (plane/concave/convex, uses)

Which of the following statements is correct about the image formed by a convex mirror?

A. Virtual and erect image



B. Real and erect image

C. Magnified image

D. Real and inverted image

Q102 Mirrors (plane/concave/convex, uses)

Which of the following statements is correct about the nature of the image formed by a concave mirror when the object is placed between the principal focus and the pole?

A. Real, inverted, diminished

B. Real, inverted, same size

C. Real, inverted, highly diminished (point image)

D. Virtual, erect, magnified

**Q103 Mirrors (plane/concave/convex, uses)**

According to the sign convention, the height of an erect image formed by a mirror is taken as:

A. Zero

B. Positive



C. Negative

D. Imaginary

Q104 Mirrors (plane/concave/convex, uses)

In a concave mirror, a ray of light directed towards the principal focus after reflection:

A. Diverges away from the axis

B. Retraces its path

C. Passes through the center of curvature

D. Becomes parallel to the principal axis



Q105 Mirrors (plane/concave/convex, uses)

A concave mirror forms an image at a distance of 20 cm when an object is placed 10 cm in front of it. What is the focal length of this mirror?

- A. 40 cm
- B. 20 cm
- C. 10 cm
- D. 30 cm



Q106 Mirrors (plane/concave/convex, uses)

A car driver uses a concave mirror as a shaving mirror at home. If his face is kept close to the mirror, how will the image formed be?

- A. Virtual, erect, and magnified
- B. Real, inverted, and smaller than the face
- C. Virtual, erect, and diminished
- D. Real, inverted, and larger than the face



Q107 Mirrors (plane/concave/convex, uses)

What type of image is formed by a concave mirror when the object is placed at infinity?

- A. Highly enlarged and virtual
- B. Same size as the object and real
- C. Enlarged, virtual and upright
- D. Highly diminished, real and inverted



Q108 Mirrors (plane/concave/convex, uses)

The image formed by a convex mirror is always _____.

- A. real and inverted
- B. virtual and inverted
- C. virtual and erect
- D. real and erect



Q109 Mirrors (plane/concave/convex, uses)

The size of the image formed by a convex mirror _____.

- A. is always larger than the object
- B. is always equal to the object
- C. can be larger or smaller depending on object position
- D. is always smaller than the object



Q110 Mirrors (plane/concave/convex, uses)

A concave mirror can form a real and inverted image when the object is placed:

- A. Between focus and pole
- B. At the focus
- C. Very close to the mirror
- D. Beyond the centre of curvature



Q111 Mirrors (plane/concave/convex, uses)

Which of the following statements correctly defines the principal axis of a spherical mirror?

- A. The line passing through the focus and object
- B. The tangent at the pole
- C. The perpendicular line drawn from the pole
- D. The line passing through the centre of curvature and pole



Q112 Mirrors (plane/concave/convex, uses)

Where is the centre of curvature of a convex mirror located?

- A. At the principal focus of the mirror
- B. At the pole of the mirror
- C. In front of the mirror
- D. Behind the mirror



Q113 Mirrors (plane/concave/convex, uses)

If an image is formed at the same distance behind a mirror as the object in front, the mirror must be:

- A. convex
- B. concave
- C. plane
- D. parabolic



Q114 Mirrors (plane/concave/convex, uses)

In the case of a convex mirror, a ray parallel to the principal axis after reflection appears to diverge from:

- A. The principal focus
- B. The centre of curvature
- C. Infinity
- D. The pole



Q115 Mirrors (plane/concave/convex, uses)

A light ray passes through the centre of curvature of a convex mirror. What happens to it after reflection?

- A. It retraces its own path. ✓
- B. It becomes parallel to the principal axis.
- C. It gets absorbed.
- D. It converges at the focus.

Q116 Mirrors (plane/concave/convex, uses)

What should be the position of the object, if a concave mirror forms a virtual, erect and enlarged image of the object?

- A. The object is placed at the centre of curvature of the mirror.
- B. The object is placed between the focus and the centre of curvature.
- C. The object is placed at the focus of the mirror.
- D. The object is placed between the pole and the focus of the mirror. ✓

Q117 Mirrors (plane/concave/convex, uses)

An object is placed at the centre of curvature of a concave mirror. The image formed is:

- A. Between focus and pole, diminished
- B. Behind the mirror, virtual
- C. At infinity, highly magnified
- D. At the centre of curvature, same size ✓

Q118 Mirrors (plane/concave/convex, uses)

Which of the following statements about the centre of curvature of a spherical mirror is NOT true?

- A. It is not a part of the mirror itself.
- B. For a concave mirror, it is located behind the mirror. ✓
- C. It lies outside the reflecting surface of the mirror.
- D. For a convex mirror, it lies behind the mirror.

Q119 Mirrors (plane/concave/convex, uses)

Which mirror is used by a dentist to see the inside of a patient's mouth?

- A. Plane mirror
- B. Planoconvex mirror
- C. Convex mirror
- D. Concave mirror ✓

Q120 Mirrors (plane/concave/convex, uses)

Which of the given statements is correct?

Statement 1: Concave mirrors are used in solar furnaces to focus sunlight at a point for heating.

Statement 2: Convex mirrors can never form real images.

- A. Only statement 1 is correct.
- B. Only statement 2 is correct.
- C. Both statements 1 and 2 are correct. ✓
- D. Both statements 1 and 2 are incorrect.

Q121 Mirrors (plane/concave/convex, uses)

An object is placed 30 cm from a concave mirror of focal length 20 cm. Using the mirror formula, what will be the image distance?

- A. -60 cm ✓
- B. -40 cm
- C. -12 cm
- D. -2.5 cm

Q122 Mirrors (plane/concave/convex, uses)

Read the given statements and select the most appropriate option.

Statement 1: Mirror formula is applicable to both concave and convex mirrors, provided the sign convention is followed.

Statement 2: The validity of Mirror formula depends on the size of the object.

- A. Both the statements 1 and 2 are not correct.
- B. Only statement 2 is correct.
- C. Only statement 1 is correct. ✓
- D. Both the statements 1 and 2 are correct.

Q123 Mirrors (plane/concave/convex, uses)

The centre of curvature of a concave mirror is:

- A. The midpoint of the mirror's aperture
- B. The point on the principal axis where image of an object at infinity is formed
- C. The geometric centre of the spherical surface of which the mirror is a part ✓
- D. The point where parallel rays of light meet after reflection



Q124 Mirrors (plane/concave/convex, uses)

Which of the following statements correctly describes image formation by a convex mirror?

- A.** When the object is at a finite distance, the image is formed between the pole and focus, virtual and diminished. ✓
- B.** When the object is at a finite distance, the image is formed beyond the centre of curvature, real and enlarged.
- C.** When the object is at infinity, the image is formed at the pole and is real and inverted.
- D.** When the object is at infinity, the image is formed at the focus, real and inverted.

Q125 Mirrors (plane/concave/convex, uses)

Which type of spherical mirror has its reflecting surface curved outwards and possesses a centre of curvature C that lies behind the mirror?

- A.** Plane mirror
- B.** Converging mirror
- C.** Convex mirror ✓
- D.** Concave mirror

Q126 Mirrors (plane/concave/convex, uses)

A convex mirror is generally used as a rear-view mirror in vehicles because it:

- A.** Produces magnified images
- B.** Produces real and inverted images
- C.** Absorbs most of the light rays
- D.** Produces a wider field of view ✓

Q127 Mirrors (plane/concave/convex, uses)

The diameter of the reflecting curved surface of a spherical mirror is called _____.

- A.** Pole
- B.** Focal length
- C.** Aperture ✓
- D.** Radius of curvature

Q128 Mirrors (plane/concave/convex, uses)

The distance between the pole and the centre of curvature of a concave mirror is -50 cm. If the magnification produced is (-1) by this mirror, then what will be the object and the image distance, respectively?

- A.** -50 cm and -50 cm ✓
- B.** -50 cm and $+50$ cm
- C.** $+50$ cm and $+50$ cm
- D.** $+50$ cm and -50 cm

Q129 Mirrors (plane/concave/convex, uses)

If the radius of curvature of a convex mirror used for rear-view on an automobile is 4.00 m, what is its focal length?

- A.** 4 m
- B.** 8 m
- C.** 1 m
- D.** 2 m ✓

Q130 Mirrors (plane/concave/convex, uses)

Which of the following is correct for concave mirrors?

- A.** They cannot produce magnified images.
- B.** They are used as rear-view mirrors.
- C.** They are used by dentists to see enlarged images of teeth. ✓
- D.** They always produce virtual images.

Q131 Mirrors (plane/concave/convex, uses)

Which of the following is NOT the correct use of a concave mirror?

- A.** It is used as a rear view mirror in automobiles. ✓
- B.** It is used as a shaving mirror.
- C.** It is used in torches.
- D.** It is used in a solar furnace.

Q132 Mirrors (plane/concave/convex, uses)

The magnification of a concave mirror is -1 . Which of the following statements is correct about the position of the object?

- A.** Object is at the centre of curvature ✓
- B.** Object is beyond the centre of curvature
- C.** Object is at focus
- D.** Object is between focus and pole



Q133 Mirrors (plane/concave/convex, uses)

Rear-view mirrors of vehicles are usually _____.

- A. concave mirrors
- B. convex mirrors** ✓
- C. plane mirrors
- D. parabolic mirrors

Q134 Mirrors (plane/concave/convex, uses)

The image formed by a concave mirror of focal length 20 cm is real, inverted, and enlarged in size as compared to the size of the object. Which of the following is true about the position of the object?

- A. The object is placed between 20 cm and 40 cm from the pole of the mirror.** ✓
- B. The object is placed at 10 cm from the pole of the mirror.
- C. The object is placed at 20 cm from the pole of the mirror.
- D. The object is placed at 40 cm from the pole of the mirror.

Q135 Mirrors (plane/concave/convex, uses)

Which of the following mirrors is used as a shaving mirror to get a magnified image of the face?

- A. Plane mirror
- B. Parabolic mirror
- C. Convex mirror
- D. Concave mirror** ✓

Q136 Mirrors (plane/concave/convex, uses)

What is the relationship between the radius of curvature and the focal length for spherical mirrors with small apertures?

- A. Radius of curvature is equal to twice the focal length** ✓
- B. Radius of curvature is equal to half the focal length
- C. Radius of curvature is equal to the focal length
- D. Radius of curvature is equal to thrice the focal length

Q137 Mirrors (plane/concave/convex, uses)

When an object is moved slowly and gradually closer to a convex mirror from infinity towards the pole (P), what can we say about the image?

- A. Moves from the pole (P) towards the principal focus (F)
- B. Moves from the principal focus (F) towards the pole (P)** ✓
- C. Moves away from the mirror
- D. Remains at the principal focus (F)

Q138 Mirrors (plane/concave/convex, uses)

An image is formed at a distance of 30 cm from a convex mirror when the object is placed 40 cm from the mirror. The magnification produced by the mirror will be _____.

- A. $-3/4$
- B. $+3/4$** ✓
- C. $-4/3$
- D. $+4/3$

Q139 Mirrors (plane/concave/convex, uses)

To get a virtual, erect and enlarged image using a spherical mirror, the object must be placed _____.

- A. at the principal focus (F) of a concave mirror
- B. at the centre of curvature (C) of a concave mirror
- C. between the pole (P) and the principal focus (F) of a concave mirror** ✓
- D. at the principal focus (F) of a convex mirror

Q140 Mirrors (plane/concave/convex, uses)

For spherical mirrors of small apertures, the relation between the radius of curvature (R) and focal length (f) is:

- A. $R = 3f$
- B. $R = 2f$** ✓
- C. $R = f$
- D. $R = f/2$

Q141 Mirrors (plane/concave/convex, uses)

If an object is placed at the centre of curvature of a concave mirror, the image formed will be:

- A. at the focus, real and diminished
- B. between focus and pole, virtual and erect
- C. at the centre of curvature itself, real and of the same size** ✓
- D. at infinity, virtual and magnified



Q142 Mirrors (plane/concave/convex, uses)

An object is placed at 35.0 cm in front of a concave mirror of focal length 25.0 cm. At what distance from the mirror an image is formed?

- A. 8.75 cm
- B. - 87.5 cm
- C. 10 cm
- D. - 8.75 cm

**Q143 Mirrors (plane/concave/convex, uses)**

How can you identify a concave and a convex mirror based on the direction of their reflecting surfaces?

- A. A concave mirror reflects light outward, while a convex mirror reflects it inward.
- B. A concave mirror has its reflecting surface curved inward; a convex mirror has its reflecting surface curved outward.
- C. Both concave and convex mirrors have the same reflecting surface direction.
- D. A concave mirror and a convex mirror both reflect inward.

**Q144 Mirrors (plane/concave/convex, uses)**

An object is placed at infinity in front of a concave mirror. Where is the image formed?

- A. At the principal focus (F)
- B. Behind the mirror
- C. At the pole (P)
- D. At the centre of curvature (C)

**Q145 Mirrors (plane/concave/convex, uses)**

When an object is placed beyond the centre of curvature (C) of a concave mirror, the image formed is:

- A. real, erect and same size as object
- B. real, inverted and smaller than the object
- C. virtual, erect and larger than the object
- D. virtual, inverted and larger than the object

**Q146 Mirrors (plane/concave/convex, uses)**

The point on the principal axis where rays parallel to the principal axis converge (or appear to diverge) after reflection from a mirror is called which of the following?

- A. Centre of curvature
- B. Aperture
- C. Pole
- D. Principal focus

**Q147 Mirrors (plane/concave/convex, uses)**

Which of the following statement(s) is /are true about the image formed by a concave mirror?

- (i) A concave mirror always forms a real and inverted image whatever be the position of the object.
- (ii) A concave mirror forms a real, inverted and diminished image when the object is placed between the focus and centre of curvature of the mirror.
- (iii) A concave mirror forms a real, inverted and point sized image at its focus when the object is placed at infinity.

- A. Only (i)
- B. Both (ii) and (iii)
- C. Both (i) and (ii)
- D. Only (iii)

**Q148 Mirrors (plane/concave/convex, uses)**

A ray of light parallel to the principal axis, after reflection from a concave mirror, _____.

- A. passes through the principal focus
- B. remains parallel to the axis
- C. passes through the pole
- D. passes through the centre of curvature

**Q149 Mirrors (plane/concave/convex, uses)**

What type of image is formed by a convex mirror when the object is placed at infinity?

- A. Same size, real and inverted
- B. Enlarged, virtual and erect
- C. Enlarged, real and inverted
- D. Highly diminished, virtual, erect and point-sized

**Q150 Mirrors (plane/concave/convex, uses)**

When an object is placed beyond the centre of curvature (C) in front of a concave mirror, what kind of image is formed?

- A. Same size, real, and upright
- B. Highly enlarged and virtual
- C. Enlarged, virtual, and upright
- D. Diminished, real, and inverted

**Q151 Mirrors (plane/concave/convex, uses)**

A convex mirror always forms an image that is _____.

- A. virtual, erect, and larger than the object
- B. real, erect, and same size as the object
- C. virtual, erect, and diminished
- D. real, inverted, and smaller than the object



Q152 Mirrors (plane/concave/convex, uses)

For a convex mirror, where is the centre of curvature located?

- A. At the focus
- B. At the mirror's surface
- C. Behind the mirror ✓
- D. In front of the mirror

Q153 Mirrors (plane/concave/convex, uses)

To accurately locate the image of an extended object formed by a spherical mirror using a ray diagram, what is the minimum number of reflected rays that must intersect (or appear to intersect)?

- A. Three rays
- B. Four rays
- C. Two rays ✓
- D. One ray

Q154 Mirrors (plane/concave/convex, uses)

An object is placed beyond the centre of curvature (C) of a concave mirror. The image formed will be now:

- A. Virtual, erect, and magnified
- B. Real, inverted, and diminished ✓
- C. Real, inverted, and same size
- D. Real, inverted, and magnified

Q155 Mirrors (plane/concave/convex, uses)

The principal focus of a spherical mirror is defined as:

- A. The midpoint of the radius of curvature
- B. The distance between object and image
- C. The point on the principal axis where parallel rays converge (or appear to diverge) after reflection ✓
- D. The center of the mirror's reflecting surface

Q156 Mirrors (plane/concave/convex, uses)

When an object is placed between the pole (P) and the focus (F) of a concave mirror, what kind of image is formed?

- A. Real, inverted, and enlarged
- B. Virtual, erect, and enlarged ✓
- C. Virtual, inverted, and diminished
- D. Real, inverted, and diminished

Q157 Mirrors (plane/concave/convex, uses)

According to the sign convention for spherical mirrors, which option is correct about the focal length of a concave mirror?

- A. Sometimes negative
- B. Always positive
- C. Always negative ✓
- D. Sometimes positive

Q158 Mirrors (plane/concave/convex, uses)

What is the geometric relationship between the principal axis and the reflecting surface of a spherical mirror at the point of the pole P?

- A. The principal axis intersects the mirror at an oblique angle.
- B. The principal axis is parallel to the mirror surface.
- C. The principal axis is tangent to the mirror surface.
- D. The principal axis is normal (perpendicular) to the mirror at its pole. ✓

Q159 Mirrors (plane/concave/convex, uses)

The distance between the pole and focus of a concave mirror is 30 cm. A real and inverted image is formed by this mirror on a screen at 40 cm from the pole of this mirror. What will be the object distance?

- A. - 120/7 cm
- B. - 120 cm ✓
- C. + 120/7 cm
- D. + 120 cm

Q160 Mirrors (plane/concave/convex, uses)

A real and inverted image is formed at a distance of 30 cm from a concave mirror when the object is placed 40 cm from the mirror. What will be the magnification produced by the mirror?

- A. + 3/4
- B. + 4/3
- C. - 4/3
- D. - 3/4 ✓



Q161 Mirrors (plane/concave/convex, uses)

Which of the following rays is NOT used to locate the image formed by a spherical mirror?

- A. A ray passing through the center of curvature that reflects back along the same path
- B. A ray passing through the focus that reflects parallel to the principal axis
- C. A ray perpendicular to the principal axis that reflects through the focus ☒
- D. A ray parallel to the principal axis that reflects through the focus

Q162 Mirrors (plane/concave/convex, uses)

When substituting numerical values for the distances (u , v , f) into the Mirror Formula to solve problems, which prerequisite must be strictly followed?

- A. All values must be converted to metres
- B. The focal length (f) must always be taken as positive
- C. All measurements must be taken from the centre of curvature
- D. The New Cartesian Sign Convention must be used ☒

Q163 Mirrors (plane/concave/convex, uses)

The principal focus of a concave mirror is the point where:

- A. Rays parallel to the principal axis appear to diverge after reflection
- B. The mirror surface intersects the principal axis
- C. Rays parallel to the principal axis converge after reflection ☒
- D. Rays passing through the center of curvature converge

Q164 Reflection & Refraction

Why does the Sun appear to rise earlier and set later than it actually does?

- A. Because of atmospheric refraction ☒
- B. Due to the Moon's gravitational influence on sunlight
- C. Due to the Earth's rotation slowing down during sunrise and sunset
- D. Because the Sun moves faster near the horizon

Q165 Reflection & Refraction

The random wavering or flickering of objects viewed through a turbulent stream of hot air rising above a fire or radiator is an effect of _____.

- A. Atmospheric refraction on a small scale ☒
- B. Tyndall effect
- C. Heat radiation causing visual distortion
- D. Diffraction of light

Q166 Reflection and laws of reflection

A ray of light strikes a plane mirror at an angle of 30° with the normal. The angle between the incident ray and the reflected ray is:

- A. 60° ☒
- B. 90°
- C. 30°
- D. 120°

Q167 Refraction and refractive index

When a thick glass slab is placed over printed matter, the letters appear raised. This is due to _____.

- A. Refraction of light ☒
- B. Polarization of light
- C. Total internal reflection
- D. Scattering of light

Q168 Refraction and refractive index

Consider a ray of light travelling obliquely from air into a glass slab. Which of the following statement(s) is/are true?

- (i) The angle of incidence is smaller than the angle of refraction.
- (ii) The angle of incidence is greater than the angle of emergence.
- (iii) The speed of light decreases as the light ray enters from air to glass.
- (iv) The incident ray and the emergent ray are parallel to each other.

- A. Both (ii) and (iii)
- B. Both (iii) and (iv) ☒
- C. Both (i) and (ii)
- D. Both (i) and (iv)



Q169 Refraction and refractive index

What is the relationship between the incident ray and the emergent ray after light passes through the two parallel opposite faces of a rectangular glass slab?

- ☒ A. The emergent ray is parallel to the direction of the incident ray, but shifted sideward slightly
- ☐ B. The emergent ray is perpendicular to the incident ray
- ☐ C. The emergent ray is reflected back along the path of the incident ray
- ☐ D. The emergent ray converges to a point on the principal axis

Q170 Refraction and refractive index

Which of the following statements is responsible for the atmospheric refraction?

- ☒ A. Bending of light due to change in air density
- ☐ B. Absorption of light by air molecules
- ☐ C. Scattering of light in atmosphere
- ☐ D. Reflection of light by atmosphere

Q171 Refraction and refractive index

Which of the following statement(s) is true when a straw appears bent when placed in a glass of water?

Statement 1: The incident ray, refracted ray, and normal lie in the same plane.

Statement 2: The ratio of sine of angle of incidence to sine of angle of refraction is constant.

- ☐ A. Only statement 1
- ☐ B. Neither statement 1 nor 2
- ☒ C. Both statement 1 and 2
- ☐ D. Only statement 2

Q172 Refraction and refractive index

A light is travelling from a denser medium A to a rarer medium B. What will be the unit of refractive index of medium B with respect to medium A?

- ☐ A. (metre)⁻¹
- ☐ B. (metre)²
- ☒ C. No unit
- ☐ D. metre

Q173 Refraction and refractive index

When light ray passes from a rarer medium to a denser medium, it _____.

- ☒ A. bends towards the normal
- ☐ B. bends away from the normal
- ☐ C. bends at a 90° angle
- ☐ D. does not bend at all

Q174 Refraction and refractive index

The absolute refractive index of a medium is defined as:

- ☐ A. the ratio of speed of light in medium to that in air
- ☒ B. the ratio of speed of light in vacuum to that in medium
- ☐ C. the ratio of speed of light in medium to that in vacuum
- ☐ D. the ratio of speed of light in one medium to that in another medium

Q175 Refraction and refractive index

Which of the following is NOT due to refraction of light?

- ☒ A. Image formation by a convex mirror
- ☐ B. Twinkling of stars
- ☐ C. Image formation by a convex lens
- ☐ D. Delayed Sunset

Q176 Refraction and refractive index

The absolute refractive index of a medium is defined as the ratio of _____.

- ☒ A. speed of light in vacuum to speed of light in medium
- ☐ B. speed of light in water to speed of light in medium
- ☐ C. speed of light in medium to speed of light in vacuum
- ☐ D. speed of light in glass to speed of light in water

Q177 Refraction and refractive index

When light enters a glass prism from air at the first refracting surface, the light ray _____.

- ☒ A. Bends towards the normal, as it enters a denser medium
- ☐ B. Bends away from the normal, increasing the angle of incidence
- ☐ C. Undergoes total internal reflection.
- ☐ D. Passes straight through without bending



Q178 Refraction and refractive index

The refractive index of the second medium with respect to the first depends on the:

- A. temperature of the surroundings only
- B. colour (wavelength) of light used and the pair of media ✓
- C. intensity of the incident light
- D. shape of the boundary surface only

Q179 Refraction and refractive index

When a light ray passes through a rectangular glass slab, the emergent ray is _____.

- A. Along the same line as the incident ray
- B. Perpendicular to the incident ray
- C. Bent toward the normal without displacement
- D. Parallel to the incident ray but shifted sideward ✓

Q180 Refraction and refractive index

What does Snell's Law of refraction state about the relationship between the angle of incidence and the angle of refraction for the given pair of media?

- A. Their difference is always constant.
- B. The ratio of the sine of the angle of incidence to the sine of the angle of refraction remains constant. ✓
- C. Both angles are always equal in all media.
- D. Their sum is always 90° .

Q181 Refraction and refractive index

What is the term used for the refractive index of a medium when medium 1 is specified as vacuum or air?

- A. Absolute refractive index ✓
- B. Relative refractive index
- C. Comparative refractive index
- D. Optical density

Q182 Refraction and refractive index

The refractive indices of water, glass and diamond are 1.33, 1.5, and 2.42, respectively. Light travels:

- A. the fastest in water medium ✓
- B. the fastest in glass medium
- C. at the same speed irrespective of the medium
- D. the fastest in diamond medium

Q183 Refraction and refractive index

The emergent ray from a rectangular glass slab is:

- A. Parallel to the incident ray ✓
- B. Perpendicular to the incident ray
- C. Bent towards the normal
- D. Bent away from the normal

Q184 Refraction and refractive index

The absolute refractive index of a material is $4/3$. If the speed of light in air is 3×10^8 m/s, then what will be the speed of light in this medium?

- A. 3×10^8 m/s
- B. 4×10^8 m/s
- C. 2.25×10^8 m/s ✓
- D. 1.33×10^8 m/s

Q185 Refraction and refractive index

The law of refraction is valid for which range of the angle of incidence?

- A. $i > 90^\circ$
- B. $0^\circ < i < 90^\circ$ ✓
- C. $0^\circ < i < 45^\circ$
- D. $0^\circ < i < 60^\circ$

Q186 Refraction and refractive index

Which of the following statements is correct about the absolute refractive index?

- A. It is always greater than 1. ✓
- B. It is always less than 1.
- C. It is always negative.
- D. It is always equal to 1.

Q187 Refraction and refractive index

Which of the following is NOT caused by atmospheric refraction?

- A. Reddish colour of sun at sunrise / sunset ✓
- B. Advanced sunrise and delayed sunset
- C. Twinkling of stars
- D. Sun appearing higher in sky than its actual geometric position



Q188 Scattering (blue sky, red sunset)

The blue colour of the sky appears due to:

- A. absorption of blue light by air molecules
- B. scattering of shorter wavelength of sunlight by air molecules ✓
- C. reflection of light by air molecules
- D. refraction of light by air molecules

Q189 Scattering (blue sky, red sunset)

What is the name of the effect seen when light is scattered by tiny particles in a colloidal solution?

- A. Tyndall Effect ✓
- B. Refraction
- C. Reflection
- D. Dispersion

Q190 Scattering (blue sky, red sunset)

Which of the statement(s) is/are NOT true about the phenomenon of scattering of light:

- (i) The amount of scattering light undergoes is independent of the size of particles of the medium through which light is passing.
- (ii) The amount of scattering is directly proportional to the wavelength of light.
- (iii) The colour of the sky appears blue as blue light undergoes more scattering as compared to red light.
- (iv) The colour of danger signal is red as red colour undergoes least amount of scattering when passing through fog.

- A. Both (ii) and (iii)
- B. Both (i) and (ii) ✓
- C. Both (i) and (iii)
- D. Both (iii) and (iv)

Q191 Mirrors (plane/concave/convex, uses)

If an object is placed at the centre of curvature (C) of a concave mirror, then what is the value of the magnification (m)?

- A. $m = -1$ ✓
- B. $m < -1$
- C. $m = +1$
- D. $m = 0$



Q1 Conductors, insulators, semiconductors

Among the following materials, which one has the highest electrical resistivity at room temperature?

A. Manganese



B. Iron

C. Chromium

D. Mercury

Q2 Conductors, insulators, semiconductors

Based on the concept of electrical resistance, how are conductors, resistors, and insulators primarily differentiated?

A. By their ability to generate heat upon current flow

B. By their chemical composition (e.g., metal vs. non-metal)

C. By the ease or difficulty with which they allow the flow of electric charge



D. By their length and area of cross-section

Q3 Current Electricity (Ohm's Law, Circuits)

How much work (W) is done in moving a charge (Q) of 5 C across two points that have a potential difference of 15 V?

A. 15 J

B. 3 J

C. 1/3 J

D. 75 J

**Q4** Current Electricity (Ohm's Law, Circuits)

Which of the following correctly describes how potential difference between two points is calculated?

A. Potential difference = Charge $\times$ Work done

B. Potential difference = Charge $\div$ Work done

C. Potential difference = Work done $\div$ Charge



D. Potential difference = Work done $\times$ Potential energy

Q5 Current Electricity (Ohm's Law, Circuits)

A charge of 1.5 C is moved through a potential difference. If the work done is 30 J, what is the potential difference between the two points?

A. 45 V

B. 20 V



C. 30 V

D. 25 V

Q6 Current Electricity (Ohm's Law, Circuits)

In a circuit diagram, the symbol for a cell is represented by which of the following?

A. A circle with a cross inside

B. Two equal lines parallel to each other

C. A rectangle with a diagonal line

D. One long and one short line parallel to each other

**Q7** Current Electricity (Ohm's Law, Circuits)

The symbol of a battery is:

A. a circle with a dot

B. a rectangle with arrows

C. several cells joined together



D. one long and one short line

Q8 Current Electricity (Ohm's Law, Circuits)

Which of the following components is represented by a zig-zag line in a circuit diagram?

A. Resistor



B. Switch

C. Bulb

D. Battery

Q9 Current Electricity (Ohm's Law, Circuits)

In a schematic electric circuit diagram, how is a voltmeter typically represented when connected to measure potential difference?

A. A circle with an 'A' inside, connected in series

B. A circle with a 'V' inside, connected in parallel



C. A square with a 'V' inside, connected in parallel

D. A rectangle with an 'R' inside, connected in series



Q10 Current Electricity (Ohm's Law, Circuits)

Which of the following is NOT correct?

- A. In the electrical circuit, if the switch is open, no current flows.
- B. In the electrical circuit, the direction of current is taken from the positive to the negative terminal.
- C. In the electrical circuit, the voltmeter is connected in series with the component. ✓
- D. A bulb glows only in a closed circuit.

Q11 Current Electricity (Ohm's Law, Circuits)

Which of the following statements is NOT correct about an electric circuit?

- A. Current is a result of flow of electrons
- B. Current flows in an open circuit ✓
- C. A switch helps to open or close the circuit
- D. The direction of conventional current is opposite to the flow of electrons

Q12 Current Electricity (Ohm's Law, Circuits)

A science teacher asks students to measure the current through a bulb using an ammeter. What precaution must the students follow?

- A. Connect the ammeter without a battery
- B. Connect the ammeter with reversed polarity
- C. Connect the ammeter in parallel with the bulb
- D. Connect the ammeter in series with correct polarity ✓

Q13 Electric charge, current and its unit

Electric current is expressed as:

- A. amount of charge per unit length
- B. energy consumed per unit time
- C. rate of flow of electric charge ✓
- D. amount of charge per unit area

Q14 Electric charge, current and its unit

Which of the following statements about electric field lines is correct?

- A. They can form closed loops
- B. They never intersect ✓
- C. They are always straight lines
- D. They start on negative charges and end on positive charges

Q15 Electric charge, current and its unit

An electric bulb draws a current of 0.15 A for 8 minutes. How much electric charge flows through the circuit during this time?

- A. 1.2 C
- B. 720 C
- C. 72 A
- D. 72 C ✓

Q16 Electric charge, current and its unit

Which of the following statements correctly describes the direction of conventional electric current?

- A. From the positive terminal to the negative terminal of a cell ✓
- B. The same as the direction of the electrons' flow
- C. From the negative terminal to the positive terminal of a cell
- D. The direction is random and charges flow in a constant way

Q17 Electric charge, current and its unit

Conventionally, what is the assigned direction of electric current in an electric circuit, given the flow of electrons?

- A. Same as the movement of atoms
- B. Opposite to the flow of positive charges
- C. Same as the movement of molecules
- D. Opposite to the flow of electrons ✓

Q18 Electric charge, current and its unit

If the potential difference between two points is V and charge q moves between them, the work done is _____.

- A. $W = V \times q$ ✓
- B. $W = q/V$
- C. $W = V/q$
- D. $W = V^2/q$

Q19 Electric motor (principle)

Fleming's Left-Hand Rule is used to determine the direction of motion in an electric motor. Which finger represents the direction of the force or motion?

- A. Index finger
- B. Middle finger
- C. Thumb ✓
- D. Little finger



Q20 Electric motor (principle)

Which of the following is correct about force on a current-carrying conductor in a magnetic field?

- A. The force on a conductor is along the magnetic field direction.
- B. The force depends on the resistance of the conductor.
- C. The force on a current carrying conductor is proportional to the length of the conductor in the magnetic field. ✓
- D. The force is independent of the current in the conductor.

Q21 Electric motor (principle)

Which rule is used to find the direction of force on a current-carrying conductor?

- A. Fleming's left-hand rule ✓
- B. Fleming's right-hand rule
- C. Ohm's law
- D. Lenz's law

Q22 Electric motor (principle)

Which of the following devices works on the principle of force on a current-carrying conductor in a magnetic field?

- A. Electric generator
- B. Electric motor ✓
- C. Resistor
- D. Transformer

Q23 Electric motor (principle)

Read the given statements carefully and select the correct option.

Statement 1: Fleming's left-hand rule is used to find the direction of force (motion) on a current-carrying conductor placed in a magnetic field.

Statement 2: The force on the conductor acts perpendicular to both the current and the magnetic field.

- A. Statement 1 is correct, but 2 is incorrect.
- B. Both statements 1 and 2 are correct. ✓
- C. Statement 1 is incorrect, but 2 is correct.
- D. Both statements 1 and 2 are incorrect.

Q24 Electric motor (principle)

A straight conductor is carrying current in the +x-direction, this conductor is placed in a magnetic field pointing in the +y-direction. What will be the direction of motion of the conductor?

- A. positive x direction
- B. positive z direction ✓
- C. negative y direction
- D. negative x direction

Q25 Electric motor (principle)

In daily life, the principle of force on a current-carrying conductor is used in which of the following devices?

- A. Electric heater
- B. Electric fuse
- C. Electric bell
- D. Electric motor ✓

Q26 Electric motor (principle)

Which rule helps in identifying the direction of the force acting on a current-carrying conductor placed in a magnetic field?

- A. Fleming's left-hand rule ✓
- B. Maxwell's corkscrew rule
- C. Ohm's law
- D. Right-hand thumb rule

Q27 Electric motor (principle)

Under what spatial condition is the magnitude of the force acting on a current-carrying conductor placed in a uniform magnetic field observed to be the highest?

- A. When the current is varied instantaneously.
- B. When the current and field are perpendicular to each other. ✓
- C. When the current flows towards the south pole of the magnet.
- D. When the current and field are parallel.

Q28 Electric power and heating (fuse/bulb)

A coil has a resistance of $44\ \Omega$. If it is connected across a 220 V supply, what is the power consumed by the coil?

- A. 110 W
- B. 0.2 W
- C. 5 W
- D. 1100 W ✓



Q29 Electric power and heating (fuse/bulb)

The relation between electric energy, power and time is:

- A. Energy = Power / Time
- B. Energy = Power + Time
- C. Energy = Time – Power
- D. Energy = Power × Time

**Q30 Electric power and heating (fuse/bulb)**

An electric heater of resistance $20\ \Omega$ operates for 10 minutes when connected to a 220 V supply. The heat produced is:

- A. $1.45 \times 10^6\ \text{J}$
- B. $1.45 \times 10^5\ \text{J}$
- C. $2.9 \times 10^5\ \text{J}$
- D. $2.9 \times 10^4\ \text{J}$

**Q31 Electric power and heating (fuse/bulb)**

If a device is rated 90 W at 120 V, the current drawn is _____.

- A. 1.33 A
- B. 0.75 A
- C. 0.25 A
- D. 1.50 A

**Q32 Electric power and heating (fuse/bulb)**

An electric iron operating at 220 V consumes energy at a rate of 840 W when the heating is at its maximum. What is the resistance of the coil used in the iron?

- A. $55.6\ \Omega$
- B. $57.6\ \Omega$
- C. $50.6\ \Omega$
- D. $47.6\ \Omega$

**Q33 Electric power and heating (fuse/bulb)**

200 J of heat is produced per second in an $8\ \Omega$ resistance. What is the potential difference across the resistor?

- A. 40 V
- B. 50 V
- C. 30 V
- D. 20 V

**Q34 Electric power and heating (fuse/bulb)**

In a domestic electric circuit, the main purpose of a FUSE is _____.

- A. To store electricity
- B. To reduce voltage
- C. To prevent overloading and protect appliances
- D. To increase current

**Q35 Electric power and heating (fuse/bulb)**

An electric bulb is rated 110 Watt – 220 Volt. The current drawn by the bulb is:

- A. 20 A
- B. 2 A
- C. 0.5 A
- D. 24,200 A

**Q36 Electric power and heating (fuse/bulb)**

The generation of heat in a conductor due to electric current is known as:

- A. Joule's heating
- B. Ohm's Law
- C. electrolysis
- D. electromagnetic induction

**Q37 Electric power and heating (fuse/bulb)**

When the current in a circuit is doubled, keeping resistance constant, the power dissipated in the resistor becomes:

- A. Double
- B. Four times
- C. Half
- D. One-fourth

**Q38 Electric power and heating (fuse/bulb)**

In a purely resistive circuit, the electrical energy supplied by the battery is:

- A. completely dissipated as heat
- B. converted only into light
- C. stored as potential energy
- D. stored as magnetic energy



Q39 Electric power and heating (fuse/bulb)

When the same current flows through two wires of equal length but different resistances, the wire with higher resistance will:

- A. Produce less heat
- B. Produce more heat** ✓
- C. Produce no heat
- D. Produce the same heat

Q40 Electric power and heating (fuse/bulb)

Which of the following devices does NOT use the heating effect of current for its working?

- A. Electric Iron
- B. Electric Geyser
- C. Electric Mixer Grinder** ✓
- D. Electric Fuse

Q41 Electric power and heating (fuse/bulb)

A resistor of $4\ \Omega$ produces 64 J of heat every second. What is the potential difference across it?

- A. 16 V** ✓
- B. 16 A
- C. 64 A
- D. 8 V

Q42 Electric power and heating (fuse/bulb)

According to Joule's law of heating, the heat produced (H) is directly proportional to which of the following?

- A. The square of the time (t^2)
- B. The square of the resistance (R^2)
- C. The current (I)
- D. The square of the current (I^2)** ✓

Q43 Electric power and heating (fuse/bulb)

An electric iron of resistance $15\ \Omega$ is connected to 220 V supply. How much heat will be produced in one minute?

- A. 500 kJ
- B. 194 kJ** ✓
- C. 1.94 kJ
- D. 200 kJ

Q44 Electric power and heating (fuse/bulb)

If both current and resistance are halved, the power reduces to _____.

- A. half of the initial value
- B. one-fourth of the initial value
- C. one-eighth of the initial value** ✓
- D. one-third of the initial value

Q45 Electric power and heating (fuse/bulb)

The fuse wire in electric circuits works on the principle of _____.

- A. chemical effect of current
- B. heating effect of current** ✓
- C. magnetic effect of current
- D. induction effect of current

Q46 Electric power and heating (fuse/bulb)

The filament of an electric bulb is made of tungsten because it:

- A. has a high resistance and can withstand high temperatures** ✓
- B. is cheap
- C. is a good conductor
- D. has a low melting point

Q47 Electric power and heating (fuse/bulb)

The heat produced in a conductor due to the flow of current does NOT depend on _____.

- A. duration of current flow.
- B. direction of current.** ✓
- C. resistance for a given current.
- D. amount of current.

Q48 Electric power and heating (fuse/bulb)

If a current of 4 A flows through a resistor of $50\ \Omega$ for 8 minutes, the heat produced is _____.

- A. 288 kJ
- B. 192 kJ
- C. 384 kJ** ✓
- D. 96 kJ



Q49 Electric power and heating (fuse/bulb)

An electric bulb is connected to a 240 V generator and draws a current of 0.25 A. What is the power consumed by the bulb?

A. 60 W



B. 60 J

C. 960 W

D. 960 J

Q50 Electric power and heating (fuse/bulb)

According to Joule's law of heating, if the current flowing through a resistor is doubled while resistance and time remain constant, then the heat produced (H) will increase by a factor of _____.

A. two

B. eight

C. sixteen

D. four

**Q51 Electric power and heating (fuse/bulb)**

In a house, electricity is supplied at 220 V. If the maximum power consumption of the house is 11 kW, what should the rating of the main fuse be?

A. 50 A



B. 100 A

C. 20 A

D. 30 A

Q52 Electric power and heating (fuse/bulb)

What is the role of a fuse in an electric circuit?

A. To break the circuit if the current exceeds a safe level, preventing damage



B. To increase the current when needed

C. To not break the circuit if the current exceeds a safe level

D. To cool down the wires during overheating

Q53 Electric power and heating (fuse/bulb)

Which device relies on the heating effect of current to protect circuits and appliances by intentionally melting to break the circuit when the current exceeds a specified limit?

A. Electric fuse



B. Electric bulb filament

C. Rheostat

D. Electric iron coil

Q54 Electric power and heating (fuse/bulb)

100 J of heat is produced in an electrical geyser when 1 A current flows through it for 10 secs. How much is the resistance of the geyser?

A. 1 Ω

B. 100 Ω

C. 0.1 Ω

D. 10 Ω

**Q55 Electric power and heating (fuse/bulb)**

An electric iron having resistance (R) has a power (P) associated with it when current (I) flows through it on applying potential difference (V) across its ends. Which of the following relations is NOT correct?

A. $P = V^2/R$

B. $P = I^2R$

C. $P = VI$

D. $P = V/I$

**Q56 Electric power and heating (fuse/bulb)**

A 100 W bulb is connected to a 220 V supply. The current through the bulb is approximately:

A. 0.45 A



B. 0.91 A

C. 1.1 A

D. 2.2 A

Q57 Electric power and heating (fuse/bulb)

Which of the following relations is correct for expressing power in terms of voltage and resistance?

A. $P = R/V^2$

B. $P = I/VR$

C. $P = V^2/R$



D. $P = VR/I$

Q58 Electric power and heating (fuse/bulb)

If voltage (V) is constant, the power is directly proportional to which of the following?

A. Resistance

B. Current



C. Square of Resistance

D. Energy



Q59 Electric power and heating (fuse/bulb)

If a wire has a resistance R and a current I passes through it, the power dissipated in the wire is given by:

- A. $P=I^2/R$
- B. $P=I^2R$ ✓
- C. $P=V^2R$
- D. $P=V/I$

Q60 Electric power and heating (fuse/bulb)

In daily life, the heating effect of electric current is used in which of the following?

- A. Electric bell and buzzer
- B. Electric fan and motor
- C. LED and torch
- D. Electric heater, electric iron, and fuse ✓

Q61 Electric power and heating (fuse/bulb)

An electric geyser has a power of 2200 W when it is operated at 220 V. How much will be the current flowing through the heater?

- A. 10 A ✓
- B. 1 A
- C. 1100 A
- D. 100 A

Q62 Electric power and heating (fuse/bulb)

In which device is the heating effect of current used to melt a metal?

- A. Electric fan
- B. Electric bell
- C. Electric bulb
- D. Electric fuse ✓

Q63 Electric power and heating (fuse/bulb)

The heating effect of electric current is least in _____.

- A. Copper ✓
- B. Nichrome
- C. Iron
- D. Tungsten

Q64 Electric power and heating (fuse/bulb)

The filament of a light bulb is made up of tungsten, because of its _____.

- A. High resistance and low melting point
- B. Low resistance and high melting point
- C. High resistance and high melting point ✓
- D. Low resistance and low melting point

Q65 Electric power and heating (fuse/bulb)

In a toaster, the heating wire glows red because _____.

- A. It has zero resistance.
- B. It has low melting point.
- C. It resists the current and gets hot. ✓
- D. The current is very high.

Q66 Electric power and heating (fuse/bulb)

For a resistor with constant resistance, the magnitude of heat produced is directly proportional to which of the following?

- A. Length of the resistor
- B. Current flowing through the resistor
- C. Density of the material
- D. Square of the current flowing through the resistor ✓

Q67 Electromagnetism and electromagnet uses

A solenoid behaves like a magnet because:

- A. Current in its turns produces a magnetic field ✓
- B. It has a high resistance
- C. It stores electricity
- D. It contains iron inside

Q68 Electromagnetism and electromagnet uses

Which of the following is true about the magnetic field inside a solenoid?

- A. It is uniform and in the form of parallel straight lines. ✓
- B. It is zero.
- C. It forms random patterns.
- D. It is non-uniform.



Q69 Electromagnetism and electromagnet uses

The magnetic field at the centre of a current carrying circular loop is directly proportional to _____.

- A. inverse of current flowing through the loop
- B. the square of the radius of the circular loop
- C. the current flowing through the loop ✓
- D. the square of the current flowing through the loop

Q70 Electromagnetism and electromagnet uses

Which rule helps determine the direction of the magnetic field inside a current-carrying loop?

- A. Right-hand thumb rule ✓

- B. Left-hand thumb rule
- C. Fleming's right-hand rule
- D. Fleming's left-hand rule

Q71 Electromagnetism and electromagnet uses

The direction of the magnetic field at the centre of a current-carrying circular loop can be determined by:

- A. Left-hand thumb rule
- B. Right-hand palm rule
- C. Fleming's left-hand rule
- D. Right-hand rule (curling fingers along current) ✓

Q72 Electromagnetism and electromagnet uses

Which of the following is true about the magnetic field around a current carrying solenoid?

- A. The field in the core of the solenoid decreases from one end of the other end.
- B. The field line pattern of the solenoid resembles the magnetic field line pattern of a straight current carrying wire.
- C. The direction of magnetic field associated with the solenoid can be reversed by reversing the direction of current flowing through it. ✓
- D. The field associated with the solenoid can be increased by decreasing the number of turns in the solenoid.

Q73 Electromagnetism and electromagnet uses

Which of the following rules determines the direction of the magnetic field produced by a current carrying circular loop?

- A. Left-Hand Thumb rule
- B. Fleming's Left-Hand rule
- C. Right-Hand Thumb rule ✓
- D. Fleming's Right-Hand rule

Q74 Electromagnetism and electromagnet uses

The strength of the magnetic field around a straight wire depends on:

- A. Voltage applied
- B. Resistance of the wire
- C. Length of the wire only
- D. Current and distance from the wire ✓

Q75 Electromagnetism and electromagnet uses

The right-hand thumb rule is used to find which of the following?

- A. Direction of force on a current-carrying conductor
- B. Magnitude of current
- C. Direction of magnetic field around a current-carrying conductor ✓
- D. Resistance of the wire

Q76 Electromagnetism and electromagnet uses

Which of the following statements is correct about the direction of the magnetic field lines inside a current-carrying solenoid?

- A. The magnetic field lines are parallel and along the axis of the solenoid from its north pole to south pole.
- B. The magnetic field lines are random inside the solenoid.
- C. The magnetic field lines are circular and perpendicular to the axis of the solenoid.
- D. The magnetic field lines are parallel and along the axis of the solenoid from its south pole to north pole. ✓

Q77 Electromagnetism and electromagnet uses

Which of the following correctly describes the direction of the magnetic field outside a solenoid?

- A. South pole to North pole
- B. From the ends to the centre
- C. North pole to South pole ✓
- D. From the centre to the ends



Q78 Electromagnetism and electromagnet uses

What happens to the magnetic field strength produced by a circular coil if the number of turns (n) is increased while keeping the current constant?

- ☒ A. It becomes n times larger than for a single turn.
- ☐ B. It remains the same as for a single turn.
- ☐ C. It only increases if the diameter is also increased.
- ☐ D. It decreases inversely with n .

Q79 Electromagnetism and electromagnet uses

According to Right Hand Thumb Rule, if the curling of the fingers of our right hand gives the direction of magnetic field, then the thumb of our right hand is aligned along the direction of which physical quantity?

- ☐ A. Induced Current in the conductor
- ☐ B. Electric field applied across the conductor
- ☐ C. Force acting on the conductor
- ☒ D. Current flowing through the conductor

Q80 Household Wiring & Safety

What is the purpose of a plug key in an electrical circuit?

- ☐ A. It measures the current flowing through a circuit.
- ☐ B. It provides potential difference in a circuit.
- ☒ C. It helps in connecting and disconnecting a circuit.
- ☐ D. It measures the potential difference in a circuit.

Q81 Household Wiring & Safety

Which statement is INCORRECT about a household electric circuit?

- ☐ A. All appliances are connected in parallel.
- ☒ B. Current through each appliance is the same.
- ☐ C. A fuse protects the circuit from excessive current.
- ☐ D. A fuse is always connected in the live wire.

Q82 Household Wiring & Safety

Consider the following statements and select the correct option.

Statement 1: A fuse is connected in series in an electric circuit.
Statement 2: A fuse wire melts when the current exceeds a safe limit.

- ☐ A. Only Statement 2 is correct.
- ☐ B. Only Statement 1 is correct.
- ☒ C. Both Statements 1 and 2 are correct.
- ☐ D. Both Statements 1 and 2 are incorrect.

Q83 Household Wiring & Safety

The main purpose of the earth wire in a domestic circuit is:

- ☒ A. to protect from electric shocks
- ☐ B. to reduce resistance
- ☐ C. to supply current
- ☐ D. to increase voltage

Q84 Household Wiring & Safety

In a domestic circuit, the live wire is generally of which colour?

- ☐ A. Green
- ☐ B. Yellow
- ☒ C. Red
- ☐ D. Black

Q85 Household Wiring & Safety

Which of the following statements is/are true for a domestic circuit?

- (i) All the appliances are connected in parallel.
- (ii) The live wire in the domestic circuit has green insulation on it.
- (iii) A fuse connected to the circuit allows excessive current to pass through the appliances.
- (iv) The neutral wire in the domestic circuits has black insulation on it.

- ☐ A. Both (i) and (iii)
- ☐ B. Both (ii) and (iv)
- ☒ C. Both (i) and (iv)
- ☐ D. Both (ii) and (iii)

Q86 Household Wiring & Safety

What is the primary safety function of the green insulated earth wire in a domestic circuit, particularly for metallic appliances?

- ☐ A. To stabilise the voltage at 220 V
- ☐ B. To provide a high-resistance path to divert excess current into the ground
- ☐ C. To act as the neutral wire when the black wire fails
- ☒ D. To provide a low-resistance path to ensure leakage current keeps the appliance potential to that of the earth, preventing severe shocks



Q87 Household Wiring & Safety

In household electricity supply, which of the following statements correctly describes the colour codes of the wires?

- A. The live wire is green, the neutral wire is red, and the earth wire is black
- B. The live wire is blue, the neutral wire is green, and the earth wire is red
- C. The live wire is red, the neutral wire is black, and the earth wire is green ✓
- D. The live wire is black, the neutral wire is green, and the earth wire is blue

Q88 Magnetic Effects of Current

Which of the following statements is correct?

Statement 1: The magnetic field lines produced around a straight current-carrying conductor form concentric circles centred along the wire.
Statement 2: The direction of these magnetic field lines can be determined using the right-hand thumb rule.

- A. Both statements 1 and 2 are incorrect.
- B. Statement 1 is correct, but 2 is incorrect.
- C. Statement 1 is incorrect, but 2 is correct.
- D. Both statements 1 and 2 are correct. ✓

Q89 Magnetic Effects of Current

Which of the following statements about the magnetic field due to a circular loop is true?

- A. The field depends on current and radius. ✓
- B. The field lines at the centre are circular.
- C. The field lines are parallel to the plane of the loop.
- D. The field is uniform everywhere around the loop.

Q90 Magnetic Effects of Current

If a current-carrying conductor is placed in a magnetic field and the direction of current is reversed, the force on the conductor _____.

- A. doubles
- B. remains the same
- C. reverses direction ✓
- D. becomes zero

Q91 Magnetic Effects of Current

A compass needle placed near a current-carrying conductor shows deflection because:

- A. Current produces electric field
- B. Current produces sound
- C. Current produces heat
- D. Current produces magnetic field ✓

Q92 Magnetic Effects of Current

Every section of a current-carrying circular wire contributes to the magnetic field at the centre of the loop in _____.

- A. the opposite direction
- B. the same direction ✓
- C. a random direction
- D. the perpendicular direction

Q93 Magnetic Effects of Current

What is associated with a metallic wire carrying an electric current?

- A. A magnetic field around it ✓
- B. Only electric potential
- C. Only heat
- D. No physical effect

Q94 Magnetic Effects of Current

A straight current carrying conductor has a magnetic field (B) associated with it. Which of the following is correct regarding the value of magnetic field (B)?

- (i) The magnetic field will increase as we move away from the conductor.
- (ii) The magnetic field will decrease as we move away from the conductor.
- (iii) The magnetic field will increase when the current flowing through the conductor increases.
- (iv) The magnetic field will first decrease when the current flowing through the conductor increases.

- A. Both (ii) and (iii) ✓
- B. Both (i) and (ii)
- C. Both (iii) and (iv)
- D. Both (i) and (iv)



Q95 Magnetic Effects of Current

The direction of the magnetic field at the centre of a current-carrying circular loop is determined by which of the following?

- A. Lenz's Law
- B. Fleming's Left-Hand Rule
- C. Right-Hand Thumb Rule ✓
- D. Fleming's Right-Hand Rule

Q96 Magnetic Effects of Current

A straight conductor carrying current is placed parallel to a uniform magnetic field. The force on the conductor will be:

- A. zero ✓
- B. half the maximum
- C. infinite
- D. maximum

Q97 Magnetic Effects of Current

According to the right-hand thumb rule, if the thumb points in the direction of current, then the fingers show:

- A. direction of electric force
- B. direction of resistance
- C. direction of magnetic field lines ✓
- D. direction of voltage

Q98 Magnetic Effects of Current

A long straight conductor carries current vertically upwards. What will be the direction of magnetic field at a point lying to the east of the wire?

- A. Towards south ✓
- B. Towards west
- C. Towards east
- D. Towards north

Q99 Magnetic Effects of Current

Which of the following statements is true?

- A. The magnetic field lines inside a solenoid are circular.
- B. The magnetic field inside a solenoid carrying current does not depend on the strength of the current.
- C. On increasing the number of turns per unit length in a solenoid, the strength of the magnetic field in the solenoid increases. ✓
- D. On increasing the resistance of the wire, the strength of the magnetic field in a solenoid increases.

Q100 Magnetic Effects of Current

The magnetic field around a straight current-carrying conductor:

- A. points radially outward
- B. forms concentric circles around the conductor ✓
- C. points along the conductor
- D. is zero

Q101 Magnetic Effects of Current

Which of the following statements is correct?

- A. Magnetic field lines always emerge from the north pole of a magnet and enter the south pole outside the magnet. ✓
- B. The magnetic field at a point is zero when field lines are dense.
- C. Magnetic field lines intersect each other.
- D. Magnetic field lines start from the south pole and end at the north pole.

Q102 Magnetic Effects of Current

The magnetic field due to a solenoid carrying 'I' current is 'B'. What will be the magnetic field due to this solenoid, when the current flowing through the solenoid is halved? (Keeping all the other parameters the same)

- A. 2B
- B. B
- C. B/2 ✓
- D. B/4

Q103 Magnets and properties / magnetic field

Which of the following statements is true about magnetic field lines?

- A. Field lines intersect at poles.
- B. Field lines inside a magnet move from north to south.
- C. Magnetic field is weaker where lines are close.
- D. Field lines outside a magnet move from north to south. ✓

Q104 Magnets and properties / magnetic field

Which of the following statements about magnetic field lines is correct?

- A. They originate only from the centre of the magnet
- B. They show the path of charged particles
- C. They form closed loops inside and outside the magnet ✓
- D. They always intersect



Q105 Magnets and properties / magnetic field

Which of the following statements is correct for the magnetic field inside a long, straight, current-carrying solenoid?

- A. It is zero.
- B. It increases as we move towards its end.
- C. It decreases as we move towards its end.
- D. It is the same at all points. ✓

Q106 Magnets and properties / magnetic field

Which of the following is/are true about the magnetic field lines around a bar magnet?

- (i) The relative strength of the magnetic field is shown by the degree of closeness of the field lines.
- (ii) No two magnetic field lines can intersect each other.

- A. Neither (i) nor (ii)
- B. Only (i)
- C. Both (i) and (ii) ✓
- D. Only (ii)

Q107 Magnets and properties / magnetic field

Why is it impossible for two magnetic field lines to cross each other at a single point?

- A. Because they repel each other due to like polarity
- B. Because it would imply the compass needle could point in two directions simultaneously ✓
- C. Because the magnetic field strength would be zero at that point
- D. Because they are always parallel inside the magnet

Q108 Magnets and properties / magnetic field

Which of the following characteristics is correct about magnetic field lines?

- A. They always form closed loops. ✓
- B. They always start and end at the same pole.
- C. They are open curves.
- D. They intersect each other.

Q109 Magnets and properties / magnetic field

Which of the following rules can be used to determine the direction of magnetic field due to a current carrying circular loop?

- A. Flemming's Left Hand Rule
- B. Maxwell's Left Hand Rule
- C. Flemming's Right Hand Rule
- D. Right Hand Thumb Rule ✓

Q110 Magnets and properties / magnetic field

A long straight wire carries a current I , and the magnetic field at a distance r from the conductor is B . If the distance from a straight current-carrying wire is doubled, what will be the magnetic field at that point?

- A. Zero
- B. $B/2$ ✓
- C. $2B$
- D. B

Q111 Magnets and properties / magnetic field

A single-turn coil of radius R produces a magnetic field B at its centre. If the same wire is wound into a coil of n turns (each of radius R/n) carrying the same current I , what will be the value of the new field at the centre?

- A. nB
- B. B/n
- C. B
- D. n^2B ✓

Q112 Magnets and properties / magnetic field

The magnetic field is strongest:

- A. equidistant from the conductor
- B. outside a solenoid
- C. near the conductor ✓
- D. far from the conductor

Q113 Magnets and properties / magnetic field

The closeness of magnetic field lines indicates:

- A. Direction of magnetic field
- B. Strength of magnetic field ✓
- C. Position of the poles
- D. Length of the magnet

Q114 Magnets and properties / magnetic field

The fundamental property that qualifies magnetic field as a vector quantity is that it possesses both _____.

- A. mass and density
- B. force and time
- C. direction and magnitude ✓
- D. charge and potential difference



Q115 Magnets and properties / magnetic field

The pattern formed by iron filings around a bar magnet demonstrates _____.

- A. electrostatic force
- B. magnetic field lines
- C. gravitational field lines
- D. electric field lines

Q116 Magnets and properties / magnetic field

How are the magnetic field lines arranged inside a current-carrying solenoid?

- A. Curved and non-uniform
- B. Random
- C. Parallel and uniformly spaced
- D. Radial from the centre

Q117 Magnets and properties / magnetic field

What does the presence of parallel straight magnetic field lines inside a solenoid indicate?

- A. The magnetic field is infinite inside the solenoid
- B. The magnetic field is uniform inside the solenoid
- C. The magnetic field is non-uniform and changes at different points
- D. The magnetic field is zero inside the solenoid

Q118 Magnets and properties / magnetic field

Which statement is correct about magnetic field lines?

- A. They start from the south pole.
- B. They never intersect each other.
- C. They can intersect at the poles.
- D. They form random curves.

Q119 Magnets and properties / magnetic field

If the current in a straight conductor is doubled, the magnetic field at a given distance from it:

- A. Halves
- B. Doubles
- C. Becomes zero
- D. Remains the same

Q120 Magnets and properties / magnetic field

What does it mean when magnetic field lines are drawn closer together in a diagram?

- A. The magnetic field is stronger in that region
- B. The magnetic field is weaker in that area
- C. The direction of the magnetic field has changed
- D. There is no magnetic field present

Q121 Ohm law ($V=IR$)

If a conductor has a resistance of $10\ \Omega$ and a potential difference of 5 V is applied across it, what is the current flowing through it?

- A. 2 A
- B. 5 A
- C. 0.2 A
- D. 0.5 A

Q122 Ohm law ($V=IR$)

If 0.2 A current flows through a wire when the potential difference across it is 2 V , what is the resistance of the wire?

- A. $0.1\ \Omega$
- B. $4\ \Omega$
- C. $1\ \Omega$
- D. $10\ \Omega$

Q123 Ohm law ($V=IR$)

Ohm's Law is valid under which condition?

- A. For all materials at any temperature
- B. Only for insulator at high temperatures
- C. Only for metallic conductors at constant temperature
- D. Only for semiconductors

Q124 Ohm law ($V=IR$)

According to Ohm's law, the ratio of potential difference (V) across a conductor to the current (I) through it is constant, provided _____.

- A. temperature remains constant
- B. current is very high
- C. voltage is zero
- D. resistance changes



Q125 Ohm law ($V=IR$)

A metallic conductor obeys Ohm's law at room temperature. When the applied potential difference across it is increased from V to $2V$, and the temperature is kept constant, the current through the conductor:

- A. Doubles because resistance is constant** ✓
- B. Remains unchanged because current depends only on resistance
- C. More than doubles due to increased electron drift velocity
- D. Less than doubles due to heating effects

Q126 Ohm law ($V=IR$)

A potential difference of 6 V is applied across the two ends of a conducting wire of resistance $R\ \Omega$. What will be the value of R if the current flowing through the wire is 2 A ?

- A. $1/3$
- B. $1/12$
- C. 12
- D. 3** ✓

Q127 Ohm law ($V=IR$)

A potential difference of V volt is applied across a resistor of $R\ \Omega$, then a current of I ampere flows through it. Keeping the resistance the same, how should the value of potential difference be changed so that the current flowing through the resistance gets doubled? (Keep all the other parameters the same.)

- A. $V/4$ volts
- B. V volts
- C. $2V$ volts** ✓
- D. $V/2$ volts

Q128 Ohm law ($V=IR$)

In a metallic wire obeying Ohm's Law, if the resistance remains constant, reducing the potential difference across its terminals to one-half of its former value will result in what change in the current flowing through it?

- A. The current reduces to one-fourth of its former value.
- B. The current reduces to one-half of its former value.** ✓
- C. The current remains constant.
- D. The current doubles.

Q129 Ohm law ($V=IR$)

Which of the following correctly describes the graphical representation of Ohm's law?

- A. A hyperbolic curve
- B. An elliptical curve
- C. A straight line parallel to x -axis
- D. A straight line through the origin** ✓

Q130 Ohm law ($V=IR$)

How much current will flow through a resistor of $20\ \Omega$ when a potential difference of 40 V is applied across it?

- A. $1/2\text{ A}$
- B. 2 A** ✓
- C. $1/5\text{ A}$
- D. 5 A

Q131 Ohm law ($V=IR$)

A current I ampere flows through a metallic wire of resistance $X\ \Omega$ when a potential difference V volt is applied across its ends. Which of the following is the correct relation between X , I and V ?

- A. $X = I + V$
- B. $X = I - V$
- C. $X = I/V$
- D. $X = V/I$** ✓

Q132 Ohm law ($V=IR$)

Which of the following statements is correct about Ohm's Law?

- A. It states that resistance decreases with voltage.
- B. It is valid for semiconductors and electrolytes.
- C. It is valid only for metallic conductors at constant temperature.** ✓
- D. It is valid for all conductors at all temperatures.

Q133 Ohm law ($V=IR$)

According to Ohm's law, the potential difference across a conductor is:

- A. equal to the resistance
- B. inversely proportional to the current
- C. directly proportional to the current** ✓
- D. independent of the current



Q134 Ohm law ($V=IR$)

An electric heater draws 5 A of current when connected to a 70 V source. If the potential difference is increased to 126 V, what will be the new current drawn by the heater?

A. 3 A

B. 9 A

C. 8 A

D. 90 A

Q135 Ohm law ($V=IR$)

If a conductor has a potential difference of 1 volt across its ends and a current of 1 ampere flows through it, what is its resistance?

A. 10 ohm

B. 2 ohm

C. 1 ohm

D. 0.5 ohm

Q136 Resistance and factors affecting it

If the length of a wire is doubled and its cross-sectional area is halved, its resistance will become:

A. Twice the original

B. Half the original

C. Four times the original

D. One-fourth the original

Q137 Resistance and factors affecting it

The increase in which of the following factor(s) will increase the resistance of a conductor?

(i) Temperature of the conductor

(ii) Length of the conductor

(iii) Area of cross-section of the conductor

A. Both (i) and (ii)

B. Only (iii)

C. Only (i)

D. Both (ii) and (iii)

Q138 Resistance and factors affecting it

The resistance of a metallic conductor increases with:

A. Decrease in temperature

B. Increase in temperature

C. Increase in cross-sectional area

D. Decrease in length

Q139 Resistance and factors affecting it

Two wires of the same material have equal lengths but their cross-sectional areas are in the ratio 1 : 4. The ratio of their resistances will be:

A. 4 : 1

B. 1 : 4

C. 1 : 1

D. 1 : 2

Q140 Resistance and factors affecting it

In circuit diagrams, a zigzag line is used to represent which of the following?

A. A switch

B. A battery

C. A resistor

D. A fuse

Q141 Resistance and factors affecting it

On which of the following does resistivity of a material depend?

A. Nature of the material

B. Current passing through it

C. Shape of the conductor

D. Length and area of the conductor

Q142 Resistance and factors affecting it

A cube of side a is made of a material of resistivity ρ . What will be the resistance between two opposite faces of the cube?

A. ρa

B. $2\rho a$

C. ρ/a^2

D. ρ/a

Q143 Resistance and factors affecting it

Which of the following wires will have the least resistance if all are made of the same material?

A. Short and thin wire

B. Long and thin wire

C. Long and thick wire

D. Short and thick wire



Q144 Resistance and factors affecting it

Two wires, A and B, of the same material, have the same length, but the cross-sectional area of wire A is twice that of wire B. The ratio of their resistances $R_A : R_B$ is:

A. 1 : 1

B. 1 : 2

C. 4 : 1

D. 2 : 1

Q145 Resistance and factors affecting it

Which material is generally used for making resistance wires because it has high resistance and high melting point?

A. Copper

B. Aluminium

C. Silver

D. Nichrome

Q146 Resistance and factors affecting it

For a given material, the resistance per unit length is inversely proportional to which of the following?

A. Resistivity

B. Cross-sectional area

C. Conductivity

D. Temperature

Q147 Resistance and factors affecting it

A wire made of a certain material has a resistance of $12\ \Omega$ with length l and cross-sectional area A . What will be the resistance of another wire made of the same material but with length $l/3$ and cross-sectional area $2A$?

A. $4\ \Omega$

B. $1\ \Omega$

C. $0.5\ \Omega$

D. $2\ \Omega$

Q148 Resistance and factors affecting it

Which of the following statements about resistivity is correct?

A. It depends only on the nature and temperature of the material

B. It increases with the cross-sectional area

C. It decreases when the length increases

D. It changes with the shape of the conductor

Q149 Resistance and factors affecting it

Which of the following statements is NOT correct about resistivity?

A. It is measured in ohm-meter.

B. It changes with temperature.

C. It is a property of the material.

D. It depends on the length of the wire.

Q150 Resistance and factors affecting it

The resistance of a conductor depends on the:

A. Voltage applied across the conductor

B. Length and area of cross-section only

C. Current flowing through it

D. Length, area of cross-section, material of the conductor, and temperature

Q151 Resistance and factors affecting it

A wire of a given material has length L and cross-sectional area A , with resistance R . If the wire is stretched to twice its length while keeping the volume constant, what will be its new resistance?

A. $4R$

B. $2R$

C. $R/2$

D. ZERO

Q152 Resistance and factors affecting it

Which component is used in a circuit to increase resistance and limit current?

A. Resistor

B. Battery

C. Switch

D. Lamp

Q153 Resistance and factors affecting it

If the length of a uniform metallic conductor is doubled, and simultaneously its area of cross-section is doubled, how does the resistance of the conductor change?

A. It decreases to one-half of the original resistance.

B. It remains the same as the original resistance.

C. It becomes four times the original resistance.

D. It doubles the original resistance.



Q154 Resistance and factors affecting it

Which of the following symbols represents a rheostat?

- A. A zigzag line with an arrow which is drawn across it. ✓
- B. A zigzag line.
- C. A circle with a 'V' inside it.
- D. An 'A' inside a circle

Q155 Resistance and factors affecting it

The resistance of a wire is $1\ \Omega$. If it is cut into two equal parts, the resistance of each part will be:

- A. $0.5\ \Omega$ ✓
- B. $4\ \Omega$
- C. $1\ \Omega$
- D. $2\ \Omega$

Q156 Resistance and factors affecting it

If the length of a conductor and area is halved, keeping material same, then its resistance will _____.

- A. Be halved
- B. Become four times
- C. Remain same ✓
- D. Be doubled

Q157 Resistance and factors affecting it

The resistance of a metal wire of length 2 m is $10\ \Omega$ at 25°C . If the diameter of the wire is 0.4 mm, what will be the resistivity of the metal at that temperature? [Given, $\pi = 3.14$]

- A. $6.3 \times 10^{-5}\ \Omega\text{m}$
- B. $1.55 \times 10^{-6}\ \Omega\text{m}$
- C. $3.6 \times 10^{-6}\ \Omega\text{m}$
- D. $6.3 \times 10^{-7}\ \Omega\text{m}$ ✓

Q158 Resistance and factors affecting it

A wire of resistivity ρ , has a length L and area of cross-section A . If the resistance of the wire is R , then which of the following is the correct relation for R ?

- A. $R = L/\rho A$
- B. $R = \rho LA$
- C. $R = A\rho/L$
- D. $R = \rho L/A$ ✓

Q159 Resistance and factors affecting it

Which of the following circuit elements is used to vary the amount of current following through a closed circuit?

- A. Ammeter
- B. Voltmeter
- C. Plug key
- D. Rheostat ✓

Q160 Resistance and factors affecting it

A wire of length ' L ', area of cross-section ' A ' and resistivity ' ρ ' has a resistance ' R '. What will be the new resistance of this wire if its area of cross-section is tripled? (Keep all the other parameters the same)

- A. $R/3$ ✓
- B. R
- C. $R/9$
- D. $3R$

Q161 Series and parallel circuits

Two resistors of $15\ \Omega$ and $5\ \Omega$ are connected in series with a 12 V battery. How much current will flow in the circuit?

- A. 0.5 A
- B. 0.65 A
- C. 0.6 A ✓
- D. 0.45 A

Q162 Series and parallel circuits

The total resistance of 10 resistors of equal resistance R arranged in series arrangement is _____.

- A. $10/R$
- B. $R/10$
- C. $R10$
- D. $10R$ ✓

Q163 Series and parallel circuits

When resistors are connected in series, which quantity remains the same across all resistors?

- A. Current ✓
- B. Resistance
- C. Voltage
- D. Power



Q164 Series and parallel circuits

The equivalent resistance in a parallel combination is:

- A. greater than the largest resistance
- B. equal to the largest resistance
- C. the sum of all resistances
- D. smaller than the smallest resistance ✓

Q165 Series and parallel circuits

If resistors are connected in series, the total or equivalent resistance is _____.

- A. Reciprocal of sum of reciprocals
- B. Product of individual resistances
- C. Sum of individual resistances ✓
- D. Always less than any single resistor

Q166 Series and parallel circuits

Three resistors of 4 Ω , 8 Ω , and 12 Ω are connected in series across a 12 V battery. The current in the circuit is:

- A. 1 A
- B. 4 A
- C. 2 A
- D. 0.5 A ✓

Q167 Series and parallel circuits

A voltmeter is always connected in a circuit:

- A. in series
- B. in diagonal
- C. in parallel ✓
- D. in place of a switch

Q168 Series and parallel circuits

Three resistors of 12 Ω , 6 Ω and 4 Ω are connected in parallel. The equivalent resistance is _____.

- A. 0.05 Ω
- B. 1 Ω
- C. 22 Ω
- D. 2 Ω ✓

Q169 Series and parallel circuits

Two resistors, R_1 and R_2 , are connected in parallel. Their equivalent resistance is 5 Ω . When one of them is removed, the resistance of the circuit increases to 10 Ω . Which of the following is the correct value of the other resistor?

- A. 20 Ω
- B. 15 Ω
- C. 10 Ω ✓
- D. 5 Ω

Q170 Series and parallel circuits

A battery of 12 V is connected in series with resistors of 1 Ω , 2 Ω , 3 Ω , 4 Ω and 10 Ω , respectively. How much current would flow through the 10 Ω resistor?

- A. 1.0 A
- B. 1.2 A
- C. 0.6 A ✓
- D. 12 A

Q171 Series and parallel circuits

A wire with resistance R is cut into seven equal parts. These parts are then connected in parallel. If the equivalent resistance of this new combination is R' , what is the value of the ratio R / R' ?

- A. 1/7
- B. 49 ✓
- C. 7
- D. 1/49

Q172 Series and parallel circuits

Three resistors of 2 Ω , 3 Ω , and 6 Ω are connected in parallel. The equivalent resistance of the combination is:

- A. 6 Ω
- B. 3 Ω
- C. 1 Ω ✓
- D. 11 Ω

Q173 Series and parallel circuits

Two resistors of 2 Ω and $X \Omega$ are connected in series to a 10 V battery. If the current flowing through the resistors is 2 A, then what will be the value of X (in Ohm)?

- A. 1/2
- B. 2
- C. 1/3
- D. 3 ✓



Q174 Series and parallel circuits

If two resistors are connected in series, then which of the following statements is correct regarding the equivalent resistance of the circuit?

- A. It will increase at first and then will decrease.
- B. It will increase. ✓
- C. It will decrease.
- D. It will remain same.

Q175 Series and parallel circuits

Which statement about parallel connection of resistors is true?

- A. The total current is the sum of the currents through individual resistors. ✓
- B. Each resistor carries the same current regardless of its resistance.
- C. The total current is the same as current through any branch.
- D. The total resistance increases when more resistors are added.

Q176 Series and parallel circuits

In a parallel combination of resistors, which of the following quantities remains the same across all the resistors?

- A. The power consumed (P)
- B. The equivalent resistance (R_{eq})
- C. The electric current (I)
- D. The potential difference (V) ✓

Q177 Series and parallel circuits

Four resistors of $5\ \Omega$, $15\ \Omega$, $20\ \Omega$ and $40\ \Omega$ are connected in series. The equivalent resistance is _____.

- A. $20\ \Omega$
- B. $3\ \Omega$
- C. $0.5\ \Omega$
- D. $80\ \Omega$ ✓

Q178 Series and parallel circuits

Three resistors of $2\ \Omega$, $3\ \Omega$, and $5\ \Omega$ are connected in series. The total resistance is:

- A. $3.33\ \Omega$
- B. $1\ \Omega$
- C. $0.1\ \Omega$
- D. $10\ \Omega$ ✓

Q179 Series and parallel circuits

Which of the following statements is/are true when two different resistors R_1 and R_2 are connected in parallel to one another in a circuit?

- (i) The potential difference across each of them is same.
- (ii) The current through both of them will be the same.
- (iii) Their equivalent resistance is equal to $R_1 + R_2$.

- A. Both (i) and (iii)
- B. Only (ii)
- C. Both (ii) and (iii)
- D. Only (i) ✓

Q180 Series and parallel circuits

Which of the following is usually connected in series in a domestic circuit?

- A. Fan
- B. Main fuse ✓
- C. All appliances
- D. Electric bulb

Q181 Series and parallel circuits

A 7 V battery is connected in series with five resistors: $0.1\ \Omega$, $0.4\ \Omega$, $0.5\ \Omega$, $0.6\ \Omega$ and $12.4\ \Omega$. What is the current flowing through the $12.4\ \Omega$ resistor?

- A. 1 A
- B. 2 A
- C. 0.75 A
- D. 0.5 A ✓

Q182 Series and parallel circuits

The total resistance of 5 resistors of equal resistance R arranged in a parallel arrangement is _____.

- A. $R5$
- B. $5/R$
- C. $R/5$ ✓
- D. $5R$



Q183 Series and parallel circuits

What is a major disadvantage of connecting an electric bulb and an electric heater in series, based on their required operating current?

- A. The total equivalent resistance would be zero
- B. They need currents of widely different values to operate properly ✓
- C. The current through the heater would stop immediately
- D. The total voltage would decrease to zero

Q184 Series and parallel circuits

Which characteristic of parallel circuits makes them advantageous over series circuits for connecting multiple electrical gadgets in a house?

- A. The current is divided among the electrical gadgets, allowing them to operate independently. ✓
- B. The potential difference across each gadget is unique.
- C. The total resistance is increased, protecting appliances.
- D. If one component fails, the entire circuit is broken.

Q185 Series and parallel circuits

Which of the following combinations will consume more electrical power if connected to the same voltage source?

- A. Zero resistance
- B. Higher resistance
- C. Lower resistance ✓
- D. Equal resistance

Q189 Electric power and heating (fuse/bulb)

Which of the following is NOT a correct expression for electric power (P)?

- A. $P = I \times R^2$ ✓
- B. $P = \frac{V^2}{R}$
- C. $P = V \times I$
- D. $P = I^2 \times R$

Q186 Units (volt/ampere/ohm/coulomb/watt)

Statement 1: The potential difference is measured in volts.
Statement 2: One volt is equal to one newton per coulomb.
Which of the following is true?

- A. Only Statement 2 is correct.
- B. Only Statement 1 is correct. ✓
- C. Both Statements 1 and 2 are incorrect.
- D. Both Statements 1 and 2 are correct.

Q187 Units (volt/ampere/ohm/coulomb/watt)

One volt (1 V), the SI unit of potential difference, is defined when _____.

- A. 1 joule of energy is dissipated in 1 second
- B. 1 coulomb of charge flows in 1 second
- C. 1 joule of work is done to move a charge of 1 coulomb ✓
- D. 1 milliamperere of current flows through 1 Ohm of resistance

Q188 Units (volt/ampere/ohm/coulomb/watt)

Which of the following is the correct unit of resistivity of a material?

- A. ohm
- B. ohm-meter ✓
- C. ohm/meter
- D. meter/ohm



Q1 Atom and subatomic particles

Nucleons are subatomic particles found inside the atom. They consist of:

A. only neutrons

B. protons and neutrons ✓

C. only protons

D. electrons

Q2 Atom and subatomic particles

The approximate radii of hydrogen atom is:

A. 10–10 m ✓

B. 10–7 m

C. 10–9 m

D. 10–8 m

Q3 Atom and subatomic particles

What is an ion in chemistry?

A. An atom with only neutrons

B. A radioactive stable particle

C. A neutral molecule of atom

D. A charged atom or molecule ✓

Q4 Atom and subatomic particles

Which of the following correctly describes an ion?

A. A molecule that has gained or lost neutrons

B. An atom with more protons than neutrons

C. An atom or group of atoms with a net electric charge ✓

D. A neutral molecule formed by ionic bonding

Q5 Atom and subatomic particles

Which statement accurately describes the characteristics of protons in an atom?

A. They revolve around the nucleus in fixed orbits.

B. They are located in the nucleus of an atom. ✓

C. They have negligible mass compared to electrons.

D. They are negatively charged particles.

Q6 Atom and subatomic particles

Which subatomic particle has a negative charge but negligible mass?

A. Neutron

B. Nucleons

C. Proton

D. Electron ✓

Q7 Atom and subatomic particles

Which of the following statements accurately describes the characteristic of electrons in an atom?

A. They are positively charged.

B. They revolve around the nucleus in fixed orbits. ✓

C. They have the same mass as protons.

D. They are located in the nucleus.

Q8 Atom and subatomic particles

Which of the following statements about neutrons is correct?

A. They are found in the nucleus of an atom. ✓

B. They have a positive charge.

C. They determine the chemical properties of an atom.

D. They revolve around the nucleus in fixed orbits.

Q9 Atom and subatomic particles

What happens to an atom when it loses an electron?

A. It becomes an anion

B. It becomes a cation ✓

C. It becomes a molecule

D. It becomes neutral

Q10 Atom and subatomic particles

Where are protons found in an atom?

A. Energy Levels

B. Nucleus ✓

C. Orbitals

D. Electron Cloud



Q11 Atom and subatomic particles

Which of the following statements about a proton is correct ?

- A. A proton is negatively charged and has very small mass
- B. A proton is neutral in charge and has mass equal to an electron
- C. A proton is positively charged and mass is 1/2000 of a hydrogen atom
- D. A proton is positively charged and its mass is taken as one unit ✓

Q12 Atomic Structure & Models

The unit of formula unit mass is:

- A. kg
- B. u ✓
- C. mole
- D. g

Q13 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Rutherford's α -particle scattering experiment led to the discovery of which of the following?

- A. Electrons
- B. Protons
- C. Neutrons
- D. Nucleus ✓

Q14 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which of the following statements is true according to Thomson's Model of Atom?

- A. Electrons are spread randomly in a positively charged sphere. ✓
- B. Electrons are attached to neutrons.
- C. Electrons are concentrated in the nucleus.
- D. Electrons are fixed in the orbits.

Q15 Atomic models (Dalton/Thomson/Rutherford/Bohr)

According to Bohr's Model of atom, electrons revolve around the nucleus in _____.

- A. straight lines
- B. elliptical path
- C. random path
- D. discrete orbits ✓

Q16 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Electrons revolve around the nucleus in fixed paths called:

- A. Nucleons
- B. Quarks
- C. Elliptical paths
- D. Shells or orbitals ✓

Q17 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which of the following statements is correct about 'Bohr's model of an Atom'?

- A. While revolving in discrete orbits, the electrons radiate energy.
- B. While revolving in discrete orbits, the electrons do not exist.
- C. Only certain special orbits known as discrete orbits of electrons are allowed outside the atom.
- D. Only certain special orbits known as discrete orbits of electrons are allowed inside the atom. ✓

Q18 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which of the following best describes Thomson's model of an atom?

- A. An atom is mostly empty space with a dense nucleus.
- B. An atom has a positively charged nucleus and electrons outside.
- C. An atom is a sphere of positive charge with electrons embedded in it like seeds in a watermelon. ✓
- D. Electrons revolve around the nucleus in fixed orbits.

Q19 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which Rutherford's experiment led to the discovery of the atomic nucleus?

- A. Beta-particle scattering
- B. Alpha-particle scattering ✓
- C. Cathode Ray experiment
- D. Photoelectric effect

Q20 Atomic models (Dalton/Thomson/Rutherford/Bohr)

What is a key feature of Rutherford's atomic model?

- A. Atom has a dense positive nucleus at the center. ✓
- B. Electrons are fixed in shells around the nucleus.
- C. Atom is a uniform positive sphere throughout.
- D. Nucleus contains only electrons with negative charge.



Q21 Atomic models (Dalton/Thomson/Rutherford/Bohr)

According to Thomson's model of an atom, which of the following statements best describes the structure of the atom?

- A. The atom consists of a dense nucleus surrounded by electrons.
- B. Electrons are embedded in a positively charged sphere. ✓
- C. The atom contains only neutrons and electrons.
- D. Electrons revolve around a central nucleus in fixed orbits.

Q22 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which of the following observations could NOT be explained by Rutherford's model of the atom?

- A. The distribution of electrons around the nucleus
- B. The stability of the atom despite the presence of accelerating electrons ✓
- C. The presence of a positively charged nucleus in the atom
- D. The deflection of alpha particles at large angles

Q23 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Bohr's model is only applicable to:

- A. lithium
- B. hydrogen ✓
- C. helium
- D. beryllium

Q24 Atomic models (Dalton/Thomson/Rutherford/Bohr)

According to Bohr's model of the atom, electrons in an atom:

- A. are embedded in a positively charged sphere like plums in a pudding
- B. revolve around the nucleus in elliptical orbits and emit energy continuously
- C. revolve in fixed circular orbits and do not radiate energy while in these orbits ✓
- D. are stationary in the atom and emit energy when struck by photons

Q25 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which of the following observations from Rutherford's alpha-particle scattering experiment led to the conclusion that most of the atom's volume is empty?

- A. Most of the alpha particles passed straight through the gold foil. ✓
- B. A few alpha particles were deflected by 180° .
- C. Some alpha particles were deflected by small angles.
- D. Alpha particles were attracted towards electrons in the atom.

Q26 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Rutherford's gold foil experiment led to a major revision of the atomic model. Which of the following observations and conclusions is most accurate according to the experiment?

- A. Alpha particles are deflected because they collide with electrons and spread uniformly throughout the atom.
- B. The nucleus is positively charged and occupies most of the volume of the atom.
- C. The majority of alpha particles passed through the foil undeflected, indicating that atoms are mostly empty space. ✓
- D. Electrons are present in the nucleus and account for the atom's mass.

Q27 Atomic models (Dalton/Thomson/Rutherford/Bohr)

The discovery of which subatomic particle led to the development of Thomson's model?

- A. Electron ✓
- B. Neutron
- C. Positron
- D. Proton

Q28 Atomic models (Dalton/Thomson/Rutherford/Bohr)

In Rutherford's model of an atom, which of the following particles are double charged on helium ions?

- A. Alpha particles ✓
- B. Delta particles
- C. Beta particles
- D. Gamma particles

Q29 Atomic models (Dalton/Thomson/Rutherford/Bohr)

According to Bohr, electrons revolve:

- A. in elliptical orbits randomly
- B. in fixed circular orbits called shells ✓
- C. only when energy is absorbed
- D. inside the nucleus of an atom



Q30 Atomic models (Dalton/Thomson/Rutherford/Bohr)

Which of the following analogies did Thomson use to describe his atomic model?

A. Christmas pudding



B. Nuclear core-shell

C. Solar system

D. Planetary system

Q31 Atomic models (Dalton/Thomson/Rutherford/Bohr)

The Rutherford gold foil experiment established the presence of:

A. Protons

B. Nucleus



C. Electrons

D. Neutrons

Q32 Atomic models (Dalton/Thomson/Rutherford/Bohr)

According to Bohr's model of the atom, in which orbits can electrons revolve around the nucleus?

A. Elliptical orbits of variable energy

B. Certain fixed circular paths called discrete orbits



C. Spiral paths continuously losing energy

D. Any arbitrary circular path

Q33 Atomic number and mass number

An atom has 11 protons, 11 electrons and 12 neutrons. What is the mass number of that atom?

A. 24

B. 12

C. 11

D. 23



Q34 Atomic number and mass number

The atomic number is defined as the total number of _____ present in the nucleus of an atom.

A. only neutrons

B. neutrons and half of the protons

C. only protons



D. protons and neutrons

Q35 Atomic number and mass number

What is the mass number of a neutral atom with 11 electrons, 11 protons and 12 neutrons?

A. 12

B. 11

C. 23



D. 22

Q36 Atomic number and mass number

What does the atomic number of an element represent?

A. Number of protons in an atom



B. Number of neutrons in an atom

C. Total number of electrons and protons

D. Mass number of the atom

Q37 Atomic number and mass number

The molecular mass of HNO_3 is 63 atomic mass unit (u). What is atomic mass of oxygen (O)?

A. 8u

B. 32u

C. 48u

D. 16u



Q38 Atomic number and mass number

Which of the following elements has atomic number 11?

A. Sodium



B. Potassium

C. Nitrogen

D. Magnesium

Q39 Atomic number and mass number

The number of neutrons in an oxygen atom is:

A. 7

B. 8



C. 16

D. 32



Q40 Atomic number and mass number

Which of the following particles contribute to the mass number?

- A. Protons only
- B. Electrons only
- C. Electrons and Protons
- D. Protons and Neutrons



Q41 Atomic number and mass number

What is the correct definition of atomic mass?

- A. It is the mass of one atom in kilograms.
- B. It is the mass of an atom in grams.
- C. It is the mass relative to carbon-12 atom.
- D. It is the mass of one hydrogen molecule.



Q42 Atomic number and mass number

What is the atomic mass of magnesium oxide?

- A. 35
- B. 45
- C. 32
- D. 40



Q43 Atomic number and mass number

What is the atomic mass of oxygen?

- A. 8 u
- B. 12 u
- C. 18 u
- D. 16 u



Q44 Atomic number and mass number

Which element has mass number 27 and 14 neutrons present in it?

- A. Sodium
- B. Magnesium
- C. Aluminium
- D. Chlorine



Q45 Atomic number and mass number

How is the mass number of an atom calculated?

- A. Protons plus neutrons in nucleus of atom
- B. Total protons plus electrons in the atom
- C. Total electrons plus nucleons in the atom
- D. Atomic number multiplied by 3 as an estimate



Q46 Atomic number and mass number

Predict the elements corresponding to the following numbers of protons and neutrons.

A: 20 protons and 20 neutrons

B: 19 protons and 20 neutrons

- A. A: Magnesium, B: Potassium
- B. A: Calcium, B: Potassium
- C. A: Calcium, B: Magnesium
- D. A: Potassium, B: Calcium



Q47 Atomic number and mass number

What is the atomic number of an element that has 17 electrons and 18 neutrons?

- A. 1
- B. 18
- C. 35
- D. 17



Q48 Atomic number and mass number

Which of the following statements is INCORRECT for mass number?

- A. Isobars have same mass number.
- B. Mass number is equal to the sum of number of neutrons and number of protons.
- C. Protium and deuterium have same the mass number.
- D. The number of nucleons is same as mass number.



Q49 Atomic number and mass number

Which of the following statements correctly defines the atomic number of an element?

- A. The number of protons in the nucleus of an atom
- B. The total number of protons and neutrons in the nucleus
- C. The number of neutrons in the nucleus of an atom
- D. The number of electrons in the outermost shell of an atom



Q50 Atomic number and mass number

What is the formula unit mass of sodium chloride (NaCl)?

- A. 35.5u
- B. 58.5u ✓
- C. 57u
- D. 23u

Q51 Atomic number and mass number

What determines the atomic number of an element?

- A. Number of electrons in all shells
- B. Difference between mass and charge
- C. Number of neutrons in an isotope
- D. Total number of protons in nucleus ✓

Q52 Atomic number and mass number

The number of protons in an element with atomic number 10 is:

- A. 8
- B. 10 ✓
- C. 6
- D. 5

Q53 Atomic number and mass number

What is the mass number of an element defined as?

- A. Number of protons
- B. Sum of the number of protons and neutrons ✓
- C. Sum of the number of electrons and protons
- D. Number of neutrons

Q54 Atomic number and mass number

What is the atomic mass of magnesium?

- A. 6
- B. 1
- C. 24 ✓
- D. 14

Q55 Atomic number and mass number

Which of the following statements best explains why all atoms of an element are represented by the same symbol?

- A. Because they have identical physical properties
- B. Because they have the same number of neutrons in the nucleus
- C. Because they have the same number of protons in their nucleus ✓
- D. Because their mass numbers are always the same

Q56 Atomic number and mass number

The atomic number of an element is equal to which of the following?

- A. Number of protons ✓
- B. Number of electrons
- C. Number of neutrons + number of protons
- D. Number of neutrons

Q57 Atomic number and mass number

An atom contains 17 electrons and 18 neutrons. Find the number of protons.

- A. 35.5
- B. 36
- C. 18
- D. 17 ✓

Q58 Atomic number and mass number

Which statement best defines the term 'formula unit mass' as used in the context of ionic compounds?

- A. It is the product of the atomic masses of all elements in a compound.
- B. It is the sum of the atomic masses of all atoms present in a formula unit of an ionic compound. ✓
- C. It is the total number of atoms in a molecule of a covalent compound.
- D. It is the mass of one mole of a molecular compound.

Q59 Atomic number and mass number

Which of the following correctly represents the mass number of an element?

- A. The number of protons only
- B. The difference between protons and neutrons
- C. The number of electrons
- D. The sum of protons and neutrons ✓



Q60 Atomic number and mass number

A sodium chloride crystal contains sodium and chloride ions in a 1:1 ratio. To calculate the formula unit mass of sodium chloride, which process would you use?

- A. Multiply the atomic mass of sodium and the atomic mass of chlorine
- B. Subtract the atomic mass of chlorine from that of sodium
- C. Add the atomic mass of sodium and the atomic mass of chlorine ✓
- D. Divide the atomic mass of sodium by that of chlorine

Q61 Atomic number and mass number

The molecular mass of a compound is 63 u. If it contains one hydrogen atom and three oxygen atoms, the atomic mass of the remaining element is :

- A. 14 u ✓
- B. 32 u
- C. 16 u
- D. 12 u

Q62 Chemical Bonding (Ionic, Covalent)

Which of the following statements defines Formula Unit?

- A. Mass of one molecule
- B. Sum of atomic masses of all atoms in the formula unit of an ionic compound ✓
- C. Mass of one mole of a compound
- D. Mass of an atom

Q63 Chemical Bonding (Ionic, Covalent)

The covalent bonding behaviour of the carbon compounds corresponds to which of the following characteristics of these compounds?

- A. Low boiling point
- B. Both low melting and boiling point ✓
- C. High conductance
- D. Low melting point

Q64 Chemical Bonding (Ionic, Covalent)

What is the type of bonding that usually exists in most of the carbon compounds?

- A. Hydrogen bonding
- B. Coordinate bonding
- C. Covalent bonding ✓
- D. Ionic bonding

Q65 Chemical Bonding (Ionic, Covalent)

Which among the following is NOT a physical characteristic of ionic compounds?

- A. Insoluble in water ✓
- B. High melting point
- C. Conducts electricity in molten state
- D. High boiling point

Q66 Chemical Bonding (Ionic, Covalent)

The anion formed by which of the following non-metals reacts with Ca^{2+} ion to form a stable ionic compound?

- A. Carbon
- B. Nitrogen
- C. Boron
- D. Oxygen ✓

Q67 Chemical Bonding (Ionic, Covalent)

The nature of the bond formed in aliphatic carbon compounds is:

- A. hydrogen
- B. covalent ✓
- C. ionic
- D. coordinate

Q68 Chemical Bonding (Ionic, Covalent)

What type of bonding exists in most organic compounds?

- A. Covalent ✓
- B. Metallic
- C. Coordinate
- D. Ionic

Q69 Chemical Bonding (Ionic, Covalent)

Why does carbon form covalent bonds instead of ionic bonds?

- A. Carbon has 8 valence electrons.
- B. It has a very large atomic radius.
- C. Carbon can easily gain or lose 4 electrons.
- D. It is energetically unfavourable to lose or gain 4 electrons. ✓



Q70 Chemical Bonding (Ionic, Covalent)

What type of bond is formed when a metal reacts with a non-metal?

A. Ionic bond



B. Hydrogen bond

C. Covalent bond

D. Metallic bond

Q71 Chemical Bonding (Ionic, Covalent)

Which of the following bond is made up of a large number of organic compounds?

A. Ionic bond

B. Metallic bond

C. Covalent bond



D. Dipolar bond

Q72 Chemical Bonding (Ionic, Covalent)

Covalent bonds are formed by:

A. Loss of protons

B. Gain of neutrons

C. Sharing of electrons



D. Transfer of electrons

Q73 Chemical Bonding (Ionic, Covalent)

Which among the following covalent compounds will have the least number of shared electron pairs?

A. O₂

B. N₂

C. CH₄

D. H₂

**Q74 Chemical Bonding (Ionic, Covalent)**

Which of the following statements correctly explains why carbon forms covalent bonds in organic compounds?

A. Carbon has a high tendency to form positive ions

B. Carbon atoms have a full outer shell and do not react

C. Carbon easily donates all its valence electrons to non-metals

D. Carbon has four electrons in its outer shell and shares electrons to complete its octet

**Q75 Chemical Bonding (Ionic, Covalent)**

Which of the following is a general property of ionic compounds?

A. They exist as molecules and have weak interatomic forces

B. They are brittle and conduct electricity in molten or aqueous state



C. They are insoluble in water and conduct electricity in solid state

D. They are soft and have low melting points

Q76 Chemical Bonding (Ionic, Covalent)

Select the correct reason as to why glucose and alcohol do NOT conduct electricity?

A. They are acidic in nature.

B. They do not form ions in solution.



C. They are made of metal.

D. They evaporate quickly.

Q77 Chemical Bonding (Ionic, Covalent)

Which of the following statements is/are correct?

A) When a compound consists of a metal and a non-metal, the name or symbol of the metal is written first.

B) When a compound consists of a metal and a non-metal, the name or symbol of the non-metal is written first.

C) The valency or charges on the ion must balance.

A. Only A

B. Only C

C. A, B and C

D. Only A and C

**Q78 Chemical Bonding (Ionic, Covalent)**

Covalent bonds are formed by the:

A. loss of neutrons

B. gaining of protons

C. transfer of electrons

D. sharing of electrons



Q79 Chemical Bonding (Ionic, Covalent)

Which of the following is NOT a property of ionic compounds?

- A. They are soluble in solvents such as kerosene and petrol. ✓
- B. They can conduct electricity in an aqueous/molten state.
- C. They generally have high melting and boiling points.
- D. They are generally solid at room temperature.

Q80 Chemical Bonding (Ionic, Covalent)

Molecules of compounds are formed by:

- A. Different elements chemically bonded together ✓
- B. Mixing ions without forming any chemical bonds
- C. One type of atom only with identical properties
- D. Metals joined with metals through metallic bonds

Q81 Chemical Bonding (Ionic, Covalent)

Which of the following is a characteristic property of ionic compounds?

- A. Insoluble in water
- B. Low melting point
- C. Poor electrical conductivity in molten state
- D. Strong electrostatic forces between ions ✓

Q82 Discovery of particles (e/p/n) + scientists

Which particle did JJ Thomson discover?

- A. Proton
- B. Nucleus
- C. Electron ✓
- D. Neutron

Q83 Electronic configuration basics

The distributions of electrons in the K, L, and M shell of the chlorine atom are:

- A. 2, 6, 5
- B. 2, 7, 7
- C. 2, 7, 8
- D. 2, 8, 7 ✓

Q84 Electronic configuration basics

What is the electronic configuration of oxygen (Atomic number = 8)?

- A. 4, 4
- B. 2, 6 ✓
- C. 2, 4, 6
- D. 2, 8

Q85 Electronic configuration basics

The outermost orbit can hold maximum how many electrons?

- A. 2
- B. 8 ✓
- C. 16
- D. 5

Q86 Electronic configuration basics

According to Bohr-Bury, what is the maximum number of electrons that the M-shell can accommodate?

- A. 8
- B. 18 ✓
- C. 2
- D. 20

Q87 Electronic configuration basics

According to Bohr's model of an atom, the 'M' shell is represented by the principal quantum number 'n' equal to:

- A. 4
- B. 3 ✓
- C. 2
- D. 1

Q88 Isotopes, isobars, isotones

The fractional atomic mass of chlorine is due to which of the following?

- A. Presence of ions
- B. Presence of isotopes ✓
- C. Its compound nature
- D. Experimental error



Q89 Isotopes, isobars, isotones

Which property of isobars is always different?

A. Atomic number



B. Total number of electrons

C. Total number of nucleons

D. Mass number

Q90 Isotopes, isobars, isotones

Which of the following statements best explains why isotopes of an element have identical chemical properties but different physical properties?

A. Isotopes differ in the number of protons, leading to different behaviours in chemical reactions.

B. Isotopes have the same atomic number but differ in their number of neutrons, which affects physical properties like mass.



C. Isotopes have completely different atomic structures, affecting both their physical and chemical properties.

D. Isotopes have the same number of protons and neutrons but different numbers of electrons.

Q91 Isotopes, isobars, isotones

What is the atomic mass of Carbon-13 Isotope?

A. 12 amu

B. 13 amu



C. 14 amu

D. 11 amu

Q92 Isotopes, isobars, isotones

Why do isobars, despite having the same mass number, exhibit different chemical properties?

A. Because they have the same number of neutrons in their nuclei

B. Because they have the same number of protons

C. Because their atomic numbers and electronic configurations differ



D. Because they belong to the same group in the periodic table

Q93 Isotopes, isobars, isotones

Isobars are atoms having the same:

A. mass number, different elements



B. atomic number and mass

C. number of electrons only

D. number of neutrons only

Q94 Isotopes, isobars, isotones

Which of the following pairs of elements has the same number of neutrons?

A. B, C



B. He, Li

C. Li, Be

D. Be, B

Q95 Isotopes, isobars, isotones

Which of the following pairs represent the Isobar?

A. $^{235}_{92}\text{U}$ and $^{238}_{92}\text{U}$

B. $^{15}_8\text{O}$ and $^{16}_8\text{O}$

C. $^{40}_{19}\text{K}$ and $^{40}_{18}\text{Ar}$



D. $^{15}_7\text{N}$ and $^{16}_8\text{O}$

Q96 Isotopes, isobars, isotones

What defines two elements as isobars?

A. Same mass number but different atomic numbers



B. Same number of electrons

C. Same number of neutrons

D. Same atomic number

Q97 Isotopes, isobars, isotones

Atoms of different elements with different _____ numbers but the same _____ number are known as isobars.

A. atomic, atomic

B. mass, mass

C. mass, atomic

D. atomic, mass

**Q98 Isotopes, isobars, isotones**

Isotopes of an element have the same number of _____.

A. Protons



B. Electrons

C. Neutrons

D. Nucleus



Q99 Isotopes, isobars, isotones

Isobars are the atoms with:

- A. same melting point but different refractive index
- B. same refractive index but different melting point
- C. same atomic number but different mass number
- D. same mass number but different atomic number ✓

Q100 Isotopes, isobars, isotones

Which of the following is NOT an isotope of hydrogen atom?

- A. Protium
- B. Deuterium
- C. Helium ✓
- D. Tritium

Q101 Metals, nonmetals, metalloids position

Which of the following elements is classified exclusively as a non-metal under standard conditions?

- A. Silver
- B. Zinc
- C. Mercury
- D. Hydrogen ✓

Q102 Noble gases and their properties/uses

Which of the following correctly identifies an element that DOES NOT exist as a molecule in nature?

- A. Helium ✓
- B. Chlorine
- C. Hydrogen
- D. Iodine

Q103 Periodic trends (atomic size/electroneg.)

Atomic radius is usually measured in:

- A. millimetres
- B. nanometres ✓
- C. centimetres
- D. decimetres

Q104 Periodic trends (atomic size/electroneg.)

Which of the following statements is correct about the size of atoms?

- A. Atoms are larger than molecules.
- B. All atoms have the same size.
- C. The size of atoms is in the range of nanometres. ✓
- D. Atoms are visible under an ordinary microscope.

Q105 Periodic trends (atomic size/electroneg.)

Which of the following determine the size of an atom?

- A. Nucleus
- B. Electron Clouds ✓
- C. Neutrons
- D. Protons

Q106 Periodic trends (atomic size/electroneg.)

Which of the following factors primarily determines the size of an atom?

- A. Number of protons
- B. Number of neutrons
- C. Number of electrons ✓
- D. Mass of the nucleus

Q107 Symbols of elements (match)

Which of the following is the correct symbol for the element lead?

- A. Lb
- B. Le
- C. Ld
- D. Pb ✓

Q108 Symbols of elements (match)

What is the correct symbol for the element sodium?

- A. So
- B. Na ✓
- C. Sd
- D. S



Q109 Symbols of elements (match)

Sodium, carbon and oxygen elements are present in Washing Soda. Select the INCORRECT symbol of these elements.

A. O

B. C

C. SO

D. Na

Q110 Symbols of elements (match)

The symbol of an element represents which of the following?

A. One mole of the element

B. Atomic number and mass number

C. The full name of the element

D. One atom of the element only

Q111 Symbols of elements (match)

What is the IUPAC rule for writing element symbols?

A. Two lowercase letters always used (in case of two letters)

B. Symbols written in numeric codes

C. First letter uppercase, second lowercase (in case of two letters)

D. Both letters always in uppercase form (in case of two letters)

Q112 Symbols of elements (match)

Which of the following symbols is used for the element phosphorus as per the rules for atomic symbols?

A. P

B. Ps

C. Ph

D. Pr

Q113 Valency and radicals

Which of the following pair is a correct example, which shows number of Valency as 2?

A. Sulphate and sulphite

B. Phosphate and nitride

C. Sodium and sulphate

D. Ammonium and sulphate

Q114 Valency and radicals

Which of the following elements shows +2 valency?

A. Lithium

B. Beryllium

C. Hydrogen

D. Helium

Q115 Valency and radicals

What is the valency of oxygen in H_2O ?

A. 1

B. 3

C. 2

D. 0

Q116 Valency and radicals

Which of the polyatomic ion has 'n' value equal to 3?

A. PO_4^{3-}

B. CO_3^{2-}

C. SO_4^{2-}

D. HCO_3^-

Q117 Valency and radicals

The combining capacity of an element to each other primarily depends on which of the following?

A. Number of neutrons

B. Number of valence electrons

C. Number of energy level

D. Number of protons

Q118 Valency and radicals

Which of the following correctly represents the total number of atoms in one molecule of ammonium sulphate $((NH_4)_2SO_4)$?

A. 14

B. 15

C. 10

D. 16



Q119 Valency and radicals

Which of the following statements about ions is correct?

- A. A cation is a negatively charged species.
- B. Sodium chloride consists of neutral sodium and chloride atoms.
- C. Ions are formed only from non-metal atoms.
- D. A group of atoms carrying a net charge is called a polyatomic ion. ✓

Q120 General Science

Which of the following statements best explains the Law of Constant Proportions?

- A. Mass can neither be created nor destroyed in a chemical reaction.
- B. Atoms can be divided into smaller particles during a reaction.
- C. A chemical compound always contains the same elements in the same proportion by mass. ✓
- D. Elements are always found in random ratios in a compound.

Q121 General Science

How is molecular mass calculated?

- A. Adding all atomic masses of the atoms in molecule ✓
- B. Adding all atomic volumes of the atoms present
- C. By squaring atomic numbers of all elements
- D. Multiplying atomic radii of constituent elements

Q122 General Science

What is the molecular mass of glucose? (C = 12 u, H = 1 u, O = 16 u)

- A. 150 u
- B. 160 u
- C. 180 u ✓
- D. 120 u

Q123 General Science

Which of the following best defines an ion?

- A. An atom or group of atoms that has a positive or negative charge ✓
- B. An atom with equal number of protons and electrons
- C. A neutral particle formed by the combination of atoms
- D. A molecule with more neutrons than protons

Q124 General Science

Which of the following best explains the term 'formula unit mass'?

- A. The mass of a single atom of an element
- B. The total mass of all atoms in one formula unit of a compound ✓
- C. The mass of a single molecule of an element
- D. The mass of one mole of a substance

Q125 General Science

Which of the following statements is/are correct?

- A) The formula unit mass of CaCl_2 is 111 u.
- B) The formula unit mass is calculated in the same manner as we calculate the molecular mass.
- C) The formula unit mass is calculated in a manner that is different to how we calculate the molecular mass.

- A. Only C
- B. Only B and C
- C. Only A and B ✓
- D. Only A

Q126 General Science

Which of the following statements are correct about molecular mass?

- Statement 1: The molecular mass of a substance is the sum of the atomic masses of all the atoms in a molecule of the substance.
- Statement 2: It is also known as the relative mass of a molecule.
- Statement 3: It is expressed in atomic mass units (u).

- A. Statements 1, 2 and 3 are correct. ✓
- B. Only Statements 1 and 3 are correct.
- C. Only statements 1 and 2 are correct.
- D. Only statements 2 and 3 are correct.

Q127 General Science

The calculated formula unit mass of Na_2SO_4 is:

- A. 140 u
- B. 146 u
- C. 142 u ✓
- D. 148 u



Q128 General Science

The formula unit mass of a substance is the sum of the atomic masses of all atoms in a formula unit of a/an:

- A. atom
- B. element
- C. compound
- D. mixture

**Q129 General Science**

A molecule of ozone has:

- A. 1 oxygen atom
- B. 2 oxygen atoms
- C. 3 oxygen atoms
- D. 4 oxygen atoms

**Q130 General Science**

Which of the following is chosen as a standard reference for determining atomic masses?

- A. Nitrogen-15
- B. Carbon-13
- C. Carbon-12
- D. Nitrogen-14

**Q131 General Science**

How many atoms are there in a molecule of water?

- A. 2
- B. 1
- C. 3
- D. 4

**Q132 General Science**

The molecular mass of carbon dioxide is:

- A. 44 amu
- B. 32 amu
- C. 50 amu
- D. 28 amu

**Q133 General Science**

Which of the following statements best defines the term 'formula unit mass'?

- A. The sum of atomic masses of all atoms in a molecule
- B. The mass of one mole of a compound
- C. The mass of an individual atom of an element
- D. The sum of the atomic masses of the ions in an ionic compound as represented by its formula

**Q134 General Science**

What is the formula unit mass of ZnO (zinc oxide)?

- A. 97 u
- B. 65 u
- C. 81 u
- D. 16 u

**Q135 General Science**

In a Closed System, if 15 gm of substance A reacts with 10 gm of substance B, the total mass of the products should be

- A. 0 gm
- B. 25 gm
- C. 10 gm
- D. 15 gm

**Q136 General Science**

According to the Law of Constant Proportions, water (H_2O) will always contain hydrogen and oxygen in the mass ratio of:

- A. 1:2
- B. 1:8
- C. 8:1
- D. 2:1

**Q137 General Science**

Formula unit mass is defined as:

- A. the mass of one molecule
- B. the molecular mass of a compound
- C. the atomic mass of the lightest element
- D. the sum of atomic masses of all atoms in a formula unit of an ionic compound



Q138 General Science

What does the term 'formula unit mass' refer to?

- A. Mass of a single proton in an atom
- B. Sum of atomic masses of all atoms in the compound ✓
- C. Mass of one molecule of a covalent compound
- D. Total mass of atoms in one mole of a compound

Q139 General Science

What does the Law of Conservation of Mass state?

- A. Mass of reactants is always lost
- B. Energy can be converted into mass
- C. Mass remains unchanged in reactions ✓
- D. Mass of products is always greater

Q140 General Science

Which of the following statements about 'Law of conservation of mass' is correct?

A) Mass can be changed when the reaction takes place.
B) During the chemical reaction, atoms are rearranged.
C) Mass within a closed system remains the same over time.

- A. Only A
- B. only B and C ✓
- C. Only A and B
- D. Only B

Q141 General Science

Which statement best describes the Law of Constant Proportion of the compound water?

- A. The total mass of products is always greater than reactants in a reaction.
- B. The properties of compounds are the same as those of elements.
- C. A chemical compound always contains the same elements combined in a fixed ratio by mass. ✓
- D. Elements combine in any ratio to form compounds.

Q142 Atomic Structure & Models

$^{40}_{18}\text{Ar}$ and $^{40}_{20}\text{Ca}$ are a pair of:

- A. isoelectronic
- B. isotopes
- C. isobars ✓
- D. isotones

Q143 Atomic models (Dalton/Thomson/Rutherford/Bohr)

According to Rutherford's model of an atom, the radius of an atom in metre is about:

- A. 10^{15}
- B. 10^{10}
- C. 10^{-10} ✓
- D. 10^{-5}

Q144 Atomic number and mass number

The number of protons in $^{12}_6\text{C}$ and $^{14}_6\text{C}$, respectively, are:

- A. 8 and 6
- B. 6 and 8
- C. 6 and 6 ✓
- D. 7 and 7



Q145 Electronic configuration basics

The maximum number of electrons in a shell is given by:

A. $2n^2$



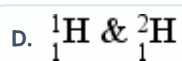
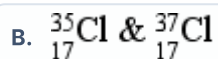
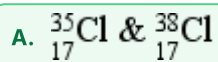
B. $2n$

C. $\frac{n^2}{2}$

D. n^2

Q146 Isotopes, isobars, isotones

Which of the following does NOT represent a pair of isotopes?



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Q1 Change of state (melting/boiling/sublim.)

What happens when a naphthalene ball is burnt in a metal plate in open space?

- A. It burns with a blue flame with black soot deposited on the metal plate.
- B. It burns with a blue flame.
- C. It burns with yellow flame with no deposit on the metal plate.
- D. It burns with a yellow flame with black soot deposited on the metal plate. ✓

Q2 Change of state (melting/boiling/sublim.)

What happens to the inter-particle space when a solid melts into a liquid?

- A. It increases ✓
- B. It becomes zero
- C. It decreases
- D. It remains the same

Q3 Change of state (melting/boiling/sublim.)

Conditions to liquefy gases would be:

- A. decreasing pressure and decreasing temperature
- B. increasing pressure and decreasing temperature ✓
- C. decreasing pressure and increasing temperature
- D. increasing pressure and increasing temperature

Q4 Change of state (melting/boiling/sublim.)

In liquids, a small fraction of particles at the surface, having higher kinetic energy, which is able to break away from the forces of attraction of other particles, will ultimately get converted into which state?

- A. Deposition
- B. Sublimation
- C. Solid
- D. Vapor ✓

Q5 Change of state (melting/boiling/sublim.)

Which of the following causes a change in the state of matter?

- A. Mixing it with another substance
- B. Dissolving the substance
- C. Changing temperature or pressure ✓
- D. Cutting the substance

Q6 Change of state (melting/boiling/sublim.)

What happens to particles on heating a solid?

- A. They stop interacting completely.
- B. They freeze and become static.
- C. They break into other elements.
- D. They vibrate with more energy. ✓

Q7 Change of state (melting/boiling/sublim.)

Which of the following changes involves both heat absorption and a change in state from solid to liquid?

- A. Melting of ice ✓
- B. Sublimation of camphor
- C. Freezing of water
- D. Condensation of steam

Q8 Change of state (melting/boiling/sublim.)

Select the correct pair of example of 'sublimation'.

- A. Sugar and naphthalene
- B. Salt and camphor
- C. Camphor and naphthalene ✓
- D. Dry ice and salt

Q9 Change of state (melting/boiling/sublim.)

What happens when a solid is heated continuously?

- A. It shrinks
- B. It evaporates directly
- C. It melts and may later evaporate ✓
- D. It expands and turns into a gas



Q10 Change of state (melting/boiling/sublim.)

How does the space between particles change from solid to gas?

- A. The space decreases as matter changes from solid to gas
- B. The space increases as matter changes from solid to gas ✓
- C. Solids and gases always have equal spacing
- D. The space remains unchanged during the change in states of matter

Q11 Change of state (melting/boiling/sublim.)

Which of the following statements is/are correct regarding 'changes of state of matter'?

- A) A change of state of matter is a physical change.
B) A change of state of matter is an irreversible change.

- A. Only A ✓
- B. Both A and B
- C. Neither A nor B
- D. Only B

Q12 Change of state (melting/boiling/sublim.)

Which process best explains how water droplets form on the outer surface of a cold glass during a hot day?

- A. Evaporation
- B. Freezing
- C. Sublimation
- D. Condensation ✓

Q13 Mixtures vs compounds vs elements

Which of the following statements best differentiates a compound from a solution?

- A. A compound can be separated by physical methods, while a solution cannot.
- B. Compounds are mixtures of two or more elements, while solutions are mixtures of compounds only.
- C. A compound has a fixed composition and definite properties, unlike a solution. ✓
- D. Compounds are always liquid, but solutions can be in any state.

Q14 Mixtures vs compounds vs elements

Which of the following is a molecule of a compound?

- A. H₂O ✓
- B. O₂
- C. H₂
- D. N₂

Q15 Mixtures vs compounds vs elements

Which of the following has a variable composition?

- A. Methane
- B. Hydrogen chloride
- C. Brass ✓
- D. Water

Q16 Mixtures vs compounds vs elements

Which of the following statements correctly distinguishes a compound from a solution?

- A. A compound has a variable composition, while a solution has a fixed composition.
- B. A compound has a fixed composition and properties distinct from its constituent elements, unlike a solution. ✓
- C. A compound can be separated into its components by physical methods, while a solution cannot.
- D. Both compound and solution are always homogeneous and chemically bonded.

Q17 Mixtures vs compounds vs elements

Which of the following statements is correct about the concept of 'molecules of compounds'?

- A. A molecule of a compound is formed by the separation of atoms of different elements.
- B. A molecule of a compound is formed by the combination of atoms of the same element.
- C. A molecule of a compound is formed by the separation of atoms of the same element.
- D. A molecule of a compound is formed by the combination of atoms of different elements. ✓

Q18 Mixtures vs compounds vs elements

Which of the following pairs is an example of 'molecule of an element itself'?

- A. Hydrogen gas and oxygen gas ✓
- B. Ammonia and sulphur dioxide
- C. Ammonia and oxygen gas
- D. Hydrogen gas and water



Q19 Mixtures vs compounds vs elements

Which of the following is NOT a molecule of a compound?

- A. NH₃
- B. HCl
- C. O₃
- D. CH₄



Q20 Mixtures vs compounds vs elements

The molecules of an element are constituted by:

- A. the different type of atoms
- B. the complex type of atoms
- C. the same type of atoms
- D. the different type of atoms



Q21 Mixtures vs compounds vs elements

Which of the following is a compound?

- A. Salt (NaCl)
- B. Lemon juice
- C. Soil
- D. Air



Q22 Mixtures vs compounds vs elements

Which of the following is true for mixtures but NOT for compounds?

- A. Components lose their individual properties.
- B. Components are present in fixed ratio.
- C. Components can be separated by physical methods.
- D. New substances are formed.



Q23 Mixtures vs compounds vs elements

Which of the following is classified as an element?

- A. Water
- B. Copper
- C. Air
- D. Salt



Q24 Mixtures vs compounds vs elements

Which statement best supports the Law of Constant Proportions?

- A. Mud from two ponds containing different minerals
- B. Soil from two areas with mixed organic content
- C. Sand from two places with varying grain size
- D. Water from two sources with identical composition



Q25 Mixtures vs compounds vs elements

Which type of molecule of an element is characterised by having only one type of atom?

- A. Diatomic
- B. Triatomic
- C. Monoatomic
- D. Polyatomic



Q26 Mixtures vs compounds vs elements

Which of the following is NOT a property associated with compounds?

- A. The composition of each new substance is always fixed.
- B. Elements react to form new compounds.
- C. The new substance has totally different properties.
- D. The constituents can be separated fairly easily by physical methods.



Q27 Mixtures vs compounds vs elements

Which of the following statements properly differentiates between a mixture and a compound?

- A. A mixture has a fixed composition, while the composition of compounds is variable.

A mixture shows different properties, while a compound has entirely same properties from its constituent elements

- C. A mixture has a variable composition, while the composition of compounds is fixed.



- D. The mixture can be separated by chemical methods, while compounds can be separated by physical method.

Q28 Mixtures vs compounds vs elements

Which of the following is an example of compound?

- A. Iron
- B. Hydrogen
- C. Mercury
- D. Sugar



Q29 Mixtures vs compounds vs elements

Which of the following is a pure substance consisting of only one type of atom?

A. Sodium



B. Milk

C. Air

D. Water

Q30 Mixtures vs compounds vs elements

Which of the following is NOT applicable to the Law of Constant Proportion?

A. Elements

B. Mixtures



C. Compounds

D. Ionic Compounds

Q31 Mixtures vs compounds vs elements

Which of the following best differentiates a mixture from a compound?

A. Mixtures can be separated by physical methods, while compounds require chemical methods.



B. Compounds are heterogeneous in nature, while mixtures are always homogeneous.

C. Mixtures always have a fixed boiling point.

D. Compounds retain the individual properties of their components.

Q32 Mixtures vs compounds vs elements

Which of the following is an element?

A. Air

B. Sodium chloride

C. Oxygen



D. Water

Q33 Mixtures vs compounds vs elements

Which of the following best defines a heterogeneous mixture?

A. A compound formed by the chemical combination of two or more elements.

B. A mixture where components are uniformly distributed and indistinguishable.

C. A mixture where components are not uniformly distributed and can be easily seen as separate.



D. A pure substance that cannot be broken down further by chemical means.

Q34 Mixtures vs compounds vs elements

Which property distinguishes a compound from a mixture?

A. Has fixed composition and properties



B. Can exist in any state

C. Is made of more than one substance

D. Is always a solid

Q35 Mixtures vs compounds vs elements

In a compound, the elements are combined:

A. physically

B. by filtration

C. chemically



D. by evaporation

Q36 Mixtures vs compounds vs elements

Which of the following statements best differentiates a mixture from a compound?

A. A mixture always contains elements in a fixed ratio.

B. A compound can be separated into its constituents by physical methods.

C. A mixture retains the individual properties of its constituents.



D. A compound shows the properties of its constituent elements.

Q37 Mixtures vs compounds vs elements

A mixture differs from a compound in that:

A. it has fixed proportions of elements

B. its components retain their properties



C. its components cannot be separated

D. it shows combined properties only

Q38 Mixtures vs compounds vs elements

Which statement from the following correctly defines the law of constant proportions?

A. The mass of a compound is always greater than the sum of its elements.

B. A compound always contains elements in a fixed ratio by mass.



C. Elements combined in random ratios to form compounds.

D. Compounds can vary their composition based on temperature.



Q39 Mixtures vs compounds vs elements

Which of the following statements is/are correct in the context of a mixture and a compound?

- A) A mixture has a variable composition while in a compound, the composition of each new substance is always fixed.
- B) A mixture shows the different properties of the constituent substance while in a compound, the new substance shows the same properties.
- C) A mixture has a non-variable composition while in a compound, the composition of each new substance is always changing.

A. Only A



B. Only B

C. Both A and B

D. Only C

Q40 Mixtures vs compounds vs elements

Consider the following statements regarding the characteristics of compounds and select the correct option.

- Statement 1: Elements react to form new compounds.
- Statement 2: Each new substance formed is of variable composition.
- Statement 3: The constituents can be separated only by chemical or electrochemical reactions.

A. Only statements 1 and 3 are correct.



B. Only statements 1 and 2 are correct.

C. Statements 1, 2 and 3 are correct.

D. Statements 1, 2 and 3 are incorrect.

Q41 Mixtures vs compounds vs elements

A compound is a substance in which elements are:

- A. Physically mixed in any ratio
- B. Easily separable
- C. Mixed temporarily

D. Chemically combined in fixed proportion

**Q42 Mixtures, Solutions, Colloids**

Which of the following correctly identifies a solution where the solute and solvent are both elements, and the solution is homogeneous?

A. Carbon dissolved in water

B. Iron filings mixed with Sulphur

C. Oxygen mixed with Nitrogen in air



D. Sugar dissolved in water

Q43 Mixtures, Solutions, Colloids

Which of the following is true about heterogeneous mixtures?

- A. The composition is the same throughout
- B. The components cannot be separated
- C. The individual substances retain their properties



D. It behaves like a compound

Q44 Mixtures, Solutions, Colloids

Which of the following is a homogeneous mixture?

A. Air



B. Oil and water

C. Soil

D. Sand and iron filings

Q45 Mixtures, Solutions, Colloids

What happens when we dissolve sugar in water?

A. The particles of sugar get into the spaces between particles of water.



B. The particles of sugar and water do not mix.

C. The particles of sugar will float on top of water.

D. A colloidal solution is formed.

Q46 Mixtures, Solutions, Colloids

Which of the following is a heterogeneous mixture?

A. Soil



B. Sugar solution

C. Air

D. Vinegar

Q47 Mixtures, Solutions, Colloids

Brass is an example of:

- A. a compound
- B. an element

C. a homogeneous mixture



D. a heterogeneous mixture



Q48 Mixtures, Solutions, Colloids

A sample of brass is melted and poured into a mold to make a musical instrument. Which of the following correctly explains why brass is classified as a homogeneous mixture?

- A. The components of brass are chemically bonded and cannot be separated
- B. Brass is made of only one type of atom and hence appears uniform
- C. The components of brass are uniformly distributed and cannot be distinguished visually ✓
- D. Brass is an example of a compound formed by the reaction of zinc and copper

Q49 Mixtures, Solutions, Colloids

Which statement accurately describes a key difference between mixtures and compounds regarding separation?

- A. Their components can be separated by physical methods. ✓
- B. They have a sharp melting and boiling point.
- C. They are always formed with an absorption of heat.
- D. The identity of the original substances is lost.

Q50 Mixtures, Solutions, Colloids

Which of the following is a compound that forms a solution when dissolved in water?

- A. Sand
- B. Sodium Chloride ✓
- C. Oil
- D. Iron filings

Q51 Mixtures, Solutions, Colloids

Which property distinguishes a homogeneous mixture from a heterogeneous mixture?

- A. Chemical reaction
- B. Uniform composition ✓
- C. High density
- D. Fixed boiling point

Q52 Physical vs chemical change (identify)

Which of the following is a chemical property?

- A. Boiling point
- B. Fluidity
- C. Burning in air ✓
- D. Melting point

Q53 Physical vs chemical change (identify)

Which of the following phenomena is NOT a physical change?

- A. Melting of ice
- B. Freezing of water
- C. Burning of candle ✓
- D. Boiling of water

Q54 Physical vs chemical change (identify)

Which of the following is formed by a chemical reaction?

- A. Air
- B. Brass
- C. Soil
- D. Water ✓

Q55 Physical vs chemical change (identify)

Which of the following is a chemical change?

- A. Melting of ice
- B. Rusting of iron ✓
- C. Cutting of paper
- D. Dissolving salt in water

Q56 Physical vs chemical change (identify)

Which of the following is an example of a physical change during the formation of a solution?

- A. Dissolution of salt in water ✓
- B. Digestion of food in the stomach
- C. Curdling of milk when lemon juice is added to it
- D. Rusting of iron in salt solution

Q57 Physical vs chemical change (identify)

Which of the following processes is a physical change?

- A. Rusting
- B. Crystallisation ✓
- C. Fermentation
- D. Combustion



Q58 Separation Techniques

Colloidal particles are separated by:

- A. recrystallisation
- B. centrifugation** ✓
- C. filtration
- D. boiling

Q59 Separation Techniques

Which of the following methods is used to separate particles from a suspension?

- A. Distillation
- B. Filtration** ✓
- C. Evaporation
- D. Crystallization

Q60 Separation Techniques

A student wants to separate a heterogeneous mixture of mud and water collected from a pond. Based on your understanding of mixtures, which method would be most effective and why?

- A. Chromatography, because it separates based on movement in a medium
- B. Evaporation, because it removes the solvent
- C. Filtration, because the solid particles in mud are not dissolved in water** ✓
- D. Distillation, because it separates based on boiling points

Q61 Solubility and concentration terms

Which of the following is NOT used for expressing the concentration of a solution?

- A. Mass by mass percentage of a solution
- B. Volume by Volume percentage of a solution
- C. Volume by Mass percentage of a solution** ✓
- D. Mass by volume percentage of a solution

Q62 Solubility and concentration terms

What happens to the concentration of a solution if more solute is added to the same amount of solvent?

- A. It becomes a suspension
- B. It remains unchanged
- C. It becomes more concentrated** ✓
- D. It becomes less concentrated

Q63 Solubility and concentration terms

Which of the following best defines the concentration of a solution?

- A. The amount of solution present in a given amount of solute
- B. The amount of solvent present in a given amount of solution
- C. The amount of solute present in a given amount of solution** ✓
- D. The amount of solvent present in a given amount of solute

Q64 Solubility and concentration terms

We express the concentration of solution in various ways. Which of the following method is INCORRECT?

- A. Mass by volume percentage of a solution
- B. Volume by mass percentage of a solution** ✓
- C. Volume by volume percentage of a solution
- D. Mass by mass percentage of a solution

Q65 Solubility and concentration terms

Salt dissolves in water because:

- A. It melts at room temperature forming a liquid
- B. It has lower density than water and floats easily
- C. Water has space between particles for ions to enter** ✓
- D. It evaporates quickly in water during mixing

Q66 Solubility and concentration terms

Estimate the concentration of the solution in terms of mass by mass percentage if 50 g of common salt is dissolved in 300 g of water.

- A. 14.28%** ✓
- B. 14%
- C. 12%
- D. 12.22%

Q67 Solubility and concentration terms

Which of the following most precisely defines the 'concentration of a solution'?

- A. The quantity of dissolved substance relative to the solvent** ✓
- B. The proportional relationship between mass and velocity
- C. The total count of gaseous particles dispersed in air
- D. The sensory characteristics such as hue and flavor



Q68 Solubility and concentration terms

The amount of solute dissolved in a particular solvent is defined in terms of:

- A. fluidity
- B. concentration ✓
- C. surface tension
- D. viscosity

Q69 Solubility and concentration terms

In a 250 mL solution, 5 g of solute is dissolved. What is the concentration (mass by volume %) of the solution?

- A. 5%
- B. 2% ✓
- C. 20%
- D. 0.2%

Q70 Solutions, suspensions, colloids

A solution is said to be stable when:

- A. the solute particles float on the surface of solution when left undisturbed
- B. the solute particles do not settle down when left undisturbed ✓
- C. the solute particles settle down when left undisturbed
- D. the solute particle forms a separate layer with solvent particles

Q71 Solutions, suspensions, colloids

Which of the following will NOT show Tyndal effect?

- A. Milk
- B. Starch
- C. Copper sulphate solution ✓
- D. Emulsion

Q72 Solutions, suspensions, colloids

Suspensions are different from solutions because:

- A. They are transparent
- B. They can be seen by naked eyes ✓
- C. Their particles do not settle on standing
- D. Their solute is fully dissolved

Q73 Solutions, suspensions, colloids

What is 'suspension' in chemistry?

- A. A heterogeneous mixture with large particles ✓
- B. A true solution
- C. A colloidal dispersion
- D. A homogeneous mixture

Q74 Solutions, suspensions, colloids

What happens when you dissolve sugar in water?

- A. Sugar reacts with water
- B. Particles of sugar settle at the bottom
- C. Sugar particles occupy spaces between water particles ✓
- D. Water evaporates

Q75 Solutions, suspensions, colloids

Which of the following is true for suspension?

- a. Suspension is a heterogeneous mixture.
- b. The particles of a suspension scatter a beam of light passing through it.
- c. The particles of a suspension can be seen by the naked eye.

- A. Only a
- B. Only a and b
- C. a, b and c ✓
- D. Only a and c

Q76 Solutions, suspensions, colloids

Which of the following is a property of suspension?

- A. Particles do not settle
- B. Particles cannot be seen by naked eyes.
- C. Solute particles cannot be separated by the process of filtration
- D. Suspension is a heterogeneous mixture ✓



Q77 Solutions, suspensions, colloids

Select the correct option with respect to the following statements.

Statement-1: Suspension is a homogeneous mixture.

Statement-2: The particles of a suspension can be seen by the naked eye.

Statement-3: The solute particles settle down when a suspension is left undisturbed, that is, a suspension is unstable.

- A. Statement 1, 2 and 3 are incorrect
- B. Statement 1 and 2 are correct
- C. Statement 2 and 3 are correct ✓
- D. Statement 1, 2 and 3 are correct

Q78 Solutions, suspensions, colloids

Which of the following is NOT an example of a heterogeneous mixture?

- A. Vinegar ✓
- B. Sand and salt
- C. Sand and sugar
- D. Water in oil

Q79 Solutions, suspensions, colloids

What happens to the particles in a suspension when the mixture is left undisturbed?

- A. The mixture is stable and does not require stirring.
- B. The mixture is clear and transparent.
- C. The particles settle down when left undisturbed. ✓
- D. The particles are dissolved in the solvent.

Q80 Solutions, suspensions, colloids

Which of the following is a colloidal solution?

- A. Sugar Solution
- B. Salt Water
- C. Milk ✓
- D. Sand in Water

Q81 Solutions, suspensions, colloids

Select the correct statement about the properties of colloid.

- A. The components of a colloid solution are not dispersed phase.
- B. Dispersing medium is the component in which its phase is suspended. ✓
- C. A colloid is a homogeneous mixture.
- D. They can be separated from the mixture by the process of filtration.

Q82 Solutions, suspensions, colloids

Alloys, air, lemonade, and soda water are examples of which of the following categories of solutions?

- A. Heterogeneous mixture
- B. Colloids
- C. Homogeneous mixture ✓
- D. Suspension

Q83 Solutions, suspensions, colloids

Which of the following is NOT an example of a colloidal solution?

- A. Mist
- B. Milk
- C. Air ✓
- D. Smoke

Q84 Solutions, suspensions, colloids

Which of the following is a characteristic of a colloidal solution?

- A. Particles are invisible under a microscope
- B. Particles scatter a beam of light ✓
- C. Particles settle down on standing
- D. Particles can be separated by filtration

Q85 Solutions, suspensions, colloids

Which property most definitively distinguishes a suspension from a colloid?

- A. Settling of particulates under gravitational force ✓
- B. Homogeneity of the mixture
- C. Formation of covalent solute-solvent bonds
- D. Absence of light scattering under illumination



Q86 Solutions, suspensions, colloids

Which of the following properties of 'suspension' is INCORRECT?

- A. Suspension is a heterogeneous mixture.
- B. Particles of suspension are visible to the naked eye.
- C. Particles of suspension can be separated from the mixtures by the process of filtration.
- D. Particles of suspension do not scatter a beam of light. ✓

Q87 Solutions, suspensions, colloids

Which of the following mixtures is a suspension?

- A. Salt water
- B. Milk
- C. Vinegar
- D. Muddy water ✓

Q88 Solutions, suspensions, colloids

In a laboratory, a student mixes starch in water and observes that the mixture is neither a true solution nor a suspension. What property of this mixture confirms it is a colloidal solution?

- A. The mixture is completely transparent and does not scatter light.
- B. The particles scatter a beam of light but do not settle on standing. ✓
- C. The particles settle down after some time.
- D. The particles are visible to the naked eye.

Q89 Solutions, suspensions, colloids

The Tyndall effect is observed when:

- A. light reflects from a mirror surface
- B. light is absorbed by particles in a solution
- C. light passes through a vacuum
- D. light is scattered by very fine particles suspended in a medium ✓

Q90 Solutions, suspensions, colloids

A characteristic of a colloidal solution is that:

- A. it is a homogeneous mixture
- B. it is an azeotrope
- C. it is a heterogeneous mixture ✓
- D. it is an ideal solution

Q91 Solutions, suspensions, colloids

Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Soap solution appears cloudy.

Reason (R): The soap micelles are large enough to scatter light.

- A. Both A and R are true, and R is the correct explanation of A. ✓
- B. A is false, but R is true.
- C. A is true, but R is false.
- D. Both A and R are true, and R is not the correct explanation of A.

Q92 Solutions, suspensions, colloids

What is a colloidal solution?

- A. Transparent mixture with gases only
- B. Uniform mixture with large particles
- C. Heterogeneous mixture with fine particles ✓
- D. Mixture in which particles fully dissolve and settle

Q93 States of Matter

Liquids have:

- A. a definite shape and no fixed volume
- B. no definite shape and no fixed volume
- C. no definite shape but have a fixed volume ✓
- D. a definite shape and a fixed volume

Q94 States of Matter

When sugar is dissolved in water, the particles of sugar:

- A. break into smaller pieces only
- B. disappear permanently
- C. get into the spaces between water particles ✓
- D. occupy more space

Q95 States of Matter

Which of the following increases the rate of evaporation?

- A. High humidity and absence of wind movement
- B. Dense atmosphere and generally cool weather
- C. Low surface area and cold air temperature
- D. High temperature and increased wind speed ✓



Q96 States of Matter

Which of the following factors increases the rate of evaporation?

A. Increase in surface area



B. Increase in humidity

C. Decrease in wind speed

D. Decrease in temperature

Q97 States of matter and their properties

Which of the following is a characteristic of gases?

A. No fixed shape but fixed volume

B. No fixed shape and no fixed volume



C. Fixed shape and volume

D. Compressible but not fluid

Q98 States of matter and their properties

Which of the following will show diffusion fastest?

A. Solid in liquid

B. Liquid in gas

C. Solid in solid

D. Gas in gas

**Q99 States of matter and their properties**

Which of the following observations best supports that liquids have a definite volume but no fixed shape?

A. Air expands to fill the entire container

B. A solid iron block retains its shape in any container

C. Water takes the shape of its container but retains its volume



D. A sponge changes its shape when squeezed

Q100 States of matter and their properties

The state of a substance whether it will be solid, liquid or gas is determined by:

- a. Temperature
- b. Pressure
- c. Volume

A. b and c only

B. a and b only



C. a, b and c

D. a and c only

Q101 States of matter and their properties

Which of the following activities demonstrates the presence of spaces between particles of matter?

A. Freezing a liquid

B. Dissolving sugar in water



C. Compressing a gas

D. Heating a solid

Q102 States of matter and their properties

Which of the following correctly explains why gases can be compressed easily compared to solids and liquids?

A. Gases have high mass and density

B. Gases do not occupy space

C. Gases have low kinetic energy

D. Gases have loosely packed particles with large intermolecular spaces

**Q103 States of matter and their properties**

In which of the following states of matter do particles possess the highest speed of rapid random motion?

A. Solid only

B. Liquid only

C. Gas



D. Liquid and solid both

Q104 States of matter and their properties

Which of the following statements is correct about the 'Attraction of particles of matter'?

A. The force of attraction is same for different particles.

B. The force of attraction is more in liquids as compared to solids.

C. The force of attraction is different for different particles.



D. The force of attraction is less in liquids as compared to gases.

Q105 States of matter and their properties

Which of the following experimental observations provides the strongest evidence for the existence of particles in matter?

A. Ice melts into water when heated

B. A drop of ink spreads evenly in water without stirring



C. Salt dissolves faster in warm water than in cold water

D. Water boils and produces steam



Q106 States of matter and their properties

Select the correct example of a crystalline solid.

- A. Only sand
- B. Only salt
- C. All salt, sugar and sand
- D. Both sugar and salt

**Q107 States of matter and their properties**

Which of the following statements correctly explains the continuous movement of particles of matter?

- A. Particles of matter are too heavy to move.
- B. Particles of matter are continuously moving due to their kinetic energy.
- C. Particles of matter move only in gases and not in solids or liquids.
- D. Particles of matter are stationary unless force is applied.

**Q108 States of matter and their properties**

When particles of two different types of matter randomly mix due to the inherent random movement of particles, the process is called:

- A. effusion
- B. intermixing
- C. homogenisation
- D. diffusion

**Q109 States of matter and their properties**

Which of the following shows the strongest force of attraction between particles?

- A. Water
- B. Iron rod
- C. Alcohol
- D. Oxygen gas

**Q110 States of matter and their properties**

Which of the following is true for solids?

- a. Definite shape
- b. Rigidity fixed
- c. Volume

- A. a, b and c
- B. b and c only
- C. a and c only
- D. a and b only

**Q111 States of matter and their properties**

The smell of hot food reaches a distance because:

- A. temperature increases food weight
- B. sound waves carry the food smell
- C. particles are continuously moving
- D. light energy spreads aroma particles

**Q112 States of matter and their properties**

Select the correct statement from the following.

- A) The large spaces between gas particles allow them to be easily squeezed into smaller volumes.
- B) Gas particles have a high average kinetic energy.

- A. Neither A nor B
- B. Both A and B
- C. Only A
- D. Only B

**Q113 States of matter and their properties**

The ability of gases to be compressed easily is due to:

- A. strong forces between particles
- B. lack of particles
- C. high mass of particles
- D. large spaces between particles

**Q114 States of matter and their properties**

The phenomenon of spreading out and mixing of a substance with another substance due to the motion of its particles is called which of the following?

- A. Diffusion
- B. Evaporation
- C. Sublimation
- D. Condensation

**Q115 States of matter and their properties**

Which of the following statement is correct regarding 'property of Gaseous state'?

- A. In gaseous state, intermolecular distance is very large and intermolecular attraction is very low.
- B. In gaseous state, intermolecular distance is very low and intermolecular attraction is very large.
- C. In gaseous state, intermolecular distance and intermolecular attraction are very low.
- D. In gaseous state, intermolecular attraction and intermolecular distance are very large



Q116 States of matter and their properties

Liquids are less compressible because:

- ☒ A. particles have moderate gaps
- ☐ B. their density is always less than solids
- ☐ C. they contain dissolved gases
- ☐ D. they have fixed mass always

Q117 States of matter and their properties

Which activity shows that particles of matter are continuously moving?

- ☐ A. Sugar settling at the bottom of a glass of water
- ☐ B. Ice melting at room temperature
- ☒ C. Fragrance of perfumes spreading in a room
- ☐ D. Water being heated to its boiling point

Q118 States of matter and their properties

Which of the following best demonstrates that there is a space between particles of matter?

- ☐ A. A rubber band stretches
- ☐ B. A piece of chalk breaks easily
- ☐ C. Ice melts into water
- ☒ D. Sugar dissolves in water

Q119 States of matter and their properties

Select the correct statement with respect to 'particles of matter'.

- ☒ A. Particles of matter move continuously.
- ☐ B. In solids, particles have more space between them.
- ☐ C. Particles of matter are stationary.
- ☐ D. In liquid, particles have no space between them.

Q120 States of matter and their properties

Which of the following activities best demonstrates that there is a force of attraction between particles of matter?

- ☒ A. Breaking a chalk stick
- ☐ B. Compressing a sponge
- ☐ C. Heating ice to form water
- ☐ D. Dissolving sugar in water

Q121 States of matter and their properties

Select the option regarding the matter which has sufficient spaces between them or are not tightly packed.

Salt, Iron, Sugar

- ☒ A. Both sugar and salt
- ☐ B. Only iron
- ☐ C. Only sugar
- ☐ D. Both iron and salt

Q122 States of matter and their properties

Which of the following is a correct property of solids?

- ☐ A. Solids have no fixed shape.
- ☐ B. Solids are highly compressible.
- ☐ C. Solids diffuse easily.
- ☒ D. Solids have strong intermolecular forces.

Q123 States of matter and their properties

Which of the following occurs due to continuous movement of gas particles?

- ☐ A. Condensation
- ☐ B. Melting
- ☐ C. Evaporation
- ☒ D. Diffusion

Q124 States of matter and their properties

Which of the following statements best describes the properties of a liquid?

- ☐ A. Fixed shape, fixed volume
- ☐ B. No fixed shape, no fixed volume
- ☐ C. Fixed shape, no fixed volume
- ☒ D. No fixed shape, fixed volume

Q125 States of matter and their properties

Diffusion of particles is faster in:

- ☐ A. cold liquids with large molecules
- ☒ B. gases at high temperatures
- ☐ C. solids with strong attractions
- ☐ D. water with low kinetic energy



Q126 States of matter and their properties

Which of the following correctly represents the strength of attraction between particles in the three states of matter?

- A. Solid < Liquid < Gas
- B. Solid > Gas > Liquid
- C. Gas < Liquid < Solid
- D. Gas > Liquid > Solid

Q127 States of matter and their properties

Which term describes the closeness of particles in solids?

- A. Inter-particle space
- B. Compressibility
- C. Density
- D. Rigidity

Q128 States of matter and their properties

Due to the continuous random movement of the gas particles, the particles collide with the walls of the container. The pressure exerted by the gas is equal to the:

- A. force exerted by the gas particles per unit volume of the container
- B. force exerted by the gas particles per unit area of the bottom of the container
- C. force exerted by the gas particles per unit area on the walls of the container
- D. force exerted by the gas particles on the walls of the container

Q129 States of matter and their properties

The forces of attraction between particles are _____ in solids, _____ in liquids, and _____ in gases.

- A. maximum, minimum, minimum
- B. maximum, intermediate, maximum
- C. maximum, minimum, intermediate
- D. maximum, intermediate, minimum

Q130 States of matter and their properties

Which of the following is a property of liquids?

- A. Fixed shape but no fixed volume
- B. No fixed shape and no fixed volume
- C. No fixed shape but fixed volume
- D. Fixed shape and fixed volume

Q131 States of matter and their properties

Which feature is common to all solids?

- A. Definite volume and shape under normal conditions
- B. Ability to flow like liquids in open containers
- C. Easily compressible structure when pressure applied
- D. Infinite expansion capability with added energy

Q132 States of matter and their properties

Which of the following is a characteristic of liquids?

- A. Fixed shape and volume
- B. Fixed shape but variable volume
- C. No fixed shape or volume
- D. No fixed shape but fixed volume

Q133 States of matter and their properties

Which property best explains why solids have a definite shape and volume?

- A. The particles are randomly arranged.
- B. The particles have large spaces between them.
- C. The particles can move freely past each other.
- D. The particles are closely packed in a fixed arrangement.

Q134 States of matter and their properties

When a drop of ink is added to water and left undisturbed, the ink gradually spreads throughout the water. Which property of matter does this observation best demonstrate?

- A. Fixed positions of particles
- B. Continuous movement of particles
- C. Spaces between particles
- D. Attraction between particles

Q135 States of matter and their properties

In which state of matter is the space between particles maximum ?

- A. Liquid
- B. Solid
- C. Gas
- D. All have equal space



Q136 General Science

Which of the following is a characteristic property of a material?

A. Voltage

B. Current

C. Resistivity



D. Resistance



Q1 Balancing Chemical Equations

Consider the unbalanced reaction:



Which of the following is the correct set of coefficients to balance this equation?

A. 1, 5, 3, 4

B. 2, 5, 4, 6

C. 1, 3, 2, 3

D. 2, 7, 4, 6

**Q2 Balancing Chemical Equations**

Which equation correctly represents the reaction of aluminum with hydrochloric acid?

A. $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$

B. $\text{Al} + \text{HCl} \rightarrow \text{AlCl} + \text{H}_2$

C. $2\text{Al} + 3\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$

D. $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$

**Q3 Balancing Chemical Equations**

The Law of conservation of mass states that:

A. mass can neither be created nor destroyed in a chemical reaction



B. volume can neither be created nor destroyed in a chemical reaction

C. pressure can neither be created nor destroyed in a chemical reaction

D. temperature can neither be created nor destroyed in a chemical reaction

Q4 Balancing Chemical Equations

In a balanced chemical equation, the total number of atoms of each element is:

A. Equal on both sides



B. Always changing

C. More on the product side

D. More on the reactant side

Q5 Balancing Chemical Equations

How many grams of sodium carbonate are produced when 112 g of sodium hydroxide reacts with 44 g of carbon dioxide, resulting in 18 g of water?

A. 138 g



B. 141 g

C. 143 g

D. 132 g

Q6 Balancing Chemical Equations

Balance the following reaction:



A. $x = 2, y = 4$

B. $x = 4, y = 2$



C. $x = 3, y = 2$

D. $x = 4, y = 4$

Q7 Balancing Chemical Equations

Select the option that balances the following reaction.



A. $x=1, y=1, z=2$

B. $x=2, y=2, z=1$

C. $x=1, y=1, z=1$

D. $x=2, y=1, z=1$

**Q8 Balancing Chemical Equations**

Which of the following chemical equations is correctly balanced?

A. $2\text{Fe} + 3\text{H}_2\text{O} \rightarrow 2\text{Fe}_3\text{O}_4 + 3\text{H}_2$

B. $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 2\text{H}_2$

C. $\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$

D. $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$



Q9 Balancing Chemical Equations

Which reaction best supports the Law of Conservation of Mass?

- A. Burning of paper in open air
- B. Heating iron in open air
- C. Evaporation of alcohol in open air
- D. Mixing of vinegar and baking soda in a sealed container ✓

Q10 Combustion and its types

Which of the following carbon compounds burns with a blue, non-sooty flame under normal conditions?

- A. Ethanol ✓
- B. Diesel
- C. Kerosene
- D. Charcoal

Q11 Combustion and its types

When a hydrocarbon is burnt in excess of air, the final product is always:

- A. carbon monoxide and hydrogen
- B. carbon dioxide and hydrogen
- C. carbon monoxide and water
- D. carbon dioxide and water ✓

Q12 Combustion and its types

Which of the following products is formed on complete combustion of hydrocarbons?

- A. Methane and hydrogen
- B. Methane and oxygen
- C. CO₂ and water ✓
- D. CO and water

Q13 Combustion and its types

Which of the following substances burn without a flame?

- A. LPG
- B. Wax
- C. Charcoal ✓
- D. Petrol

Q14 Combustion and its types

A yellow luminous flame is usually an indication of which of the following?

- A. Formation of carbon dioxide
- B. Incomplete combustion with unburnt carbon particles ✓
- C. Complete combustion
- D. Combustion of metals

Q15 Combustion and its types

What are the main products formed when ethanol burns completely in air?

- A. Carbon dioxide and water ✓
- B. Oxygen and methane
- C. Ethane and water
- D. Carbon monoxide and hydrogen

Q16 Combustion and its types

Which of the following is produced when a carbon compound undergoes complete combustion?

- A. Carbon monoxide and water
- B. Carbon dioxide and water ✓
- C. Carbon and oxygen
- D. Carbon dioxide and hydrogen

Q17 Combustion and its types

What are the primary products formed during the complete combustion of most carbon compounds?

- A. Carbon monoxide and water
- B. Carbon dioxide, water, and energy ✓
- C. Alcohols and carboxylic acids
- D. Soot and carbon dioxide

Q18 Combustion and its types

What does a blue, non-luminous flame indicate when a hydrocarbon is burnt?

- A. Lack of oxygen
- B. Incomplete combustion and soot formation
- C. Complete combustion with high temperature ✓
- D. Presence of unburnt carbon



Q19 Exothermic vs endothermic

Read the following statements carefully and select the correct option.

Assertion (A): Decomposition reactions require energy in the form of heat, light, or electricity.

Reason (R): Energy is absorbed to break down reactant molecules into simpler products.

A. Both A and R are true, and R is the correct explanation of A. ✓

B. A is false, but R is true.

C. A is true, but R is false.

D. Both A and R are true, and R is not the correct explanation of A.

Q20 Exothermic vs endothermic

If a student adds water to a concentrated acid quickly, what is likely to happen?

A. Nothing will happen.

B. The acid will solidify.

C. The solution will become cold.

D. The solution may splash and cause burns. ✓

Q21 Exothermic vs endothermic

Which energy change is generally associated with decomposition reactions?

A. Exothermic energy change

B. No energy change

C. Reversible energy change

D. Endothermic energy change ✓

Q22 Exothermic vs endothermic

The reaction between CaO and H₂O is highly exothermic and produces Ca(OH)₂. This is an example of:

A. Double displacement reaction

B. Combination reaction ✓

C. Displacement reaction

D. Rearrangement reaction

Q23 Exothermic vs endothermic

Which of the following best explains why combination reactions are often exothermic?

A. They involve formation of bonds, which absorb energy.

B. They involve the breaking of bonds only.

C. They require light to proceed.

D. They release energy due to stable product formation. ✓

Q24 Ionic and covalent bond (distinguish)

Which type of compound is formed when sodium reacts with chlorine?

A. Metallic compound

B. Covalent compound

C. Coordinate compound

D. Ionic compound ✓

Q25 Ionic and covalent bond (distinguish)

What type of chemical bond is typically formed when a metal reacts with a non-metal?

A. Hydrogen bond

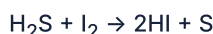
B. Metallic bond

C. Ionic bond ✓

D. Covalent bond

Q26 Oxidation & Reduction (Redox)

Observe the following chemical reaction:



Which of the following statements correctly describes this redox reaction?

Statements:

I: Hydrogen sulphide undergoes oxidation to form sulphur.

II: Iodine is reduced, producing hydrogen iodide.

A. Both Statement I and II are correct ✓

B. Only Statement I is correct

C. Both Statement I and II are incorrect

D. Only Statement II is correct



Q27 Oxidation & Reduction (Redox)

Oxidation is defined as:

- A. gain of electrons
- B. loss of electrons** ✓
- C. gain of neutrons
- D. loss of protons

Q28 Oxidation & Reduction (Redox)

Which of the following statements about oxidation and reduction are correct?

- I. A substance is said to be oxidised if it gains oxygen or loses hydrogen.
- II. A substance is reduced if it loses oxygen or gains hydrogen.
- III. In every redox reaction, both oxidation and reduction occur simultaneously.

- A. I and III only
- B. I and II only
- C. I, II, and III** ✓
- D. II and III only

Q29 Oxidation & Reduction (Redox)

Which of the following does NOT involve oxidation reaction?

- A. Rusting of iron
- B. Burning of wood
- C. Dissolution of salt in water** ✓
- D. Electrolysis of water

Q30 Oxidation & Reduction (Redox)

During the Chlor-Alkali process, which of the following products is NOT obtained directly from the electrolysis of brine?

- A. Sodium hydroxide solution
- B. Sodium metal deposited at the cathode** ✓
- C. Hydrogen gas at the cathode
- D. Chlorine gas at the anode

Q31 Oxidation & Reduction (Redox)

The bad taste or smell from the leftover food is caused due to:

- A. the oxidation of sugar
- B. the oxidation of proteins
- C. the oxidation of fats and oil** ✓
- D. the oxidation of carbohydrates

Q32 Oxidation & Reduction (Redox)

Read the following statements carefully and select the correct option.

Assertion (A): In the reaction of copper with oxygen, oxygen acts as the reducing agent.

Reason (R): Oxygen adds to copper forming copper oxide.

- A. A is true, but R is false.
- B. Both A and R are true, and R is not the correct explanation of A.
- C. A is false, but R is true.** ✓
- D. Both A and R are true, and R is the correct explanation of A.

Q33 Oxidation & Reduction (Redox)

When fats and oils are oxidised, they develop a smell and taste that is:

- A. spicy
- B. pleasant
- C. rancid** ✓
- D. fruity

Q34 Oxidation & Reduction (Redox)

Select the correct option regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): If a substance loses oxygen during a reaction, it is said to be reduced.

Reason (R): Reduction is defined as the gain of hydrogen or loss of oxygen.

- A. Both A and R are true, and R is the correct explanation of A.** ✓
- B. Both A and R are true, and R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

Q35 Oxidation & Reduction (Redox)

What happens during the oxidation of ethanol?

- A. It forms an ester.
- B. It is converted into methane.
- C. It is converted into ethanoic acid.** ✓
- D. It is converted into ethene.



Q36 Oxidation & Reduction (Redox)

In the reaction $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$, which substance is oxidised and which substance is reduced?

- A. MnO_2 is reduced, HCl is oxidised** ✓
- B. MnO_2 is reduced, MnCl_2 is oxidised
- C. MnO_2 is oxidised, HCl is reduced
- D. MnCl_2 is oxidised, Cl_2 is reduced

Q37 Oxidation & Reduction (Redox)

During the electrolysis of brine, which of the following correctly matches the products formed at each electrode and in the solution?

- A. Anode – NaOH , Cathode – Cl_2 , Solution – H_2
- B. Anode – Cl_2 , Cathode – H_2 , Solution – NaOH** ✓
- C. Anode – Cl_2 , Cathode – NaOH , Solution – H_2
- D. Anode – H_2 , Cathode – Cl_2 , Solution – NaOH

Q38 Oxidation & Reduction (Redox)

In a redox displacement reaction, if element X loses electrons and element Y gains electrons, then:

- A. Both are reduced
- B. X is oxidised and Y is reduced** ✓
- C. Both are oxidised
- D. X is reduced and Y is oxidised

Q39 Oxidation & Reduction (Redox)

What is a reduction reaction?

- A. Loss of electrons
- B. Gain of electrons** ✓
- C. Loss of neutrons
- D. Gain of protons

Q40 Oxidation & Reduction (Redox)

What happens to a substance when it is reduced in a reaction?

- A. It gains electrons** ✓
- B. It becomes more reactive
- C. It loses electrons
- D. It loses protons

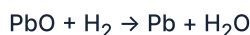
Q41 Oxidation & Reduction (Redox)

Which of the following reactions is an example of a reduction reaction?

- A. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- B. $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
- C. $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$** ✓
- D. $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$

Q42 Oxidation & Reduction (Redox)

In the given reaction, which of the following reactants has undergone oxidation?



- A. H_2O
- B. PbO
- C. Pb
- D. H_2** ✓

Q43 Oxidation & Reduction (Redox)

In the reaction $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$, which substance is oxidised?

- A. Copper
- B. Copper oxide
- C. Water
- D. Hydrogen** ✓

Q44 Oxidation & Reduction (Redox)

A substance is said to be reduced when:

- A. it loses oxygen or gains hydrogen** ✓
- B. it loses oxygen only
- C. it loses hydrogen or gains oxygen
- D. it gains hydrogen only

Q45 Oxidation & Reduction (Redox)

What is the typical oxide used along with aluminium in a thermite reaction?

- A. Copper oxide
- B. Iron (III) oxide** ✓
- C. Zinc oxide
- D. Magnesium oxide



Q46 Oxidation & Reduction (Redox)

Why does the blue colour of copper sulphate solution fade when an iron nail is dipped in it?

A. Copper sulphate is converted into iron sulphate ✓

B. Copper sulphate decomposes

C. Iron sulphate is colourless

D. Copper dissolves in water

Q47 Rusting/corrosion and prevention

Corrosion of metals is a process in which:

A. metals gain weight due to reaction with acids

B. metals change their colour permanently

C. metals are converted to their oxide, sulphide or carbonate by reaction with environmental agents ✓

D. metals melt at low temperature

Q48 Rusting/corrosion and prevention

Which of the following methods involves coating steel and iron with a layer of zinc to prevent rusting?

A. Passivation

B. Galvanisation ✓

C. Electroplating

D. Cathodic protection

Q49 Rusting/corrosion and prevention

Which of the following methods is commonly used to prevent the corrosion of iron?

A. Heating the metal repeatedly

B. Cooling the metal with water regularly

C. Dissolving the metal in acid

D. Coating the metal with paint or oil ✓

Q50 Rusting/corrosion and prevention

Which of the following methods is NOT effective to prevent the corrosion of metals?

A. Applying sacrificial anodes

B. Galvanisation

C. Exposure to moisture ✓

D. Painting

Q51 Rusting/corrosion and prevention

Which of the following factors is NOT responsible for corrosion?

A. Alloying ✓

B. Water

C. Air

D. Acid

Q52 Rusting/corrosion and prevention

What is corrosion most commonly observed as?

A. Rust formation on iron objects ✓

B. Melting of metal when heated

C. Boiling of water in a kettle

D. Glowing of a bulb

Q53 Rusting/corrosion and prevention

Which of the following conditions will most effectively accelerate the corrosion of iron?

A. Iron immersed in pure water, free of dissolved oxygen

B. Iron surface in dry air with no impurities

C. Iron coated with a thin layer of zinc (galvanization)

D. Iron surface exposed to moist air containing dissolved salts ✓

Q54 Rusting/corrosion and prevention

Which of the following metals forms a protective oxide layer on its surface when exposed to air, preventing further corrosion?

A. Aluminium ✓

B. Magnesium

C. Calcium

D. Sodium



Q55 Rusting/corrosion and prevention

Select the correct option regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Iron gets coated with a reddish-brown substance when exposed to moist air.

Reason (R): Rust forms due to the reaction of iron with moisture and oxygen.

- A. A is false, but R is true.
- B. Both A and R are true, and R is not the correct explanation of A.
- C. A is true, but R is false.
- D. Both A and R are true, and R is the correct explanation of A. ✓

Q56 Rusting/corrosion and prevention

What is the purpose of anodising aluminium metals?

- A. To increase its electrical conductivity
- B. To reduce its melting point
- C. To make it more reactive with air
- D. To form a protective oxide layer ✓

Q57 Rusting/corrosion and prevention

Which of the following represents corrosion?

- A. Burning of LPG
- B. Dissolving sugar in water
- C. Boiling of water
- D. Rusting of iron ✓

Q58 Rusting/corrosion and prevention

What colour does copper turn when it undergoes corrosion over time?

- A. Red
- B. Grey
- C. Green ✓
- D. White

Q59 Rusting/corrosion and prevention

Which of the following conditions is essential for rusting of iron?

- A. Only water
- B. Dry air only
- C. Both air and water ✓
- D. Only air

Q60 Rusting/corrosion and prevention

Galvanisation is a method of protecting steel and iron from rusting by coating them with a thin layer of:

- A. copper
- B. zinc ✓
- C. magnesium
- D. aluminium

Q61 Rusting/corrosion and prevention

The main iron gate of your building rusts over time due to:

- A. pollution
- B. moisture and oxygen ✓
- C. dirt
- D. high temperature

Q62 Rusting/corrosion and prevention

What is the dark layer that develops on silver upon its corrosion?

- A. Copper oxide
- B. Silver sulphide ✓
- C. Iron oxide
- D. Zinc oxide

Q63 Rusting/corrosion and prevention

In galvanisation process, which of the following metals is used to depositing the layer on iron?

- A. Zinc ✓
- B. Silver
- C. Platinum
- D. Iron

Q64 Rusting/corrosion and prevention

What is the primary purpose of anodising aluminium?

- A. To increase its reactivity with acids
- B. To enhance its corrosion resistance and appearance ✓
- C. To make it softer and more flexible
- D. To make it a better conductor



Q65 Rusting/corrosion and prevention

When does rust form on iron?

- A. When it is exposed to only heat
- B. When it comes in contact with dry air
- C. When it comes in contact with water and oxygen ✓
- D. When it reacts with carbon dioxide

Q66 Rusting/corrosion and prevention

Why does a galvanised iron article remain protected from rusting even if the zinc coating is scratched?

- A. Zinc reacts with iron to form a protective layer of iron oxide.
- B. Scratches allow oil to seep in and prevent rusting.
- C. Zinc is more reactive than iron and undergoes preferential oxidation, protecting the iron. ✓
- D. Iron forms a thin layer of rust that prevents further corrosion.

Q67 Rusting/corrosion and prevention

Which colour do silver articles attain when they get corroded and form a coating of silver sulphide?

- A. Black ✓
- B. Remains silver
- C. White
- D. Reddish brown

Q68 Rusting/corrosion and prevention

Corrosion causes damage to the metal body, especially:

- A. in both dry air and oil
- B. in moist air ✓
- C. by galvanisation
- D. in dry air

Q69 Rusting/corrosion and prevention

Which method is commonly used to prevent rusting of Iron?

- A. Heating
- B. Melting
- C. Magnetising
- D. Galvanisation ✓

Q70 Rusting/corrosion and prevention

Which of the following conditions are essential for the rusting of iron?

- A. Presence of only oxygen
- B. Presence of only water (moisture)
- C. Presence of both oxygen and water (moisture) ✓
- D. Presence of carbon dioxide

Q71 Rusting/corrosion and prevention

Corrosion of iron is commonly known as rusting, and it requires:

- A. water and atmospheric oxygen ✓
- B. iron and very cold temperatures
- C. salt and strong acid presence
- D. moisture and high acidity

Q72 Rusting/corrosion and prevention

Copper reacts with moist carbon dioxide in the air and slowly loses its shiny brown surface and gains a _____ colour coating of basic copper carbonate.

- A. green ✓
- B. black
- C. white
- D. reddish brown

Q73 Rusting/corrosion and prevention

Galvanisation protects iron from rusting by coating it with a thin layer of:

- A. Zinc metal only ✓
- B. Silver metal only
- C. Nickel metal only
- D. Copper metal only

Q74 Types of chemical reactions

What type of reaction occurs when barium chloride reacts with sodium sulfate?

- A. Double displacement ✓
- B. Oxidation
- C. Decomposition
- D. Combination



Q75 Types of chemical reactions

When solid lead(II) nitrate is heated, a yellow residue (PbO) is left behind and two gases are evolved — one is reddish-brown and the other supports combustion. Which gases are evolved?

- A. Nitrogen gas and carbon dioxide
- B. Nitrogen dioxide and oxygen**
- C. Nitrogen dioxide and hydrogen
- D. Nitric oxide and oxygen

Q76 Types of chemical reactions

When lead nitrate reacts with potassium iodide, a yellow precipitate of compound 'X' is formed. Identify compound X.

- A. Lead(II) nitrite [Pb(NO₂)₂]
- B. Lead(II) nitrate [Pb(NO₃)₂]
- C. Lead(II) iodide (PbI₂)**
- D. Potassium nitrate (KNO₃)

Q77 Types of chemical reactions

When solutions of lead(II) nitrate and potassium iodide are mixed, the reaction leads to the formation of which of the following?

- A. An orange precipitate of lead iodide is formed.
- B. A yellow precipitate of lead sulphate is formed.
- C. An orange precipitate of lead iodate is formed.
- D. A yellow precipitate of lead iodide is formed.**

Q78 Types of chemical reactions

In the following reaction, $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$, iron:

- A. is oxidised**
- B. is unchanged
- C. is reduced
- D. acts a catalyst

Q79 Types of chemical reactions

A common characteristic in all double displacement reaction is:

- A. the reaction mixture is always colourless
- B. only one product is formed
- C. exchange of metal ions between two metal salts**
- D. the reaction requires heat to initiate

Q80 Types of chemical reactions

When calcium oxide reacts with water, the product formed is:

- A. calcium sulphate
- B. calcium chloride
- C. calcium hydroxide**
- D. calcium carbonate

Q81 Types of chemical reactions

Which of the following explains a precipitation reaction?

- A. A reaction where heat is released
- B. A reaction in which a gas is formed
- C. A reaction where an insoluble solid is formed**
- D. A reaction involving a color change only

Q82 Types of chemical reactions

Which of the following products is formed when carbon dioxide reacts with calcium hydroxide (lime water)?

- A. Calcium oxide
- B. Sodium carbonate
- C. Calcium bicarbonate
- D. Calcium carbonate**

Q83 Types of chemical reactions

Which of the following decomposes on heating to give quick lime?

- A. CaCO₃**
- B. KClO₃
- C. CaCl
- D. NaOH

Q84 Types of chemical reactions

In the following reaction, what colour change is observed?



- A. Red to green
- B. Green to blue
- C. Blue to green**
- D. Blue to red



Q85 Types of chemical reactions

When barium chloride reacts with aluminium sulphate, it gives aluminium chloride along with:

- A. a white colour precipitate of barium oxide
- B. a yellow colour precipitate of barium sulphate
- C. a white colour precipitate of barium chloride
- D. a white colour precipitate of barium sulphate ✓

Q86 Types of chemical reactions

What type of reaction is $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$?

- A. Neutralisation
- B. Combination ✓
- C. Decomposition
- D. Displacement

Q87 Types of chemical reactions

Which of the following is an example of a decomposition reaction?

- A. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ ✓
- B. $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$
- C. $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$
- D. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$

Q88 Types of chemical reactions

Match the following: Products of Reaction of Metal Carbonates with Acids

Column A (Reactants)	Column B (Products)
A. Sodium carbonate + HCl	1. Forms white precipitate of CaCO_3
B. Calcium carbonate + H_2SO_4	2. Calcium sulphate + CO_2 + H_2O
C. Metal carbonate + Acid	3. Salt + Carbon dioxide + Water
D. CO_2 passed through lime water	4. Sodium chloride + CO_2 + H_2O

- A. A-4; B-3; C-2; D-1
- B. A-4; B-2; C-3; D-1 ✓
- C. A-2; B-1; C-4; D-3
- D. A-3; B-4; C-1; D-2

Q89 Types of chemical reactions

Which of the following is an example of a combination reaction?

- A. $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$
- B. $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$ ✓
- C. $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$
- D. $\text{CuSO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + \text{CuCl}_2$

Q90 Types of chemical reactions

Which of the following reactions is an example of a double displacement reaction?

- A. $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$
- B. $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$ ✓
- C. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
- D. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

Q91 Types of chemical reactions

The colour of silver chloride changes when placed in sunlight for some time due to the:

- A. Thermal decomposition of silver chloride
- B. Combination reaction of silver chloride with oxygen
- C. Photochemical decomposition of silver chloride by sunlight ✓
- D. Displacement reaction by oxygen and water

Q92 Types of chemical reactions

When magnesium reacts with dilute hydrochloric acid, the products are:

- A. magnesium chloride and hydrogen ✓
- B. magnesium chloride and oxygen
- C. magnesium hydroxide and hydrogen
- D. magnesium oxide and water

Q93 Types of chemical reactions

What is a decomposition reaction?

- A. A compound breaks down into two or more simpler substances ✓
- B. Two compounds exchange ions
- C. Two or more substances combine to form one product
- D. A single substance is formed from two or more reactants



Q94 Types of chemical reactions

What is the primary chemistry behind a displacement reaction?

- A. One element displaces another from a compound** ✓
- B. Two reactants combine to generate one product
- C. Compounds disintegrate into two or more components
- D. Ion exchange occurs between two substances

Q95 Types of chemical reactions

What type of ions exchange between reactants in a double displacement reaction?

- A. Negative - negative ions
- B. Positive - positive ions
- C. Both positive - positive ions and negative - negative ions
- D. Positive - negative ions** ✓

Q96 Types of chemical reactions

In which of the following reactions do two compounds combine to form a new compound?

- A. $\text{CaO} + \text{CO}_2 \rightarrow \text{CaCO}_3$** ✓
- B. $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$
- C. $\text{H}_2 + \text{Cl}_2 \rightarrow \text{HCl}$
- D. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$

Q97 Types of chemical reactions

The reaction between sodium sulphate and barium chloride is an example of double displacement reaction. This is also an example of:

- A. displacement reaction
- B. decomposition reaction
- C. precipitation reaction** ✓
- D. combination reaction

Q98 Types of chemical reactions

What are the noticeable changes observed when an iron nail is placed in copper sulphate solution?

- A. The iron nail remains as it is and the blue colour of the copper sulphate solution fades.
- B. The iron nail becomes brownish in colour and the blue colour of the copper sulphate solution remains blue.
- C. The iron nail becomes brownish in colour and the blue colour of the copper sulphate solution changes to yellow.
- D. The iron nail becomes brownish in colour and the blue colour of the copper sulphate solution fades.** ✓

Q99 Types of chemical reactions

Which of the following is NOT a combination reaction?

- A. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
- B. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- C. $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$** ✓
- D. $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$

Q100 Types of chemical reactions

Which combination reaction also demonstrates the neutralisation of atmospheric pollution components?

- A. $\text{CO} + \text{O}_2 \rightarrow \text{CO}_2$
- B. $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_3$
- C. $\text{CaO} + \text{CO}_2 \rightarrow \text{CaCO}_3$** ✓
- D. $\text{Fe} + \text{S} \rightarrow \text{FeS}$

Q101 Types of chemical reactions

A chemical reaction in which two or more substances combine to form a single product is called:

- A. double displacement reaction
- B. combination reaction** ✓
- C. decomposition reaction
- D. displacement reaction

Q102 Types of chemical reactions

Heating calcium carbonate produces calcium oxide and carbon dioxide. This is an example of which type of chemical reaction?

- A. Decomposition** ✓
- B. Double displacement
- C. Combination
- D. Displacement

Q103 Types of chemical reactions

Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Precipitation reactions produce soluble salts.

Reason (R): Precipitation reactions involve exchange of ions in solution.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, and R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.** ✓



Q104 Types of chemical reactions

Which of the following reactions is an example of a precipitation reaction?

- A. $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2\uparrow$
- B. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2\uparrow$
- C. $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
- D. $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl}\downarrow + \text{NaNO}_3$ ✓

Q105 Types of chemical reactions

A small amount of copper oxide taken in a beaker and dilute hydrochloric acid is added to it slowly while stirring, results in:

- A. formation of reddish-brown colour solution of copper chloride
- B. formation of reddish-brown colour solution of cupric chloride
- C. formation of bluish-green colour solution of copper chloride ✓
- D. formation of reddish-brown colour solution of copper sulphate

Q106 Types of chemical reactions

When BaCl_2 reacts with Na_2SO_4 , the white precipitate is:

- A. Sodium chloride which crystallises
- B. Sodium carbonate which is insoluble
- C. Barium nitrate which is basic
- D. Barium sulphate which is insoluble ✓

Q107 Types of chemical reactions

Select the correct option regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Calcium oxide reacts vigorously with water to form calcium hydroxide.

Reason (R): In a combination reaction, two or more substances combine to form one product.

- A. A is true, but R is false.
- B. Both A and R are true, and R is the correct explanation of A. ✓
- C. A is false, but R is true.
- D. Both A and R are true, and R is not the correct explanation of A.

Q108 Types of chemical reactions

Which of the following is a double displacement reaction?

- A. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- B. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
- C. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
- D. $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$ ✓

Q109 Types of chemical reactions

Adding dilute hydrochloric acid to zinc granules produces hydrogen gas. This is an example of which of the following?

- A. Physical change
- B. Chemical change ✓
- C. Mixture formation
- D. Dissolution

Q110 Types of chemical reactions

In which of the following reactions does colour change, gas evolution, and solid residue formation, all occur simultaneously during decomposition?

- A. $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$
- B. $2\text{AgCl} \rightarrow 2\text{Ag} + \text{Cl}_2$
- C. $\text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$ ✓
- D. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

Q111 Types of chemical reactions

When an iron nail is dipped in copper sulphate solution, which of the following observations confirms that a displacement reaction has occurred?

- A. The solution remains blue, and the iron nail remains shiny.
- B. The solution turns colourless, and hydrogen gas is released.
- C. The blue colour of the copper sulphate solution fades, and a reddish-brown deposit appears on the iron nail. ✓
- D. A white precipitate is formed.

Q112 Types of chemical reactions

When an iron nail is placed in copper sulphate solution, what is observed?

- A. Hydrogen gas is evolved.
- B. No reaction occurs.
- C. Copper dissolves and iron deposits on the nail.
- D. Iron dissolves and copper deposits on the nail. ✓



Q113 Types of chemical reactions

A reaction in which the positive and negative ions of two ionic compounds exchange places to form two new compounds is an example of:

- A. Combination reaction
- B. Decomposition reaction
- C. Displacement reaction
- D. Double displacement reaction ✓

Q114 Types of chemical reactions

When copper reacts with oxygen on heating in air, which of the following correctly represents the product formed, along with its colour?

- A. Copper(II) oxide (CuO) – black in colour ✓
- B. Copper(II) oxide (CuO) – brown in colour
- C. Copper(I) oxide (Cu₂O) – white in colour
- D. Copper(I) oxide (Cu₂O) – red in colour

Q115 Types of chemical reactions

Which statement best defines a combination reaction?

- A. Two or more reactants combine to form a single product. ✓
- B. Two compounds exchange ions to form new compounds.
- C. Two reactants break down into simpler products.
- D. One element displaces another element from its compound.

Q119 Exothermic vs endothermic

Which of the following combination reactions is an example of exothermic reaction?

- A. $\text{CaCO}_{3(s)} \xrightarrow{\text{Heat}} \text{CaO}_{(s)} + \text{CO}_{2(g)}$
- B. $\text{CH}_{4(g)} + 2\text{O}_2 \rightarrow \text{CO}_{2(g)} + 2\text{H}_2\text{O}$ ✓
- C. $2\text{AgCl}_{(s)} \xrightarrow{\text{sunlight}} 2\text{Ag}_{(s)} + \text{Cl}_{2(g)}$
- D. $\text{Pb}_{(s)} + \text{CuCl}_{2(aq)} \rightarrow \text{PbCl}_{2(aq)} + \text{Cu}_{(s)}$

Q116 Types of chemical reactions

Which of the following is an example of addition reaction?

- A. Hydrolysis of acetic acid
- B. Dehydration of alcohol
- C. Chlorination of methane
- D. Hydrogenation of ethene ✓

Q117 Types of chemical reactions

When iron filings are mixed with sulfur powder and the mixture is heated, a black substance called iron sulfide is formed. Which statement best describes the changes involved?

- A. Iron dissolves in sulfur forming a solution.
- B. A physical change occurs as the substances are only mixed.
- C. A chemical change occurs as a new substance is formed. ✓
- D. A reversible physical change takes place.

Q118 Types of chemical reactions

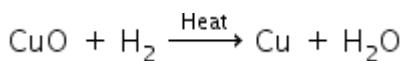
Substitution reaction involves:

- A. Addition of atoms to double bonded molecules
- B. Removal of atoms to form simpler molecules
- C. Replacement of a carbon atom with hydrogen
- D. One atom or group of atoms being replaced by another ✓



Q120 Oxidation & Reduction (Redox)

Which of the following species is reduced in the given reaction?



A. O

B. Cu

C. H₂O

D. H₂

Q121 Types of chemical reactions

In the reaction between aqueous sodium sulphate and aqueous barium chloride, which compound forms the white precipitate?

A. Na₂SO₄

B. BaCl₂

C. NaCl

D. BaSO₄

Q122 Types of chemical reactions

Which of the following is a displacement reaction?

A. $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

B. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

C. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$

D. $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$

Q123 Types of chemical reactions

Which of the following displacement reactions are possible?

I. $\text{Fe}_{(s)} + \text{CuSO}_{4(aq)} \rightarrow \text{FeSO}_4 + \text{Cu}$

II. $\text{Cu} + \text{FeSO}_{4(aq)} \rightarrow \text{CuSO}_4 + \text{Fe}_{(s)}$

III. $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$

IV. $\text{AgCl} + \text{NaNO}_3 \rightarrow \text{AgNO}_3 + \text{NaCl}$

A. I, II, and III only

B. I and III only

C. I, III and IV only

D. II and IV only

Q124 Types of chemical reactions

Which of the following is a combination reaction?

A. $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$

B. $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$

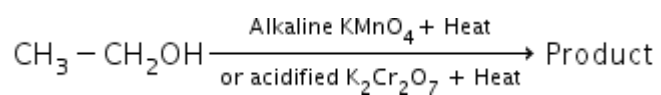
C. $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$

D. $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$



Q125 Types of chemical reactions

Identify the product in the reaction given below.



A. Propanal

B. Ethanoic acid



C. Ethanal

D. Propanone



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Q1 Acids and bases (properties/examples)

When an acid reacts with a metal carbonate, which gas is typically produced?

- A. Oxygen gas
- B. Carbon dioxide gas ✓
- C. Hydrogen gas
- D. Nitrogen gas

Q2 Acids and bases (properties/examples)

Which of the following shows acidic behaviour in aqueous solution?

- A. NaOH
- B. HCl ✓
- C. $\text{Ca}(\text{OH})_2$
- D. KOH

Q3 Acids and bases (properties/examples)

Which of the following is responsible for the basic nature of a substance?

- A. OH^- ✓
- B. Cl^-
- C. Na^+
- D. H^+

Q4 Acids and bases (properties/examples)

When dilute hydrochloric acid reacts with sodium hydrogencarbonate, which of the following observations is correct?

- A. Formation of a salt and water only
- B. Formation of brown fumes of nitrogen dioxide
- C. Formation of hydrogen gas with a pop sound
- D. Rapid evolution of a colourless gas that turns lime water milky ✓

Q5 Acids and bases (properties/examples)

Consider the following statements and select the correct option.

Statement A: Salts of strong acids and strong bases are neutral with pH 7.
Statement B: Sodium chloride is an example of a neutral salt.

- A. Statement A is correct but B is incorrect.
- B. Statement A is incorrect but B is correct.
- C. Both statements A and B are incorrect.
- D. Both statements A and B are correct. ✓

Q6 Acids and bases (properties/examples)

Which of the following reactions demonstrates the acidic nature of ethanoic acid?

- A. Ethanoic acid + Sodium hydroxide → Sodium ethanoate + Water ✓
- B. Ethanoic acid + Sodium → Sodium ethanoate + Hydrogen gas
- C. Ethanoic acid + Methanol → Methanoic acid + Ethane
- D. Ethanoic acid + Ethanol → Ester + Water

Q7 Acids and bases (properties/examples)

What happens if one drop of acid rain water is put on blue litmus paper?

- A. Blue litmus paper will turn red. ✓
- B. Blue litmus paper will turn yellow.
- C. No colour changes in litmus paper.
- D. Blue litmus paper will turn black.

Q8 Acids and bases (properties/examples)

Which of the following is a common characteristic of both acids and bases when dissolved in water?

- A. Both produce carbon dioxide when reacted with metal carbonates.
- B. Both produce ions that conduct electricity in aqueous solutions. ✓
- C. Both turn blue litmus red.
- D. Both release hydrogen gas on reacting with metals like zinc.



Q9 Acids and bases (properties/examples)

From the collected samples of the following solutions from the science laboratory, the correct acid-base pair may be categorised as:

- A. magnesium hydroxide $[Mg(OH)_2]$ and ammonium hydroxide (NH_4OH)
- B. acetic acid (CH_3COOH) and sodium hydroxide $(NaOH)$ ✓
- C. sulphuric acid (H_2SO_4) and nitric acid (HNO_3)
- D. calcium hydroxide $[Ca(OH)_2]$ and potassium hydroxide (KOH)

Q10 Acids and bases (properties/examples)

Which of the following gives H^+ ions in an aqueous solution?

- A. Sodium hydroxide
- B. Ammonium hydroxide
- C. Calcium hydroxide
- D. Hydrochloric acid ✓

Q11 Acids and bases (properties/examples)

Phosphoric acid (H_3PO_4) is composed of which of the following ions?

- A. H^+ , PO_4^{3-} ✓
- B. H^+ , PO_4^{4-}
- C. H^+ , PO_4^{2-}
- D. H_2^+ , PO_4^{3-}

Q12 Acids and bases (properties/examples)

Which of the following statements best explains why dry HCl gas does NOT change the colour of dry litmus paper, but aqueous HCl does?

- A. Litmus paper only works in the presence of light.
- B. HCl only releases H^+ ions when dissolved in water. ✓
- C. Dry HCl gas is non-acidic.
- D. Water reacts with litmus, not HCl .

Q13 Acids and bases (properties/examples)

What is generally produced when a metal reacts with an acid?

- A. Salt and hydrogen gas ✓
- B. Salt only
- C. Salt and oxygen
- D. Salt and water

Q14 Acids and bases (properties/examples)

What is the colour of copper oxide when it is added to the dilute sulphuric acid to forming a blue-green solution?

- A. White
- B. Grey
- C. Green
- D. Black ✓

Q15 Acids and bases (properties/examples)

What are the products formed when metal carbonates react with an acid?

- A. Water, carbon dioxide
- B. Salt, water, carbon monoxide
- C. Salt, water, carbon dioxide ✓
- D. Salt, carbon monoxide

Q16 Acids and bases (properties/examples)

When an acid reacts with a reactive metal, the products formed are:

- A. A metal oxide and nitrogen gas evolve
- B. An alkali and hydrogen peroxide form
- C. A salt and carbon dioxide gas form
- D. A salt and hydrogen gas are produced ✓

Q17 Acids and bases (properties/examples)

Which acid does NOT give hydrogen gas when treated with metal because of its oxidising nature?

- A. Nitric acid ✓
- B. Sulphuric acid
- C. Acetic acid
- D. Hydrochloric acid

Q18 Acids and bases (properties/examples)

What is/are the general product(s) of the reaction between a non-metallic oxide and a base?

- A. Water only
- B. Gas and water
- C. Salt and water ✓
- D. Salt and hydrogen



Q19 Acids and bases (properties/examples)

Match Column A with Column B.

Column A	Column B
A. Acids	1. Produce OH^- ions in water
B. Bases	2. Produce H^+ (or H_3O^+) ions in water
C. Acid + Base	3. Form salt and water (neutralisation)
D. Both conduct electricity	4. Due to presence of ions in solution

A. A-2; B-1; C-4; D-3

B. A-3; B-4; C-1; D-2

C. A-2; B-1; C-3; D-4



D. A-4; B-3; C-2; D-1

Q20 Acids and bases (properties/examples)

Which of the following reacts with bases to form salt and water?

A. Carbon dioxide



B. Sodium oxide

C. Hydrogen gas

D. Calcium hydroxide

Q21 Acids and bases (properties/examples)

Which of the following statements is/are correct?

- a. Zinc granules when placed in dilute sulphuric acid, hydrogen gas is evolved.
- b. Zinc granules when placed in sodium hydroxide solution forms zinc hydroxide.
- c. Zinc granules when placed in sodium hydroxide forms sodium zincate.

A. a and b

B. Only b

C. a and c



D. Only a

Q22 Acids and bases (properties/examples)

Which gas is released when hydrochloric acid reacts with calcium carbonate?

A. Nitrogen

B. Hydrogen

C. Oxygen

D. Carbon dioxide

**Q23 Acids and bases (properties/examples)**

Which of the following statements is true about a base in an aqueous solution?

A. They turn blue litmus red.

B. They have a sour taste.

C. They react with metals to produce hydrogen gas.

D. They produce OH^- ions in water.

**Q24 Antacids and everyday acid-base**

During indigestion, the stomach produces too much acid, that may be neutralised by which of the following?

A. Magnesium carbonate (Milk of magnesia)

B. Magnesium sulphate (Milk of magnesia)

C. Magnesium oxide (Milk of magnesia)

D. Magnesium hydroxide (Milk of magnesia)

**Q25 Antacids and everyday acid-base**

Why is it advised to clean your mouth after vomiting?

A. To remove bad odour

B. To stop the spread of infection

C. To neutralise the acid and protect tooth enamel



D. To avoid dehydration

Q26 Antacids and everyday acid-base

Match the following columns.

Column A (Situation)	Column B (Effect)
A. Acid rain	1. Occurs when $\text{pH} < 5.5$ in mouth
B. Indigestion	2. Antacids neutralise excess acid
C. Tooth decay	3. $\text{pH} < 5.6$ harms aquatic life
D. Bee sting	4. Neutralised by baking soda

A. A-2; B-4; C-1; D-3

B. A-1; B-2; C-3; D-4

C. A-4; B-3; C-2; D-1

D. A-3; B-2; C-1; D-4



Q27 Baking soda, washing soda, bleaching pdr

Which process is used to prepare sodium hydroxide from brine?

- A. Solvay process
- B. Electrolysis of brine**
- C. Thermal decomposition of NaCl
- D. Haber process

Q28 Baking soda, washing soda, bleaching pdr

What is the chemical formula of baking soda?

- A. NaHCO_3**
- B. Na_2CO_3
- C. NaOH
- D. NaCl

Q29 Baking soda, washing soda, bleaching pdr

Washing soda is obtained from baking soda by which of the following processes?

- A. Mixing baking soda with lime water
- B. Heating baking soda followed by crystallisation from water**
- C. Evaporation of baking soda in sunlight
- D. Adding hydrochloric acid to baking soda

Q30 Baking soda, washing soda, bleaching pdr

Baking soda is prepared using which of the following processes?

- A. Chlor-alkali process
- B. Solvay process**
- C. Deacon's process
- D. Haber process

Q31 Baking soda, washing soda, bleaching pdr

Which of the chemical formulae represents bleaching powder?

- A. $\text{Ca}(\text{ClO})_2$**
- B. $\text{Ca}_2(\text{ClO})_2$
- C. $\text{Ca}(\text{ClO}_2)_2$
- D. $\text{Ca}(\text{ClO}_2)$

Q32 Baking soda, washing soda, bleaching pdr

Which of the following is a common use of baking soda?

- A. Preventing bacterial decomposition
- B. Increasing acidity in soil beds
- C. Reacting with alcohol to make soap
- D. Neutralising excess stomach acid**

Q33 Baking soda, washing soda, bleaching pdr

Which of the following is the compound produced by the action of chlorine on dry slaked lime ($\text{Ca}(\text{OH})_2$)?

- A. bleaching powder**
- B. common salt
- C. washing soda
- D. bleaching soda

Q34 Baking soda, washing soda, bleaching pdr

Washing soda is added to water during washing clothes?

- A. To make hard water soft.**
- B. To prevent clothes getting wrinkles.
- C. To add fragrance to clothes.
- D. To bleach clothes.

Q35 Baking soda, washing soda, bleaching pdr

Washing soda is prepared by heating which compound?

- A. Sodium bicarbonate (baking soda)**
- B. Calcium carbonate
- C. Sodium chloride
- D. Calcium oxide

Q36 Baking soda, washing soda, bleaching pdr

Which of the following is a correct use of baking soda (sodium hydrogen carbonate) in daily life?

- A. It is used in fire extinguishers to produce foam**
- B. It is used to make soaps non-greasy
- C. It is used to prepare edible salts
- D. It is used to neutralise strong acids in lead-acid batteries



Q37 Baking soda, washing soda, bleaching pdr

Which of the following statements about baking soda (sodium hydrogen carbonate) is NOT correct?

- A. It is prepared industrially by reacting sodium chloride, ammonia, carbon dioxide, and water.
- B. On heating, baking soda releases carbon dioxide gas, which makes it useful in baking.
- C. Baking soda is used in antacids because it neutralises excess stomach acid, producing salt and water only.

A. Both A and B

B. Only C

C. Only A

D. Both A and C

Q38 Baking soda, washing soda, bleaching pdr

Which of the following is NOT the use of bleaching powder?

- A. as an oxidising agent in many chemical industries
- B. for bleaching cotton and linen in the textile industry
- C. for removing permanent hardness of water
- D. to make drinking water free from germs

Q39 Baking soda, washing soda, bleaching pdr

Which compound is used to prepare bleaching powder?

- A. Sodium Carbonate
- B. Calcium Hydroxide
- C. Calcium Chloride
- D. Ammonium Hydroxide

Q40 Baking soda, washing soda, bleaching pdr

The chemical formula of the compound sodium carbonate is represented as:

- A. Na_3CO_4
- B. Na_3CO_2
- C. Na_2CO_3
- D. Na_3CO_3

Q41 Baking soda, washing soda, bleaching pdr

Consider the following statements and select the correct option.

Statement A: Washing soda is obtained by heating baking soda strongly.

Statement B: It is used in glass, soap and paper industries.

A. Statement A is incorrect but B is correct.

B. Both statements A and B are correct.

C. Statement A is correct but B is incorrect.

D. Both statements A and B are incorrect.

Q42 Baking soda, washing soda, bleaching pdr

Which of the following is a use of washing soda?

- A. Removes the hardness of water
- B. Used in cooking
- C. Used in treatment of hot water
- D. Used to kill bacteria in water

Q43 Baking soda, washing soda, bleaching pdr

What is the chemical name of baking soda?

- A. Sodium sulphate
- B. Sodium hydrogen carbonate
- C. Sodium hydroxide
- D. Sodium carbonate

Q44 Baking soda, washing soda, bleaching pdr

Bleaching powder is prepared by the reaction of:

- A. calcium carbonate with chlorine gas
- B. sodium hydroxide with chlorine gas
- C. calcium hydroxide with hydrochloric acid
- D. calcium hydroxide with chlorine gas

Q45 Baking soda, washing soda, bleaching pdr

Consider the following statements and select the correct option.

Statement A: Baking soda is a mild non-corrosive basic salt.

Statement B: It can neutralise acids and relieve stomach acidity.

- A. Statement A is incorrect but B is correct.
- B. Statement A is correct but B is incorrect.
- C. Both statements A and B are correct.
- D. Both statements A and B are incorrect.



Q46 Baking soda, washing soda, bleaching pdr

Bleaching powder is chemically formed by:

- A. NaOH reacting with HCl acid
- B. CaCl_2 reacting with O_2 gas
- C. Ca(OH)_2 reacting with Cl_2 gas ✓
- D. CaCO_3 reacting with CO_2 gas

Q47 Baking soda, washing soda, bleaching pdr

What is the formula of washing soda?

- A. NaOH
- B. Na_2CO_3
- C. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ ✓
- D. NaHCO_3

Q48 Baking soda, washing soda, bleaching pdr

Baking soda releases which gas on heating?

- A. CO_2 ✓
- B. O_2
- C. N_2
- D. H_2

Q49 Baking soda, washing soda, bleaching pdr

Refer to the two statements given below and select the correct option.

Statement A: Bleaching powder is produced by the action of chlorine on dry slaked lime.

Statement B: Its chemical formula is CaOCl_2 .

- A. Statement A is correct but B is incorrect.
- B. Statement A is incorrect but B is correct.
- C. Both statements A and B are correct. ✓
- D. Both statements A and B are incorrect.

Q50 Common salts and their uses (formula)

What is the chemical formula of magnesium chloride?

- A. MgCl_2 ✓
- B. MgCl_3
- C. Mg_2Cl
- D. MgCl

Q51 Common salts and their uses (formula)

Calcium hydroxide reacts slowly with the carbon dioxide in air to form a thin layer of which compound that could be used for the purpose of whitewashing?

- A. $\text{Ca(HCO}_3)_2$
- B. CaCO_3 ✓
- C. CaO
- D. CaSO_4

Q52 Common salts and their uses (formula)

Which of the following is NOT formed in the chlor-alkali process?

- A. Sodium hydroxide
- B. Hydrogen gas
- C. Chlorine gas
- D. Sodium carbonate ✓

Q53 Common salts and their uses (formula)

Calcium hydroxide reacts slowly with the carbon dioxide in air to form a thin layer of which of the following substances that could be used for the purpose of whitewashing?

- A. $\text{Ca(HCO}_3)_2$
- B. CaSO_4
- C. CaCO_3 ✓
- D. CaO

Q54 Important Salts & Their Uses

In the chlor-alkali process, what is given off at the anode?

- A. Nitrogen gas
- B. Sodium Hydroxide
- C. Chlorine gas ✓
- D. Hydrogen gas

Q55 Important Salts & Their Uses

Sodium hydroxide is formed by:

- A. Dissolving sodium in ethanol
- B. Passing chlorine through water
- C. Reacting sodium with carbon dioxide
- D. Passing electricity through brine ✓



Q56 Important Salts & Their Uses

Sodium hydroxide is prepared by passing electricity through an aqueous solution of sodium chloride. The process is called:

A. Chlor-alkali



B. Hall-Hérault

C. Dow's

D. Born Haber

Q57 Neutralization reaction

Neutralisation reaction is best described as _____.

A. Acid + Metal → Salt + Hydrogen

B. Acid + Salt → Water

C. Base + Oxide → Salt + Water

D. Acid + Base → Salt + Water

**Q58 Neutralization reaction**

Neutralisation reaction involves the combination of _____ from the acid and _____ from the base to form water molecules.

A. H⁻ ions and OH⁺ ions, respectively

B. H⁺ ions and OH⁻ ions, respectively



C. OH⁺ ions and OH⁻ ions, respectively

D. OH⁺ ions and H⁻ ions, respectively

Q59 Neutralization reaction

What type of reaction is an acid-base reaction?

A. Redox reaction

B. Exothermic reaction



C. Dissociation reaction

D. Endothermic reaction

Q60 Neutralization reaction

Match the following nature and role of metallic oxides.

Column A (Substance)	Column B (Role in Reaction)
A. CuO	1. Salt formed in reaction
B. HCl	2. Acid reacting with basic oxide
C. CuCl ₂	3. Basic oxide reacting with acid
D. H ₂ O	4. Neutralisation product

A. A - 4; B - 1; C - 2; D - 3

B. A - 3; B - 2; C - 1; D - 4



C. A - 3; B - 4; C - 1; D - 2

D. A - 2; B - 3; C - 4; D - 1

Q61 Neutralization reaction

When an acid reacts with a base, which of the following is/are always formed, regardless of the specific acid or base used?

A. Salt and water



B. Oxygen

C. Hydrogen gas

D. Carbon dioxide

Q62 Neutralization reaction

Refer to the two statements given below and select the correct option.

Statement A: Ethanoic acid reacts with sodium hydroxide to form sodium acetate and water.

Statement B: This reaction is neutralisation.

A. Both statements A and B are incorrect.

B. Statement A is correct but statement B is incorrect.

C. Both statements A and B are correct.



D. Statement A is incorrect but statement B is correct.



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Q63 Neutralization reaction

Consider the following statements and select the correct option.

Statement A: A neutralisation reaction occurs when an acid reacts with a base.

Statement B: Water and salt are formed during neutralisation.

- A. Both statements A and B are incorrect.
- B. Statement A is correct but B is incorrect.
- C. Both statements A and B are correct. ✓
- D. Statement A is incorrect but B is correct.

Q64 Neutralization reaction

The reaction $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$ is an example of:

- A. Displacement reaction
- B. Decomposition reaction
- C. Precipitation reaction
- D. Double displacement reaction ✓

Q65 Neutralization reaction

When is a neutral salt formed?

- A. When strong acid reacts with weak base
- B. When weak acid reacts with strong base
- C. When acid reacts with metal
- D. When strong acid reacts with strong base ✓

Q66 Neutralization reaction

When an acid reacts with a non-carbonated base, what are the typical products formed in a neutralisation reaction?

- A. Only a salt
- B. Salt and water ✓
- C. Only water
- D. Carbon dioxide and water

Q67 Neutralization reaction

Which of the following types of reactions is a neutralisation reaction?

- A. Decomposition
- B. Double displacement ✓
- C. Combustion
- D. Single displacement

Q68 Neutralization reaction

What is the general name of the reaction between an acid and a base?

- A. Neutralisation ✓
- B. Decomposition
- C. Oxidation
- D. Combustion

Q69 Neutralization reaction

Which of the following is always formed during a neutralization reaction between a strong acid and a strong base?

- A. Salt and water ✓
- B. Salt, water, and carbon dioxide
- C. Only water
- D. Salt and hydrogen gas

Q70 Plaster of Paris and gypsum

When gypsum is heated at 373 K, it loses water of crystallisation and forms _____.

- A. calcium chloride pentahydrate
- B. calcium chloride hemihydrate
- C. calcium sulphate hemihydrate ✓
- D. calcium sulphate pentahydrate

Q71 Plaster of Paris and gypsum

Plaster of Paris is prepared by heating which of the following?

- A. Baking soda
- B. Gypsum ✓
- C. Limestone
- D. Slaked lime

Q72 Plaster of Paris and gypsum

What is the chemical formula of Plaster of Paris?

- A. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- B. CaCO_3
- C. $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ ✓
- D. CaSO_4



Q73 Plaster of Paris and gypsum

What is the chemical reaction involved in the preparation of Plaster of Paris from gypsum?

- A. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} + \text{heat} \rightarrow \text{CaSO}_4 + 2\text{H}_2\text{O}$
- B. $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + \text{water} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- C. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} + \text{heat} \rightarrow \text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + 1\frac{1}{2}\text{H}_2\text{O}$ ✓
- D. $\text{CaCO}_3 + \text{heat} \rightarrow \text{CaO} + \text{CO}_2$

Q74 Properties & Tests

Concentrated sulphuric acid can be regarded as a dehydrating agent because it removes water from which of the following?

- A. Glucose ✓
- B. Sodium hydroxide
- C. Ammonia gas
- D. Propane

Q75 Properties & Tests

What is common between the reaction of metal sodium carbonate and sodium bicarbonate with hydrochloric acid?

- A. Carbon monoxide is released
- B. Hydrogen gas is released
- C. Hydrogen carbonate is formed
- D. Sodium chloride is formed ✓

Q76 Properties & Tests

A white solid reacts with dilute HCl, producing a gas that turns lime water milky. What can be definitely concluded?

- A. The solid is a metal carbonate, releasing carbon dioxide.
- B. The solid is calcium carbonate.
- C. The gas is carbon dioxide; the solid is either a carbonate or bicarbonate. ✓
- D. The gas is hydrogen, indicating a reactive metal.

Q77 Properties & Tests

What are the products formed when an acid reacts with a metal hydrogen carbonate?

- A. Salt + Water + Carbon dioxide ✓
- B. Base + Hydrogen gas
- C. Salt + Oxygen + Carbon
- D. Salt + Hydrogen gas

Q78 Properties & Tests

When acid reacts with a metal carbonate, it forms:

- A. gas and solid precipitate only
- B. salt, carbon dioxide, and water ✓
- C. salt and hydrogen gas only
- D. a base and water as products

Q79 Properties & Tests

What happens when acid is dissolved in water?

- A. It forms salt.
- B. It releases H^+ ions. ✓
- C. It loses its acidic properties.
- D. It releases OH^- ions.

Q80 Properties & Tests

Which gas is evolved when a metal reacts with a dilute acid?

- A. Nitrogen
- B. Oxygen
- C. Hydrogen ✓
- D. Carbon dioxide

Q81 Properties & Tests

Match the Following Substances and Their Ions.

Column A (Substance)	Column B (Ions Produced)
A. HCl	1. H_3O^+ and Cl^-
B. NaOH	2. Na^+ and OH^-
C. KOH	3. K^+ and OH^-
D. $\text{Mg}(\text{OH})_2$	4. Mg^{2+} and 2OH^-

- A. A-1; B-2; C-3; D-4 ✓
- B. A-4; B-3; C-2; D-1
- C. A-3; B-4; C-1; D-2
- D. A-2; B-1; C-4; D-3



Q82 Strong vs weak acids/bases

Refer to the two statements given below and choose the correct option.

Statement A: Sodium hydroxide is used in the manufacture of soaps and paper.

Statement B: It is a weak base and neutral in nature.

- A. Both statements A and B are correct.
- B. Statement A is correct but B is incorrect. ✓
- C. Both statements A and B are incorrect.
- D. Statement A is incorrect but B is correct.

Q83 Strong vs weak acids/bases

Refer to the two statements given below and select the correct option.

Statement A: Carboxylic acids are strong acids that completely ionise in water.
Statement B: Ethanoic acid is a weak acid compared to hydrochloric acid.

- A. Statement A is correct but B is incorrect.
- B. Both statements A and B are incorrect.
- C. Statement A is incorrect but B is correct. ✓
- D. Both statements A and B are correct.

Q84 pH Scale & Indicators

Which of the following has the highest acidity?

- A. Water
- B. Milk
- C. Lemon juice ✓
- D. Vinegar

Q85 pH Scale & Indicators

What is the approximate pH of a salt solution formed from a strong acid and a strong base?

- A. Equal to 7 ✓
- B. Greater than 7
- C. Less than 7
- D. Can be less than or greater than 7 depending on temperature

Q86 pH Scale & Indicators

Which of the following statements is/are correct?

- a. Olfactory indicators are used to check the acidic or basic nature of a compound.
- b. Clove oil is an olfactory indicator.
- c. Clove oil is used to check the purity of any compound.

- A. a only
- B. a and b only ✓
- C. a, b and c
- D. a and c only

Q87 pH Scale & Indicators

Which of the following observations confirms that a solution is acidic?

- A. Methyl orange: yellow, Phenolphthalein: pink, Litmus: blue
- B. Methyl orange: red, Phenolphthalein: pink, Litmus: red
- C. Methyl orange: yellow, Phenolphthalein: colourless, Litmus: blue
- D. Methyl orange: red, Phenolphthalein: colourless, Litmus: red ✓

Q88 pH Scale & Indicators

What happens to the pH of a solution when the concentration of H^+ ions increases?

- A. It remains the same.
- B. It cannot be determined.
- C. It increases.
- D. It decreases. ✓

Q89 pH Scale & Indicators

Which of the following correctly explains the importance of pH in everyday life?

- A. A bee sting injects a basic liquid, so it is treated with a weak acid like vinegar.
- B. Tooth enamel dissolves when the pH of the mouth rises above 7.5 due to bacterial activity.
- C. Acid rain has pH greater than 7, which harms aquatic life.
- D. Our stomach secretes hydrochloric acid to maintain a pH around 2, aiding digestion. ✓



Q90 pH Scale & Indicators

Which of the following salts will form a solution with pH greater than 7 when dissolved in water?

A. Sodium acetate ✓

B. Ammonium chloride

C. Copper sulphate

D. Sodium chloride

Q91 pH Scale & Indicators

The pH of four different solutions are given in the options. Which of them will turn red litmus blue?

A. 4

B. 6

C. 2

D. 11 ✓

Q92 pH Scale & Indicators

What is the range of the pH scale?

A. 0 to 14 ✓

B. 0 to 10

C. -1 to 14

D. 0 to 7

Q93 pH Scale & Indicators

Tooth enamel starts corroding when the pH in the mouth falls below ____.

A. 5.5 ✓

B. 4.5

C. 6.5

D. 7.5

Q94 pH Scale & Indicators

Three solutions A, B, and C have pH values of 3, 7, and 12, respectively. Which of the following statements is correct?

A. Solution C is neutral while solution A is basic.

B. Solution A is strongly acidic, and solution C is strongly basic. ✓

C. Solution A and C both are neutral.

D. Solution B is basic and solution C is acidic.

Q95 pH Scale & Indicators

Which of the following solutions will contain the highest concentration of H^+ ions?

A. Solution with pH 7

B. Solution with pH 3 ✓

C. Solution with pH 13

D. Solution with pH 10

Q96 pH Scale & Indicators

Which of the following statements is/are correct regarding indicator?

a. Turmeric is a natural indicator used for acid base titration.

b. Phenolphthalein is colourless in basic medium and gives pink colour in acidic medium.

c. Clove oil is categorised as olfactory indicator.

A. b and c

B. Only a

C. a and c ✓

D. Only b

Q97 pH Scale & Indicators

Why clove oil is used as an olfactory indicator?

A. Different colour effervescences are observed in acidic and basic medium.

B. Vigorous fuming of different colours is observed in acidic and basic medium.

C. It gives a different colour in acidic and basic medium.

D. It gives a different smell in acidic and basic medium. ✓

Q98 pH Scale & Indicators

Tooth enamel made of calcium hydroxyapatite starts decaying when pH in mouth is lower than:

A. 7.5

B. 5.5 ✓

C. 6.5

D. 8.5



Q99 pH Scale & Indicators

Which of the following statements about olfactory indicators is correct?

- A. In basic solutions, vanilla essence retains its original sweet smell.
- B. In basic solutions, the smell of onion extract remains unchanged.
- C. Onion and vanilla both lose their smell in acidic conditions.
- D. In acidic solutions, onion extract retains its characteristic smell. ✓

Q100 pH Scale & Indicators

Which of the following acid-base indicators is colourless in acidic medium and pink in basic medium?

- A. Bromothymol blue
- B. Litmus
- C. Phenolphthalein ✓
- D. Methyl orange

Q101 pH Scale & Indicators

What colour does phenolphthalein turn to in a basic solution?

- A. Red
- B. Yellow
- C. Colourless
- D. Pink ✓

Q102 pH Scale & Indicators

Which of the following is NOT an olfactory indicator?

- A. Onion
- B. Turmeric ✓
- C. Vanilla extract
- D. Clove oil

Q103 pH Scale & Indicators

The 'p' in pH stands for _____ and it is used for measuring _____ concentration.

- A. Potential; hydroxide ion
- B. Potenz; hydroxide ion
- C. Potenz; hydrogen ion ✓
- D. Potential; hydrogen ion

Q104 pH Scale & Indicators

Match the following columns on Apparatus and Purpose.

Column A	Column B
A. Litmus paper	1. To detect acidic or basic nature
B. Watch-glass	2. To place drops of test solutions
C. Test tube	3. To hold and mix solutions safely
D. Indicator solution	4. Shows colour change to identify acid or base

- A. A-3; B-4; C-1; D-2
- B. A-2; B-3; C-4; D-1
- C. A-4; B-1; C-2; D-3
- D. A-1; B-2; C-3; D-4 ✓

Q105 pH Scale & Indicators

A basic solution will have a pH:

- A. Equal to 7
- B. Greater than 7 ✓
- C. That cannot be predicted
- D. Less than 7

Q106 pH Scale & Indicators

Which statement best describes an olfactory indicator?

- A. A solid that dissolves in both acids and bases
- B. A gas that reacts only with strong acids
- C. A liquid that changes colour in all solutions
- D. A substance that changes smell in acids and bases ✓

Q107 pH Scale & Indicators

Which of the following 'indicators' is used to test the nature of solutions besides litmus paper?

- A. Sugar and water
- B. Table salt and vinegar
- C. Turmeric and red cabbage juice ✓
- D. Sand and alcohol



Q108 pH Scale & Indicators

Consider the following statements and select the correct option.

Statement A: Plants require specific soil pH for proper growth.

Statement B: Farmers use pH values to decide the type of fertiliser to add.

A. Statement A is incorrect but B is correct.

B. Statement A is correct but B is incorrect.

C. Both statements A and B are correct. ✓

D. Both statements A and B are incorrect.

Q109 pH Scale & Indicators

Match the following synthetic indicators and colour changes.

Column A (Indicator)	Column B (Colour Change)
A. Red litmus	1. Turns blue in base
B. Blue litmus	2. Turns red in acid
C. Phenolphthalein	3. Colourless in acid, pink in base
D. Methyl orange	4. Red in acid, yellow in base

A. A-4; B-3; C-2; D-1

B. A-2; B-1; C-3; D-4

C. A-1; B-2; C-3; D-4 ✓

D. A-3; B-4; C-1; D-2

Q110 pH Scale & Indicators

In a neutral solution, red and blue litmus paper will:

A. both turn green

B. both remain unchanged ✓

C. both turn blue

D. both turn red

Q111 pH Scale & Indicators

Non-metallic oxides are considered acidic in nature. What is the approximate pH nature of the salt formed when a non-metallic oxide reacts with a strong base?

A. Acidic

B. Neutral

C. Amphoteric

D. Basic ✓

Q112 pH Scale & Indicators

The reaction of an alcohol with ethanoic acid in the presence of a catalyst forms water and:

A. An aldehyde

B. An ester ✓

C. A hydrocarbon

D. A salt

Q113 pH Scale & Indicators

At what pH does tooth decay begin to occur in the human mouth?

A. Between 7 and 8

B. Exactly 6.5

C. Above 8

D. Below 5.5 ✓

Q114 pH Scale & Indicators

When OH^- ions are added to an acidic solution, the pH:

A. stays the same

B. increases ✓

C. becomes zero

D. decreases

Q115 pH Scale & Indicators

Match the following pH change and its effect.

Column A (Change)	Column B (Effect)
A. pH ↓ from 7 to 4	1. Increase in acidity
B. pH ↑ from 7 to 10	2. Acid rain forms
C. pH = 7	3. Neutral solution
D. pH < 5.6 in rain	4. Increase in basicity

A. A-3; B-4; C-2; D-1

B. A-4; B-3; C-1; D-2

C. A-2; B-1; C-4; D-3

D. A-1; B-4; C-3; D-2 ✓

Q116 pH Scale & Indicators

Which of the following compounds would have the highest pH when dissolved in water?

A. Lemon juice

B. Vinegar solution

C. Sodium hydroxide ✓

D. Hydrogen chloride gas



Q117 pH Scale & Indicators

The concentration of H^+ ions in a solution primarily determines its:

- A. Level of gas compressibility factor
- B. Degree of acidity in aqueous phase ✓
- C. Extent of metallic bonding strength
- D. Rate of solid crystal formation

Q118 pH Scale & Indicators

Which of the following salts will have a pH close to 7 when dissolved in water?

- A. NH_4Cl
- B. $NaCl$ ✓
- C. Na_2CO_3
- D. CH_3COONa

Q119 pH Scale & Indicators

Which of the following acts as an olfactory indicator in acid-base reactions?

- A. Methyl orange produces odour in base
- B. Turmeric turns blue in bases
- C. Onion extract changes smell in bases ✓
- D. Phenolphthalein turns pink in acids

Q120 Baking soda, washing soda, bleaching pdr

Which of the following reactions correctly represents the synthesis of bleaching powder?

- A. $2Ca(OH)_2 + 2NaCl \rightarrow CaOCl_2 + CaCl_2 + 2NaOH + H_2O$
- B. $2Ca(OH)_2 + 2Cl_2 \rightarrow CaOCl_2 + CaCl_2 + H_2O$
- C. $2Ca(OH)_2 + 2NaCl \rightarrow Ca(OCl)_2 + CaCl_2 + 2H_2O$
- D. $2Ca(OH)_2 + 2Cl_2 \rightarrow Ca(ClO)_2 + CaCl_2 + 2H_2O$ ✓

Q121 Neutralization reaction

Which of the following is a neutralisation reaction?

- A. $Zn + HCl \rightarrow ZnCl_2 + H_2$
- B. $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
- C. $CaCO_3 \rightarrow CaO + CO_2$
- D. $NaOH + HCl \rightarrow NaCl + H_2O$ ✓

Q122 Plaster of Paris and gypsum

What is the formula of plaster of paris?

- A. $CaSO_4 \cdot 2H_2O$
- B. $CuSO_4 \cdot 1/2H_2O$
- C. $CuSO_4 \cdot 5H_2O$
- D. $CaSO_4 \cdot 1/2H_2O$ ✓



Q1 Basic Organic Chemistry

The characteristic feature(s) of carbon, that lead to the formation of its large number of organic compounds is:

A. both tetravalency and catenation



B. only tetravalency

C. only catenation

D. solubility

Q2 Basic Organic Chemistry

Ethanol on heating at 443 K in excess concentrated sulphuric acid gives ethene. The chemical change taking place is:

A. reduction

B. dehydration



C. oxidation

D. halogenation

Q3 Basic Organic Chemistry

From the given compounds, which is used as a fuel additive?

A. Ethane

B. Ethanoic acid

C. Ethanal

D. Ethanol

**Q4 Basic Organic Chemistry**

What unique property of carbon atoms enables them to form long and stable chains with other carbon atoms?

A. Tetravalency

B. Catenation



C. Isomerism

D. Allotropy

Q5 Basic Organic Chemistry

What are the two main properties of carbon that contribute to its 'versatile nature' and its ability to form a large number of compounds?

A. Isomerism and allotropy

B. High melting point and ductility

C. Catenation and tetravalency



D. Good conductivity and sonorous nature

Q6 Basic Organic Chemistry

Which statement DOES NOT relate to the versatile nature of carbon?.

A. It can have single, double, and triple bonds.

B. It has catenation.

C. It can bond ionically.



D. It is tetravalent.

Q7 Basic Organic Chemistry

An organic compound always contains which of the following?

A. Silicon and phosphorus atoms

B. At least one carbon atom



C. Halogens and noble gases

D. Hydrogen, oxygen and nitrogen

Q8 Basic Organic Chemistry

Which property of a carbon atom enables one carbon atom to form bonds with other carbon atoms?

A. Isomerisation

B. Valency

C. Catenation



D. Polymerisation

Q9 Basic Organic Chemistry

Carbon can form long chains because it exhibits _____ and shows _____.

A. trivalent; catenation

B. tetravalency; catenation



C. double bond; triple bond

D. electronegativity; tetravalency



Q10 Basic Organic Chemistry

When ethanol reacts with ethanoic acid in the presence of conc H₂SO₄ it produces _____.

- A. ketone
- B. esters
- C. alcohol
- D. aldehyde

Q11 Basic Organic Chemistry

Carbon forms a very large number of compounds due to two unique properties. Which of the following correctly identifies these properties?

- A. Allotropy and isomerism
- B. Good conductivity and sonorous nature
- C. Catenation and tetravalency
- D. High melting point and ductility

Q12 Basic Organic Chemistry

Carbon forms many compounds because of:

- A. High atomic mass and large size
- B. Ability to form ionic crystals
- C. Catenation and tetravalency
- D. Reactivity with noble gases

Q13 Basic Organic Chemistry

What gas is typically released when ethanoic acid reacts with sodium carbonate?

- A. Methane gas
- B. Carbon dioxide gas
- C. Oxygen gas
- D. Hydrogen gas

Q14 Basic Organic Chemistry

Consider the following statements and select the correct option.

Statement A: Sugarcane juice can be fermented to give alcohol (ethanol).

Statement B: Alcohol is added to petrol because it is a cleaner fuel.

- A. Both statements A and B are correct.
- B. Statement A is correct, but B is incorrect.
- C. Statement A is incorrect, but B is correct.
- D. Both statements A and B are incorrect.

Q15 Basic Organic Chemistry

Why is carbon able to form a large number of compounds?

- A. It has high density.
- B. It shows catenation and tetravalency.
- C. It forms strong ionic bonds.
- D. It is highly reactive.

Q16 Basic Organic Chemistry

Esters are _____ substances.

- A. sour-smelling
- B. pungent-smelling
- C. sweet-smelling
- D. bitter-smelling

Q17 Basic Organic Chemistry

What is the primary characteristic that defines organic compounds?

- A. They primarily consist of carbon and hydrogen atoms, forming covalent bonds.
- B. They are formed only by living organisms.
- C. They are compounds that conduct electricity in their molten state.
- D. They always contain oxygen atoms.

Q18 Basic Organic Chemistry

Carbon has the unique ability to form bonds with other atoms of carbon, giving rise to large molecules. This property is called:

- A. addition
- B. catenation
- C. conjugation
- D. unification

Q19 Basic Organic Chemistry

What is formed when ethanol is oxidised using an oxidising agent like alkaline KMnO₄?

- A. Acetone
- B. Ethanoic acid
- C. Methane
- D. Methanoic acid



Q20 Basic Organic Chemistry

Ethanoic acid reacts with ethanol in the presence of concentrated H_2SO_4 to form:

- A. sodium acetate
- B. methanol
- C. ethyl ethanoate ✓
- D. acetone

Q21 Basic Organic Chemistry

Which property enables carbon to form long chains?

- A. Tetravalency
- B. Catenation ✓
- C. Polymerisation
- D. Isomerism

Q22 Basic Organic Chemistry

Which property of carbon allows it to form a large number of compounds by bonding with itself and other elements?

- A. Catenation ✓
- B. Combustion
- C. Tetravalency
- D. Isomerism

Q23 Carbon and its allotropes (diamond/graphite/fullerene)

Which of the following is the chemical formula of fullerene carbon allotropes?

- A. C_0
- B. C_{60} ✓
- C. C_6
- D. C

Q24 Carbon and its allotropes (diamond/graphite/fullerene)

In graphite, each carbon atom is bonded to three other carbon atoms in the same plane giving a _____ array.

- A. square pyramidal
- B. pentagonal
- C. tetragonal
- D. hexagonal ✓

Q25 Carbon and its allotropes (diamond/graphite/fullerene)

Which of the following statements best describes allotropes of carbon?

- A. They are different isotopes of carbon with varying numbers of neutrons.
- B. They are different structural forms of carbon with different physical properties but similar chemical properties. ✓
- C. They are compounds formed by carbon with different elements.
- D. They are isomers of carbon, having the same molecular formula but different structures.

Q26 Carbon and its allotropes (diamond/graphite/fullerene)

In which carbon allotrope are atoms arranged in a hexagonal layer structure, with weak forces between layers?

- A. Fullerene
- B. Graphite ✓
- C. Coke
- D. Diamond

Q27 Carbon and its allotropes (diamond/graphite/fullerene)

Which of the following allotropes of carbon conducts electricity?

- A. Graphite ✓
- B. Charcoal
- C. Diamond
- D. Fullerene

Q28 Carbon and its allotropes (diamond/graphite/fullerene)

Which of the following is an allotrope of carbon?

- A. Diamond ✓
- B. Limestone
- C. Quartz
- D. Alum

Q29 Carbon and its allotropes (diamond/graphite/fullerene)

Which of the following is an allotrope of carbon with a cage-like structure?

- A. Charcoal
- B. Graphite
- C. Diamond
- D. Fullerene ✓



Q30 Carbon and its allotropes (diamond/graphite/fullerene)

Why is graphite a good conductor of electricity?

- A. It melts at low temperatures.
- B. It forms strong ionic bonds.
- C. It has free-moving electrons. ✓
- D. It absorbs water easily.

Q31 Common organic compounds (methane/ethanol)

Which of the following is NOT considered an organic compound?

- A. Sodium carbonate (Na_2CO_3) ✓
- B. Ethanol ($\text{C}_2\text{H}_5\text{OH}$)
- C. Methane (CH_4)
- D. Acetic acid (CH_3COOH)

Q32 Common organic compounds (methane/ethanol)

What is the formula of formic acid?

- A. $\text{C}_2\text{H}_4\text{O}_2$
- B. HCOOH ✓
- C. $\text{C}_2\text{H}_6\text{O}$
- D. $\text{C}_2\text{H}_5\text{OH}$

Q33 Common organic compounds (methane/ethanol)

Which of the following alcohols is commonly used as a fuel or fuel additive?

- A. Ethanol ✓
- B. Propanol
- C. Methanol
- D. Butanol

Q34 Common organic compounds (methane/ethanol)

Which of the following is the common name for ethanol ($\text{C}_2\text{H}_5\text{OH}$)?

- A. Ethyl alcohol ✓
- B. Methyl alcohol
- C. Isopropyl alcohol
- D. Butyl alcohol

Q35 Common organic compounds (methane/ethanol)

Which of the following statements about ethanol is correct?

- A. Ethanol reacts with sodium to form carbon dioxide.
- B. Ethanol is a liquid with a pleasant smell and is miscible with water. ✓
- C. Ethanol is a non-volatile solid.
- D. Ethanol does not dissolve in water.

Q36 Common organic compounds (methane/ethanol)

Which of the following is an organic compound?

- A. CaCO_3
- B. Na_2CO_3
- C. NaCl
- D. C_2H_6 ✓

Q37 Common organic compounds (methane/ethanol)

Which property is shown by ethanol?

- A. It is basic in nature
- B. It is solid at room temperature
- C. It forms scum with hard water
- D. It has a sweet smell and is volatile ✓

Q38 Common organic compounds (methane/ethanol)

Ethanol reacts with sodium leading to the formation of sodium ethoxide with the evolution of:

- A. nitrogen gas
- B. chlorine gas
- C. hydrogen gas ✓
- D. bromine gas

Q39 Common organic compounds (methane/ethanol)

The correct IUPAC name of CH_3COCH_3 is:

- A. propanone, a ketone with the carbonyl on the middle carbon ✓
- B. propanal, with an aldehyde group on a three-carbon chain
- C. propanoic acid, with a carboxylic acid at the terminal carbon
- D. propene, an alkene with a double bond between two carbons



Q40 Common organic compounds (methane/ethanol)

Ethanoic acid reacts with alcohols to form what compound?

- A. Ketone
- B. Esters
- C. Aldehyde
- D. Alcohols



Q41 Common organic compounds (methane/ethanol)

What type of gas is released when ethanol reacts with sodium?

- A. Hydrogen
- B. Carbon dioxide
- C. Methane
- D. Oxygen



Q42 Common organic compounds (methane/ethanol)

Which alcohol is commonly used as fuel?

- A. Methanol
- B. Butanol
- C. Propanol
- D. Ethanol



Q43 Common organic compounds (methane/ethanol)

Ethanoic acid is commonly known as acetic acid and has:

- A. A basic pH and slippery feel
- B. A strong fruity smell in water
- C. No effect on litmus or metals
- D. A sharp, sour smell and taste



Q44 Common organic compounds (methane/ethanol)

Consider the following statements and select the correct option.

Statement A: Small quantities of ethanol cause drunkenness.

Statement B: Intake of pure ethanol is safe for health.

- A. Both statements A and B are correct.
- B. Both statements A and B are incorrect.
- C. Statement A is correct, but B is incorrect.
- D. Statement A is incorrect, but B is correct.



Q45 Common organic compounds (methane/ethanol)

A molecule of methane contains one carbon atom bonded to four hydrogen atoms. What is the chemical formula for methane?

- A. C₂H₄
- B. CH₃
- C. C₄H
- D. CH₄



Q46 Fossil fuels (coal/petroleum/natural gas)

Why do we need to conserve coal and petroleum?

- A. They are unlimited resources.
- B. They are non-renewable sources of energy.
- C. They are renewable sources of energy.
- D. They are formed every day in factories.



Q47 Fossil fuels (coal/petroleum/natural gas)

Read the given statements and select the most appropriate option.

Statements:

A: Coal and petroleum were formed from the degradation of bio-mass.

B: They are exhaustible resources.

- A. Both statements A and B are correct
- B. Only statement B is correct
- C. Neither statement A nor B is correct
- D. Only statement A is correct



Q48 Fossil fuels (coal/petroleum/natural gas)

Why is conservation of petroleum important?

- A. Petroleum is a non-renewable resource.
- B. Petroleum does not affect the environment adversely.
- C. Petroleum is a renewable resource.
- D. Petroleum is abundant in nature.



Q49 Fossil fuels (coal/petroleum/natural gas)

Which of the following statements about coal and petroleum conservation is correct?

- A. They do not cause pollution.
- B. Their formation takes millions of years.
- C. They are renewable resources of energy.
- D. They are inexpensive to extract.



Q50 Fossil fuels (coal/petroleum/natural gas)

Which of the following best explains the origin of coal and petroleum?

- A. Fossilisation of plants and animals under high temperature and pressure over millions of years** ✓
- B. Crystallisation of minerals under the seabed
- C. Decomposition of volcanic rocks under high pressure
- D. Compaction of forest wood under sunlight

Q51 Functional groups basics

The functional group which does NOT contain oxygen hetero atom is:

- A. ketone
- B. alcohol
- C. halo alkane** ✓
- D. carboxylic acid

Q52 Functional groups basics

Which of the following functional groups is represented by -OH in carbon compounds?

- A. Alcohol** ✓
- B. Ketone
- C. Carboxylic acid
- D. Aldehyde

Q53 Functional groups basics

Which functional group present in aldehyde?

- A. -CHO** ✓
- B. -OH
- C. -CO
- D. -COOH

Q54 Functional groups basics

Ethanol is miscible with water due to presence of which functional group?

- A. Carboxyl group
- B. Carbon chain
- C. Hydroxyl group** ✓
- D. Double bond

Q55 Functional groups basics

What is the IUPAC name for an organic compound with two carbon atoms and a hydroxyl (-OH) functional group?

- A. Methanal
- B. Ethanoic acid
- C. Propanone
- D. Ethanol** ✓

Q56 Functional groups basics

The basic modification with a "prefix" or "suffix" in the nomenclature is the indicator of:

- A. Nature of the surface area
- B. Nature of the melting point
- C. Nature of the boiling point
- D. Nature of the functional Group** ✓

Q57 Functional groups basics

Propanone belongs to which homologous series?

- A. Ketone** ✓
- B. Alcohol
- C. Ester
- D. Aldehyde

Q58 Functional groups basics

A straight chain of three carbon atoms having no double bond and -OH functional group at first carbon atom is named:

- A. Propanol** ✓
- B. Propanal
- C. Propane
- D. Propanone

Q59 Functional groups basics

What is the primary role of a 'functional group' in an organic compound?

- A. To provide the characteristic chemical properties of the compound** ✓
- B. To change the carbon chain from straight to branched
- C. To determine the physical state (solid, liquid, gas) of the compound
- D. To increase the molecular mass of the compound



Q60 Functional groups basics

Esters are formed by the reaction of:

- A. alcohol and acid in basic medium
- B. alcohol and acid at low pressure
- C. alcohol and acid in acidic medium ✓
- D. alcohol and aldehyde in the presence of dehydrating agent

Q61 Functional groups basics

Select the correct example of a functional group that DOES NOT represent any double bond in their structure.

- A. Propanone
- B. Propanoic acid
- C. Propanol ✓
- D. Propanal

Q62 Hydrocarbons (Methane, Ethane, etc.)

Which of the following properties makes ethanol a better alternative fuel compared to petrol?

- A. Ethanol burns with a clean, smokeless flame ✓
- B. Ethanol has a higher boiling point than petrol
- C. Ethanol is a solid fuel
- D. Ethanol produces harmful smoke when burned

Q63 Hydrocarbons (Methane, Ethane, etc.)

Cyclohexane is best classified as which type of organic compound?

- A. A saturated alicyclic compound composed of six carbon atoms in a ring ✓
- B. A branched hydrocarbon with one or more unsaturated carbon bonds
- C. An aromatic compound containing a delocalised π -electron ring system
- D. An organic aldehyde consisting of a linear chain of six carbon atoms

Q64 Hydrocarbons (alkane/alkene/alkyne)

Which among the following organic compounds is saturated?

- A. 2-Bromopropene
- B. Propene
- C. Bromopropane ✓
- D. Propyne

Q65 Hydrocarbons (alkane/alkene/alkyne)

Which of the following has straight-chain hydrocarbons?

- A. 3-Methylpentane
- B. 2-Methylpropane
- C. Isobutane
- D. Butane ✓

Q66 Hydrocarbons (alkane/alkene/alkyne)

What is the defining characteristic of an unsaturated carbon compound?

- A. All carbon atoms are linked by only single bonds.
- B. It forms only cyclic structures.
- C. It always contains a functional group with oxygen.
- D. It contains at least one double or triple bond between carbon atoms. ✓

Q67 Hydrocarbons (alkane/alkene/alkyne)

In the context of carbon compounds, what characterises a 'branched chain' structure?

- A. Carbon atoms are bonded to four different atoms.
- B. Carbon atoms are arranged in a continuous, straight line.
- C. Carbon atoms form a closed ring structure.
- D. Carbon atoms are attached to the main carbon chain, forming side groups. ✓

Q68 Hydrocarbons (alkane/alkene/alkyne)

What is the product formed when ethene reacts with bromine?

- A. Ethane
- B. Bromoethane
- C. 1,2-dibromoethane ✓
- D. Ethanol

Q69 Hydrocarbons (alkane/alkene/alkyne)

Which of the following compounds is classified as a saturated hydrocarbon?

- A. Ethyne
- B. Ethane ✓
- C. Ethene
- D. Benzene



Q70 Hydrocarbons (alkane/alkene/alkyne)

The IUPAC name of following compound is _____.



A. 3-Bromopentane

B. 2-Bromopentane ☒

C. 2-Bromopentene

D. 1-Bromopentane

Q71 Hydrocarbons (alkane/alkene/alkyne)

Which of the following compounds is unsaturated?

A. Propane

B. Propene ☒

C. Butane

D. Methane

Q72 Hydrocarbons (alkane/alkene/alkyne)

$(\text{CH}_3)_3\text{-C-CH}_3$ represents the structural formula of which of the following organic compounds?

A. 3-methyl butane

B. methyl butane

C. 2,2-dimethyl propane ☒

D. 2,3-dimethyl propane

Q73 Hydrocarbons (alkane/alkene/alkyne)

Which of the following hydrocarbons is saturated?

A. Butene

B. Butane ☒

C. Propene

D. Benzene

Q74 Hydrocarbons (alkane/alkene/alkyne)

Which of the following has branched-chain hydrocarbons?

A. Ethane

B. Isobutane ☒

C. Butane

D. Propane

Q75 Hydrocarbons (alkane/alkene/alkyne)

Which statement best describes a homologous series of organic compounds?

A. A series of compounds having the same general formula, similar chemical properties, and consecutive members differing by a $-\text{CH}_2-$ group ☒

B. A series of elements with similar physical properties

C. A series of compounds that all have branched chains

D. A series of compounds with different functional groups but the same molecular formula

Q76 Hydrocarbons (alkane/alkene/alkyne)

An increase of molecular mass in any homologous series indicates:

A. increase melting point and decrease boiling point

B. decrease melting point and increases boiling point

C. decrease melting and boiling points

D. increase melting and boiling points ☒

Q77 Hydrocarbons (alkane/alkene/alkyne)

Which of the following compounds is a saturated hydrocarbon?

A. Propene

B. Cyclohexane ☒

C. Benzene

D. Propyne

Q78 Hydrocarbons (alkane/alkene/alkyne)

Each succeeding member of the homologous series of alkane differs from the previous one by a unit that consists of:

A. two carbon and two hydrogens

B. one carbon and two hydrogens ☒

C. one carbon and three hydrogens

D. two carbon and three hydrogens

Q79 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is a saturated hydrocarbon?

A. Ethene

B. Ethyne

C. Butyne

D. Propane ☒



Q80 Hydrocarbons (alkane/alkene/alkyne)

Which of the following belongs to the alkyne group?

- A. C_6H_6
- B. C_2H_4
- C. C_3H_4 ✓
- D. C_3H_8

Q81 Hydrocarbons (alkane/alkene/alkyne)

What is the difference in molecular mass between two successive members of a homologous series?

- A. 12u
- B. 16u
- C. 14u ✓
- D. 18u

Q82 Hydrocarbons (alkane/alkene/alkyne)

Which of the following conditions is essential for chlorine to react rapidly with an alkane?

- A. High temperature
- B. Sunlight ✓
- C. Presence of oxygen
- D. High pressure

Q83 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is a characteristic reaction of saturated hydrocarbons (alkanes)?

- A. Polymerisation
- B. Addition reaction
- C. Substitution reaction ✓
- D. Neutralisation

Q84 Hydrocarbons (alkane/alkene/alkyne)

Which of the following carbon compounds shows the presence of a branched chain structure?

- A. Ethane (C_2H_6)
- B. Methane (CH_4)
- C. Cyclohexane (C_6H_{12})
- D. Butane (C_4H_{10}) ✓

Q85 Hydrocarbons (alkane/alkene/alkyne)

Which compound from the following is an unsaturated hydrocarbon?

- A. Methane
- B. Ethene ✓
- C. Butane
- D. Propane

Q86 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is true for saturated hydrocarbons?

- A. They have only a single bond between carbon-carbon atoms. ✓
- B. They have at least one double bond between carbon-carbon atoms.
- C. They can have either double and triple bond between carbon-carbon atoms.
- D. They have at least one triple bond between carbon-carbon atoms.

Q87 Hydrocarbons (alkane/alkene/alkyne)

Which of the following represents a straight chain hydrocarbon?

- A. Benzene
- B. Butane ✓
- C. Cyclopentane
- D. Isobutane

Q88 Hydrocarbons (alkane/alkene/alkyne)

Which type of bond is present between carbon atoms in saturated hydrocarbons?

- A. Single bond ✓
- B. Triple bond
- C. Both double and triple bonds
- D. Double bond

Q89 Hydrocarbons (alkane/alkene/alkyne)

In a substitution reaction involving an alkane, what happens to the hydrogen atoms of the alkane molecule?

- A. They are completely removed to form double bonds.
- B. They react with oxygen to form water.
- C. They are replaced by other atoms or groups of atoms. ✓
- D. They are added to the molecule to form a larger chain.



Q90 Hydrocarbons (alkane/alkene/alkyne)

Which of the following hydrocarbons contains a branched chain?

- A. Butane
- B. Ethene
- C. Isobutane
- D. Methane

**Q91 Hydrocarbons (alkane/alkene/alkyne)**

Which of the following statements are correct for benzene?

- a. It is a six-membered cyclic carbon compound.
- b. It has three single and three double bonds.
- c. The molecular formula is C_6H_{14} .

- A. Only a and b
- B. Only a and c
- C. a, b and c
- D. Only b and c

**Q92 Hydrocarbons (alkane/alkene/alkyne)**

Which structural feature contributes to the high reactivity of unsaturated organic compounds?

- A. Total absence of hydrogen atoms within the compound molecule
- B. Existence of double or triple bonds between carbon atoms
- C. Incomplete formation of the carbon atom backbone structure
- D. Presence of halogen atoms attached to the carbon framework

**Q93 Hydrocarbons (alkane/alkene/alkyne)**

How many carbon atoms are present in a benzene ring?

- A. 8
- B. 6
- C. 5
- D. 4

**Q94 Hydrocarbons (alkane/alkene/alkyne)**

Which of the following is the smallest alkane that can form a stable ring?

- A. Ethane
- B. Methane
- C. Cyclopropane
- D. Propane

**Q95 Hydrocarbons (alkane/alkene/alkyne)**

Unsaturated carbons are _____ than the saturated carbon compounds.

- A. More saturated
- B. Equally reactive
- C. More reactive
- D. Less reactive

**Q96 Hydrocarbons (alkane/alkene/alkyne)**

Which of the following hydrocarbons are organic compounds with elements _____?

- A. Carbon
- B. both hydrogen and carbon
- C. Hydrogen
- D. Oxygen

**Q97 Hydrocarbons (alkane/alkene/alkyne)**

What do members of a homologous series differ from each other by?

- A. Two hydrogen atoms
- B. One carbon atom
- C. One oxygen atom
- D. One carbon atom and two hydrogen atoms

**Q98 Hydrocarbons (alkane/alkene/alkyne)**

Which of the following is a homologous series?

- A. Methane, Ethane, Propane
- B. Methane, Methanol, Methanoic acid
- C. Methane, Ethane, Ethene
- D. Ethene, Ethyne, Ethane

**Q99 Hydrocarbons (alkane/alkene/alkyne)**

What is typically involved in an addition reaction?

- A. Functional groups are replaced by others
- B. Atoms get added to unsaturated bonds
- C. Removal of atoms from molecules takes place
- D. Oxidation changes without new bonding



Q100 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is true about the homologous series?

- A. All members have the same boiling point.
- B. All members have different functional groups.
- C. All members have the same molecular weight.
- D. Each successive member differs by $-\text{CH}_2-$ group. ✓

Q101 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is an example of a cyclic hydrocarbon?

- A. Methane
- B. Cyclohexane ✓
- C. Ethene
- D. Butane

Q102 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is a ring-chain hydrocarbon?

- A. Benzene ✓
- B. Heptyne
- C. Ethene
- D. Propane

Q103 Hydrocarbons (alkane/alkene/alkyne)

___ generally has long, unstable carbon chains.

- A. Water
- B. Vegetable oil ✓
- C. Table salt
- D. Glucose

Q104 Hydrocarbons (alkane/alkene/alkyne)

Which of the following is a straight-chain saturated hydrocarbon?

- A. Propene
- B. Cyclohexane
- C. Butane ✓
- D. Benzene

Q105 Hydrocarbons (alkane/alkene/alkyne)

Unsaturated hydrocarbons usually produce:

- A. no flame at all
- B. white flame with sparkles
- C. clean blue flames
- D. yellow flame with black smoke ✓

Q106 Isomerism (basic idea)

Butane (C_4H_{10}) exists in two different forms: one with a straight chain and one with a branched chain. What is this phenomenon called?

- A. Sublimation
- B. Polymerisation
- C. Isomerism ✓
- D. Catenation

Q107 Isomerism (basic idea)

2-methylpropane has the same molecular formula as that of which of the following?

- A. Pentane
- B. Butane ✓
- C. Butene
- D. Pentene

Q108 LPG, CNG, biogas

In wastewater treatment plant, the biogas is obtained from which of the following substance?

- A. Coconut husk
- B. Dried leaves
- C. Banana peels
- D. Sludge ✓

Q109 Petroleum fractions and uses

Now a days, which of the following petroleum products is used in place of coal-tar for metalling the roads?

- A. Coke
- B. Paraffin wax
- C. Naphthalene
- D. Bitumen ✓



Q110 Soaps and detergents

What is the main role of micelles in the cleansing action of soap?

- A. To increase the surface tension of water
- B. To reduce the hardness of water
- C. To produce lather with water
- D. To trap and remove oil and dirt from clothes ✓

Q111 Soaps and detergents

Detergents can work in which of the following?

- A. Only soft water
- B. Only distilled water
- C. Both hard and soft water ✓
- D. Only hot water

Q112 Soaps and detergents

When ester is treated with sodium hydroxide, alcohol and sodium salt of carboxylic acid is formed. What is the process called?

- A. Hydrogenation
- B. Esterification
- C. Acidification
- D. Saponification ✓

Q113 Soaps and detergents

Select the correct property of micelles in soap that help them to interact with water:

- A. hydrophobic tail
- B. hydrophilic head ✓
- C. hydrocarbon
- D. both hydrophilic head and hydrophobic tail

Q114 Soaps and detergents

The hydrophilic end of a soap molecule is:

- A. ionic and interacts with water ✓
- B. neutral and non-polar
- C. non-ionic and soluble in water
- D. non-ionic and soluble in oil

Q115 Soaps and detergents

A characteristic feature that is NOT associated with soap is:

- A. micelles formation
- B. hydrophobic tail
- C. works perfectly with hard water ✓
- D. hydrophilic head

Q116 Soaps and detergents

Soap molecules arrange themselves in which form to perform cleaning action?

- A. Crystal
- B. Colloid
- C. Micelles ✓
- D. Precipitation

Q117 Soaps and detergents

The cleansing action of soap is due to which of its properties?

- A. Ability to form micelles ✓
- B. High melting point
- C. Being a strong acid
- D. Being a strong base

Q118 General Science

Which of the following describe(s) the versatile nature of carbon?

- a. The ability to form bonds with other carbon atoms giving rise to large molecules.
- b. The ability to form double bonds with other carbon atoms.
- c. The ability to form bonds with other atoms like oxygen, nitrogen, sulphur, hydrogen etc.

- A. Only a
- B. Only a and c
- C. All a, b and c ✓
- D. Only b and c

Q119 General Science

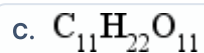
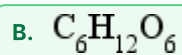
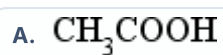
Which two properties of carbon are mainly responsible for the formation of a large number of carbon compounds?

- A. Metallic character and conductivity
- B. Tetravalency and catenation ✓
- C. Tendency to form ionic bonds and lose electrons
- D. High atomic mass and large atomic size



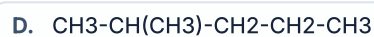
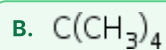
Q120 Common organic compounds (methane/ethanol)

What is the chemical formula for Glucose?



Q121 Isomerism (basic idea)

Structural formula of branched chain organic compound 'Neopentane' may be represented by:



Q1 Cell Division (Mitosis, Meiosis)

Through which method of cell division are the diploid chromosomes divided into haploid gametes?

- A. Binary Fission
- B. Meiosis** ✓
- C. Amitosis
- D. Mitosis

Q2 Cell Division (Mitosis, Meiosis)

The splitting of a unicellular organism into two equal daughter cells containing identical genetic material is termed as which of the following?

- A. Binary fission** ✓
- B. Budding
- C. Spore formation
- D. Conjugation

Q3 Cell Division (Mitosis, Meiosis)

How many daughter cells are formed during binary fission?

- A. Zero
- B. One
- C. Four
- D. Two** ✓

Q4 Cell Division (Mitosis, Meiosis)

A cell divides to form two identical daughter cells, each having the same chromosome number as the parent cell. What type of cell division is this called?

- A. Meiosis
- B. Cytokinesis
- C. Budding
- D. Mitosis** ✓

Q5 Cell Division (Mitosis, Meiosis)

The mode of cell division by which germ cells get half the amount of DNA as compared to non-reproductive cells is called _____.

- A. Amitosis
- B. Meiosis** ✓
- C. Budding
- D. Mitosis

Q6 Cell Division (Mitosis, Meiosis)

The process of fission in an amoeba results in the formation of _____.

- A. four genetically different daughter cells
- B. a small daughter cell and a large mother cell that are genetically different
- C. a large number of small, genetically identical daughter cells
- D. two similar sized, genetically identical daughter cells** ✓

Q7 Cell Division (Mitosis, Meiosis)

In the process of binary fission in unicellular organisms such as bacteria and protozoa, which of the following is least likely to occur?

- A. No need for a second parent
- B. Formation of identical daughter cells
- C. Rapid population increase under favourable conditions
- D. Unequal partition of genetic material** ✓

Q8 Cell Division (Mitosis, Meiosis)

Which of the following ensures that the DNA amount is NOT doubled in every generation?

- A. Reduction of DNA in gametes** ✓
- B. Division of neurons
- C. Division of body cells
- D. Consistency of DNA in gametes



Q9 Cell Division (Mitosis, Meiosis)

Why does the amount of DNA NOT keep doubling during sexual reproduction in animals?

- A. Because both gametes get halved after fertilisation to form the zygote
- B. Because both gametes get doubled before fertilisation to form the zygote
- C. Because both gametes get doubled after fertilisation to form the zygote
- D. Because both gametes get halved before fertilisation to form the zygote ✓

Q10 Cell Division (Mitosis, Meiosis)

Which process must accompany DNA copying to ensure the formation of functional daughter cells?

- A. Chromosomal mutation
- B. Creation of additional cellular apparatus ✓
- C. Protein synthesis only
- D. RNA transcription only

Q11 Cell Division (Mitosis, Meiosis)

Which of the following processes represents the most specific purpose of meiotic cell division?

- A. Excretion
- B. Respiration
- C. Digestion
- D. Reproduction ✓

Q12 Cell Division (Mitosis, Meiosis)

Which of the following is an INCORRECT statement about the endoplasmic reticulum?

- A. The endoplasmic reticulum helps in the transport of materials within the cell, especially between the cytoplasm and the nucleus.
- B. The endoplasmic reticulum stores genetic material in it. ✓
- C. The rough endoplasmic reticulum (RER) has ribosomes attached to its surface, which help in protein synthesis.
- D. The smooth endoplasmic reticulum (SER) is involved in the synthesis of lipids (fat molecules).

Q13 Cell Division (Mitosis, Meiosis)

Which of the following is NOT true about binary fission?

- A. It occurs in unicellular organisms
- B. It leads to population increase
- C. It needs two parents ✓
- D. It is fast and efficient

Q14 Cell Division (Mitosis, Meiosis)

In unicellular organisms, _____ is the method of reproduction.

- A. Fragmentation
- B. Rejuvenation
- C. Fission ✓
- D. Regeneration

Q15 Cell Division (Mitosis, Meiosis)

Which of the following processes results in the formation of two identical daughter cells?

- A. Cytokinesis without karyokinesis
- B. Meiosis
- C. Mitosis ✓
- D. Fertilisation

Q16 Cell Division (Mitosis, Meiosis)

The making of new cells in organisms is called _____.

- A. Cell division ✓
- B. Cell fusion
- C. Cell secretion
- D. Cell respiration

Q17 Cell Division (Mitosis, Meiosis)

Which of the following organelles is the first to divide during binary fission in Amoeba?

- A. Vacuole
- B. Nucleus ✓
- C. Cell wall
- D. Cytoplasm



Q18 Cell Division (Mitosis, Meiosis)

What is the main purpose of cell division in multicellular organisms?

- A. Transport of substances through the cell membrane
- B. Absorption of nutrients and release of wastes
- C. Formation of vacuoles and maintenance of turgidity
- D. Growth, repair, and replacement of damaged or old cells**

Q19 Cell Division (Mitosis, Meiosis)

Which of the following outcomes identifies meiosis rather than mitosis?

- A. Four cells, half number**
- B. One larger cell, double number
- C. Two identical cells, same number
- D. Many cells, same number

Q20 Cell Division (Mitosis, Meiosis)

What is the term used for the division of cytoplasm following nuclear division?

- A. Karyokinesis
- B. Cytokinesis**
- C. Interphase
- D. Chromatin condensation

Q21 Cell Division (Mitosis, Meiosis)

In mitosis, how do the chromosomes in daughter cells compare with those in the parent cell?

- A. Daughter cells have half the number of chromosomes as the parent cell.
- B. Daughter cells contain twice the number of chromosomes as the parent cell.
- C. Daughter cells have the same number of chromosomes as the parent cell.**
- D. Daughter cells lose all chromosomes during division.

Q22 Cell Division (Mitosis, Meiosis)

Which of the following is true for mitosis but not for meiosis?

- A. Promotes genetic variation
- B. Produces identical daughter cells**
- C. Results in haploid cells
- D. Occurs in reproductive cells

Q23 Cell Structure & Organelles

What is the location of the cell wall in an organism?

- A. Just inside the plasma membrane in a plant cell
- B. Just outside the plasma membrane in a plant cell**
- C. Just inside the plasma membrane in an animal cell
- D. Just outside the plasma membrane in an animal cell

Q24 Cell Structure & Organelles

The plasma membrane is composed of _____.

- A. proteins and sugars
- B. DNA and lipids
- C. lipids and proteins**
- D. sugars and lipids

Q25 Cell Structure & Organelles

Which of the following statements is INCORRECT regarding cell type and shape?

- A. The white blood cell (WBC) has a round and fixed shape.**
- B. The muscle cell is spindle-shaped.
- C. The red blood cell (RBC) is disc-shaped with a central depression.
- D. The nerve cell is long and branched in shape.

Q26 Cell Structure & Organelles

What type of solution causes water to move out of a cell through the plasma membrane, making the cell shrink?

- A. Dilute solution
- B. Hypertonic solution**
- C. Hypotonic solution
- D. Isotonic solution

Q27 Cell Structure & Organelles

When salt solution is applied to boiled Rhoeo leaf peels, it fails to show plasmolysis due to:

- A. dead cells cannot osmoregulate**
- B. walls block salts
- C. nuclei stop diffusion
- D. chlorophyll takes up water



Q28 Cell Structure & Organelles

What conclusion can be drawn from the microscopic observation of onion peel cells?

- A. All onions are made up of similar small structures called cells ✓
- B. The size of the onion decides the shape of its individual cells
- C. Each onion peel contains cells of different composition
- D. Onion bulbs contain different cell types for different functions

Q29 Cell Structure & Organelles

Which of the following statements correctly explains the variety in the shape and size of cells?

- A. The shape and size of cells are related to the specific function they perform. ✓
- B. The shape and size of cells are identical in plants and animals.
- C. The shape and size of all cells remain constant in every organism.
- D. The shape and size of cells depend only on the availability of water.

Q30 Cell Structure & Organelles

Cells differ in shape and size according to the work they perform in living organisms. Which of the following correctly compares a cell's shape with its function?

- A. Nerve cell – Round in shape, stores food
- B. Red blood cell – Long and branched, transmits messages
- C. Muscle cell – Flat and disc-shaped, carries oxygen
- D. Amoeba – Irregular in shape, helps in movement and capturing food ✓

Q31 Cell Structure & Organelles

Movement of gases such as CO₂ or O₂ across the cell membrane occurs by _____, from _____ concentration to _____ concentration.

- A. diffusion; high; low ✓
- B. osmosis; low; high
- C. endocytosis; equal; equal
- D. active transport; low; high

Q32 Cell Structure & Organelles

Which phenomenon shows the role of the cell wall in osmosis?

- A. Diffusion of gases through cell membrane
- B. Plasmolysis observed when living plant cells lose water ✓
- C. Exchange of gases through stomata of leaves
- D. Absorption of light by chlorophyll during photosynthesis

Q33 Cell Structure & Organelles

In multicellular organisms, a lot of variation in the shape and size of cells makes an organism _____.

- A. more efficient with different cells performing different functions ✓
- B. prone to infection and death
- C. less efficient with no division of labour among the cells
- D. perform poorly in adverse conditions

Q34 Cell Structure & Organelles

Plastids have their own _____ and _____, similar to mitochondria.

- A. DNA; ribosomes ✓
- B. nucleus; chromosomes
- C. vesicles; proteins
- D. enzymes; vacuoles

Q35 Cell Structure & Organelles

Which of the following methods of reproduction simply involves the splitting of the parent cell into two daughter cells in the bacteria?

- A. Binary fission ✓
- B. Fragmentation
- C. Spore formation
- D. Budding

Q36 Cell Structure & Organelles

Which of the following represents a similarity between chloroplast and Mitochondria?

- A. Both possess their own DNA and 70S Ribosome. ✓
- B. Both perform photosynthesis.
- C. Both perform respiration.
- D. Both have chlorophyll.



Q37 Cell as basic unit / cell theory

Which of the following statements about cell size is correct?

- A. Cell size is related to its function, not the size of the organism.** ✓
- B. Cell size depends on the number of nuclei.
- C. Cell size is always large in multicellular organisms.
- D. All cells are of the same size in all organisms.

Q38 Cell as basic unit / cell theory

Which of the following features is seen in every cell under a microscope?

- A. Mitochondria
- B. Cell membrane** ✓
- C. Chromosome
- D. Lysosome

Q39 Cell as basic unit / cell theory

In a multicellular organism, how does each cell support the survival of the organism?

- A. By following division of labour** ✓
- B. By converting itself into a complete organ
- C. By trying to carry out all life functions by itself
- D. By working independently without interacting with other cells

Q40 Cell as basic unit / cell theory

Which of the following features are displayed by all cells under a microscope?

- A. Only plasma membrane and nucleus
- B. Plasma membrane, nucleus and cytoplasm
- C. Only plasma membrane and cytoplasm** ✓
- D. Only nucleus and cytoplasm

Q41 Cell as basic unit / cell theory

When onion bulbs of different sizes are viewed under a microscope, all show similar rectangular structures. This proves that _____.

- A. only big onions have cells
- B. cork cells are living
- C. cells differ in a onion
- D. all living things are made of cells** ✓

Q42 Cell organelles and functions

Why can tiny molecules like oxygen easily pass through the cell membrane, but not the big ones like starch or proteins?

- A. The cell membrane is completely solid.
- B. Small molecules have special energy to push through.
- C. Big molecules have to break down for entry.
- D. The cell membrane is permeable to selective substances.** ✓

Q43 Cell organelles and functions

Which of the following examples best illustrates the real-life role of lysosomes in action?

- A. A nerve cell passing signals to help you feel pain
- B. A white blood cell swallowing and breaking down harmful bacteria** ✓
- C. A red blood cell delivering oxygen to muscles
- D. A green leaf making food by photosynthesis

Q44 Cell organelles and functions

The plant cell wall is primarily composed of:

- A. cellulose** ✓
- B. chitin
- C. suberin
- D. N-Acetyl glucosamine

Q45 Cell organelles and functions

Which organelle is called the 'suicidal bag' of the cell?

- A. Golgi body
- B. Lysosome** ✓
- C. Ribosome
- D. Mitochondria

Q46 Cell organelles and functions

What is the role of lysosomes in a cell?

- A. To transport products
- B. To digest foreign material** ✓
- C. To produce ATP
- D. To store proteins



Q47 Cell organelles and functions

Which of the following is NOT a part of the structural organisation of a cell?

- ☒ A. Heart
- ☐ B. Cell wall
- ☐ C. Cytoplasm
- ☐ D. Mitochondria

Q48 Cell organelles and functions

The Golgi apparatus is associated with which of the following organelles?

- ☒ A. Endoplasmic reticulum
- ☐ B. Nucleus
- ☐ C. Mitochondria
- ☐ D. Plastids

Q49 Cell organelles and functions

Which of the following is a function of the Smooth Endoplasmic Reticulum (SER)?

- ☐ A. Assembly of ribosomes
- ☐ B. Synthesis of proteins
- ☐ C. Modification of sugars
- ☒ D. Manufacture of lipids

Q50 Cell organelles and functions

In eukaryotic cells, the smooth endoplasmic reticulum is mainly responsible for:

- ☒ A. Lipid synthesis and detoxification
- ☐ B. Protein synthesis
- ☐ C. Sugar breakdown
- ☐ D. Genetic information storage

Q51 Cell organelles and functions

What is the main function of leucoplasts in plant cells?

- ☐ A. Breaking down waste materials
- ☒ B. Storing materials like starch, oils, and proteins
- ☐ C. Absorbing sunlight
- ☐ D. Giving colour to flowers

Q52 Cell organelles and functions

Which of the following functions is NOT associated with Golgi Complex?

- ☒ A. It permits entries and exits of substances from the cell.
- ☐ B. It modifies and packages proteins received from the endoplasmic reticulum.
- ☐ C. It forms lysosomes that help in intracellular digestion.
- ☐ D. It transports and secretes materials outside the cell.

Q53 Cell organelles and functions

Which of the following is the fluid content inside the plasma membrane?

- ☐ A. Ribosomes
- ☐ B. Cell wall
- ☐ C. Nuclear membrane
- ☒ D. Cytoplasm

Q54 Cell organelles and functions

Why is the plasma membrane called selectively permeable?

- ☒ A. It allows only certain substances to pass in or out.
- ☐ B. It dissolves unwanted materials.
- ☐ C. It blocks all substances from entering.
- ☐ D. It allows all substances to pass freely.

Q55 Cell organelles and functions

Which of the following cell organelles help(s) in cellular reproduction?

- ☐ A. Plastids
- ☐ B. Endoplasmic Reticulum
- ☐ C. Lysosomes
- ☒ D. Nucleus

Q56 Cell organelles and functions

The key difference between rough endoplasmic reticulum and smooth endoplasmic reticulum is the presence of:

- ☒ A. ribosomes
- ☐ B. cytosol
- ☐ C. centrosomes
- ☐ D. mitochondria



Q57 Cell organelles and functions

Which of the following cell organelles stores starch, oil and protein granules?

- A. Chromoplast
- B. All plastids
- C. Leucoplast
- D. Chloroplast



Q58 Cell organelles and functions

Leucoplasts have which of the following colours?

- A. Orange
- B. Indigo
- C. Purple
- D. White



Q59 Cell organelles and functions

Which of the following is NOT a cell organelle?

- A. Endoplasmic Reticulum
- B. Cytoplasm
- C. Mitochondria
- D. Golgi Apparatus



Q60 Cell organelles and functions

What is the network of tiny tubular structures found in the cytoplasm of eukaryotic cells called?

- A. Mitochondria
- B. Golgi apparatus
- C. Endoplasmic reticulum
- D. Lysosome



Q61 Cell organelles and functions

Which of the following statements about vacuoles is INCORRECT?

- A. Vacuoles in plant cells are filled with cell sap, which helps provide turgidity and rigidity.
- B. Plant cells usually have a large central vacuole.
- C. Vacuoles are responsible for protein synthesis in the cell.
- D. Vacuoles store important substances such as amino acids, sugars, organic acids and proteins.



Q62 Cell organelles and functions

Which of the following statements is INCORRECT regarding the shape and function of different cell types?

- A. White blood cells can change shape to move through tissues.
- B. Red blood cells are biconcave to increase oxygen-carrying capacity.
- C. Muscle cells are flat and circular to help them flow in blood.
- D. Nerve cells are long and branched to carry messages across the body.



Q63 Cell organelles and functions

Which of the following cell organelles is filled with digestive enzymes and helps to keep the cell clean by digesting any foreign material as well as worn out cell organelles?

- A. Ribosome
- B. Chromoplast
- C. Chloroplast
- D. Lysosomes



Q64 Cell organelles and functions

Which cell organelle is responsible for packaging and dispatching materials within or outside the cell?

- A. Ribosome
- B. Mitochondria
- C. Golgi apparatus
- D. Nucleus



Q65 Cell organelles and functions

Which of the following is NOT a membrane bound organelle in eukaryotic cells?

- A. Lysosome
- B. Chromoplast
- C. Vacuole
- D. Ribosome



Q66 Cell organelles and functions

Which of the following structures is present at the surface of the rough endoplasmic reticulum membrane?

- A. Plasma membrane
- B. Chromosome
- C. Ribosome
- D. Cell wall



Q67 Cell organelles and functions

Which of the following statements is FALSE regarding cells?

- A. Cells can be round, oval, spindle-shaped or branched.
- B. Nerve cells are long to help in the conduction of impulses.
- C. Cell shape is often related to its function.
- D. All cells are of the same size and shape. ✓

Q68 Cell organelles and functions

Which of the following statements about lysosomes is correct?

- A. Lysosomes contain digestive enzymes. ✓
- B. Lysosomes synthesise fats.
- C. Lysosomes contain growth hormones.
- D. Lysosomes synthesise proteins.

Q69 Cell organelles and functions

Which of the following is the correct function of the Golgi body in a plant cell?

- A. Providing protection to the cell.
- B. Helping in the synthesis of proteins.
- C. Maintaining the shape of the cell.
- D. Supporting the formation of lysosomes. ✓

Q70 Cell organelles and functions

The smooth endoplasmic reticulum (SER) helps in the manufacture of _____.

- A. lipids (fats) ✓
- B. starch
- C. DNA
- D. proteins

Q71 Cell organelles and functions

Which of the following cell organelles have cisterns and is involved in the formation of lysosomes?

- A. Golgi apparatus ✓
- B. Leucoplast
- C. Chromoplast
- D. Mitochondria

Q72 Cell organelles and functions

What is the primary function of lysosomes in a cell?

- A. Regulation of water and mineral balance within the cytoplasm
- B. Production of energy in the form of ATP molecules
- C. Digestion of foreign materials and worn-out organelles ✓
- D. Synthesis of proteins and lipids for cell membranes

Q73 Cell organelles and functions

What is the name of the fluid present inside a plant cell vacuole?

- A. Cytoplasm
- B. Protoplasm
- C. Nucleoplasm
- D. Cell sap ✓

Q74 Cell organelles and functions

Which of the following statements correctly describes plastids in plant cells?

- A. They are found in prokaryotic cells like bacteria for photosynthesis
- B. They are present in both plant and animal cells in equal amount
- C. They are present only in plant cells and absent in animal cells ✓
- D. They are present only in animal cells and absent in plant cells

Q75 Cell organelles and functions

Which of the following cellular organelles performs the function of storage, modification and packaging of products in vesicles?

- A. Chloroplast
- B. Ribosomes
- C. Vacuoles
- D. Golgi Complex ✓

Q76 Cell organelles and functions

What distinguishes rough ER (RER) from smooth ER (SER)?

- A. Presence of ribosomes on RER, absence on SER ✓
- B. Presence of chlorophyll on RER, absence on SER
- C. Absence of proteins in RER, presence in SER
- D. Absence of membranes in RER, presence in SER



Q77 Cell organelles and functions

Why is the plasma membrane called a selectively permeable membrane?

- A. It allows free and equal movement of all substances.
- B. It allows only certain substances to pass through while restricting others. ✓
- C. It prevents all materials from entering or leaving the cell.
- D. It controls energy production for the entire cell.

Q78 Cell organelles and functions

Which description best defines cytoplasm?

- A. Genetic material present in the form of chromatin
- B. Rigid layer outside the plasma membrane providing support
- C. Fluid content inside the plasma membrane containing organelles ✓
- D. Network of tubes involved in protein transport within the cell

Q79 Cell organelles and functions

If a cell lacks a functional Golgi complex, it would mainly fail in _____.

- A. controlling cell division
- B. protein synthesis only
- C. packaging and secretion ✓
- D. formation of ATP

Q80 Cell organelles and functions

Why are vesicles important in the functioning of the Golgi apparatus?

- A. They digest waste materials
- B. They help in forming the nucleus
- C. They carry materials to and from the Golgi apparatus ✓
- D. They generate energy needed for packaging in Golgi apparatus

Q81 Cell organelles and functions

What name is given to the flat, stacked sacs that make up the Golgi apparatus?

- A. Cristae
- B. Thylakoids
- C. Cisternae ✓
- D. Vesicles

Q82 Cell organelles and functions

During an experiment, a cell is damaged and its lysosomes burst, releasing digestive enzymes into the cytoplasm. What is most likely to happen next?

- A. The cell will grow in size.
- B. The nucleus will divide rapidly.
- C. The cell will destroy itself and die. ✓
- D. The mitochondria will produce more energy.

Q83 Cell organelles and functions

Select the statement regarding cell organelles that is INCORRECT.

- A. They are membrane-bound structures.
- B. Each cell organelle performs a special function.
- C. They are found in Prokaryotic cells. ✓
- D. They are found in Eukaryotic cells.

Q84 Cell organelles and functions

What is the main structural component of the plant cell wall?

- A. Cellulose ✓
- B. Collagen
- C. Peptidoglycan
- D. Chitin

Q85 Cell organelles and functions

In a eukaryotic cell observed under a microscope, the three main components visible are:

- A. endoplasmic reticulum, Golgi body and nucleoid
- B. capsule, nucleoid and cytoplasm
- C. plasma membrane, nucleus and cytoplasm ✓
- D. cell wall, ribosome and vacuole

Q86 Cell organelles and functions

Cytoplasm is made up of an aqueous ground substance called:

- A. chromoplasm
- B. cytosol ✓
- C. lysosomal fluid
- D. nucleoplasm



Q87 Cell organelles and functions

In a lab, a student sees a large transparent sac filling most of a plant cell. What percentage of the cell's volume does the vacuole occupy?

A. 50–90%



B. 100%

C. 20–30%

D. 5–15%

Q88 Cell organelles and functions

Select the correct function of the smooth endoplasmic reticulum.

A. Carbohydrate synthesis

B. Lipid synthesis



C. Nucleic acid synthesis

D. Protein synthesis

Q89 Cell organelles and functions

Which of the following is NOT a function of the cell wall?

A. Synthesising proteins for the cell



B. Protecting the cell from mechanical damage

C. Providing shape to the cell

D. Helping in cell-to-cell interaction

Q90 Cell organelles and functions

Rough endoplasmic reticulum (RER) bears ____ for protein synthesis, while smooth endoplasmic reticulum (SER) synthesizes ____.

A. pores; RNA

B. ribosomes; lipids



C. enzymes; sugars

D. lysosomes; DNA

Q91 Cell organelles and functions

Plastids are easily observed under a microscope because:

A. they contain DNA

B. they are large and contain pigments



C. they are colourless

D. they are very small

Q92 Cell organelles and functions

The cellular organelles are suspended in a jelly called ____.

A. Cytoplasm



B. Stroma

C. Nucleoplasm

D. Lumen

Q93 Cell organelles and functions

Which process occurring in the Golgi apparatus shows its role in synthesis?

A. Formation of complex sugars from simple sugars



B. Synthesis of nucleic acids from ribosomes

C. Conversion of proteins into amino acids

D. Absorption of water through osmosis

Q94 Cell organelles and functions

Select the statement regarding the cytoplasm of a cell that is INCORRECT.

A. In a plant cell, cytoplasm is found between cell wall and plasma membrane.



B. Cytoplasm contains many cell organelles.

C. Cytoplasm is the fluid-filled region inside plasma membrane.

D. Cytoplasm is present in both eukaryotic and prokaryotic cells.

Q95 Cell organelles and functions

Which of the following cell structures helps amoeba to acquire its food material?

A. Nuclear membrane

B. Cilia

C. Flagella

D. Plasma membrane

**Q96 Mitochondria (powerhouse) and ribosome**

Which of the following cell organelles have enough surface area for ATP-generating chemical reactions?

A. Vacuoles

B. Mitochondria



C. Lysosomes

D. Cell wall



Q97 Mitochondria (powerhouse) and ribosome

Mitochondria are special because they have their own DNA and ribosomes. What can they do on this basis?

- A. Digest materials like lysosomes do
- B. Make some of their own proteins ✓
- C. Make food using sunlight like plants do
- D. Move around the cell on their own

Q98 Mitochondria (powerhouse) and ribosome

Due to presence of which particle, does Rough Endoplasmic Reticulum (RER) look rough under a microscope?

- A. Centrosome
- B. Lysosome
- C. Ribosome ✓
- D. Peroxisome

Q99 Mitochondria (powerhouse) and ribosome

Which of the following cell organelles releases Adenosine Tri Phosphate (ATP) molecules needed for life activities?

- A. Mitochondria ✓
- B. Lysosomes
- C. Golgi apparatus
- D. Vacuoles

Q100 Mitochondria (powerhouse) and ribosome

Which cell organelle is responsible for releasing energy in the form of ATP, which enables various metabolic functions in an animal cell?

- A. Lysosome
- B. Nucleus
- C. Endoplasmic reticulum
- D. Mitochondria ✓

Q101 Mitochondria (powerhouse) and ribosome

Which primary feature allows mitochondria to be called the 'powerhouse of the cell'?

- A. They synthesise energy as ATP ✓
- B. They store calcium ions
- C. They control protein synthesis
- D. They contain digestive enzymes

Q102 Mitochondria (powerhouse) and ribosome

Which of the following statements is correct regarding the mitochondria in a plant cell?

- A. The mitochondrial inner membrane is deeply folded. ✓
- B. Mitochondria performs photosynthesis.
- C. Mitochondria has a single membranous covering.
- D. Mitochondria does not have its own DNA.

Q103 Mitochondria (powerhouse) and ribosome

Which of the following cell organelles do NOT have their own DNA?

- A. Plastids
- B. Mitochondria
- C. Nucleus
- D. Lysosomes ✓

Q104 Mitochondria (powerhouse) and ribosome

The number of mitochondria in a cell varies depending on which of the following?

- A. The size of the nucleus
- B. The physiological activity of the cell ✓
- C. The age of the organism
- D. The amount of DNA present in the cell

Q105 Nucleus, DNA, chromosomes basics

What is the main function of the nucleus in an eukaryotic cell?

- A. Digesting waste
- B. Directing life processes of the cell ✓
- C. Acting as a storage unit for food
- D. Producing energy

Q106 Nucleus, DNA, chromosomes basics

Which of the following statements is NOT correct regarding the nucleus?

- A. Nuclear membrane is a double-layered structure.
- B. Nucleus contains chromosomes.
- C. Nucleus plays a central role in cellular reproduction.
- D. Nuclear membrane is a non-porous and rigid structure. ✓



Q107 Nucleus, DNA, chromosomes basics

The dense structure inside the nucleus that produces ribosomes is called the _____.

- A. mitochondria
- B. lysosome
- C. centrosome
- D. nucleolus

**Q108 Nucleus, DNA, chromosomes basics**

What is the function of the nuclear membrane in a cell?

- A. It stores digestive enzymes for chromosomal activities.
- B. It prevents the entry of gases and water molecules into the nucleus.
- C. It regulates the transfer of material between nucleus and cytoplasm.
- D. It provides energy for nuclear division during mitosis.

**Q109 Nucleus, DNA, chromosomes basics**

The _____ is a dark, spherical structure in the cell, surrounded by a _____ membrane with pores for material exchange.

- A. nucleoid; single
- B. nucleus; double
- C. nucleoid; double
- D. vacuole; single

**Q110 Plant vs Animal Cell**

Which of the following cells change shape by changing the amount of water in them?

- A. Smooth muscle cell
- B. Cardiac muscle cell
- C. Striated muscle cell
- D. Plant cell

**Q111 Plant vs animal cell differences**

In addition to plasma membrane, which of the following outer coverings is present in plant cells?

- A. Nuclear membrane
- B. Cytoplasm
- C. Cell wall
- D. Centriole

**Q112 Plant vs animal cell differences**

Which of the following is NOT present in animal cells?

- A. Cytoplasm
- B. Nucleus
- C. Plasma membrane
- D. Chloroplast

**Q113 Plant vs animal cell differences**

Which of the following correctly compares the cell wall and cell membrane in plant and animal cells?

- A. Both plant and animal cells have a cell wall but only plant cells have a cell membrane.
- B. Neither plant nor animal cells have a cell wall, but both have a cell membrane.
- C. Plant cells have both a rigid cell wall and a cell membrane, while animal cells only have a flexible cell membrane.
- D. Animal cells have both a rigid cell wall and a cell membrane, while plant cells only have a flexible cell membrane.

**Q114 Plant vs animal cell differences**

What is the primary component of the plant cell wall?

- A. Cutin
- B. Suberin
- C. Cellulose
- D. Lignin

**Q115 Plant vs animal cell differences**

Which of the following statements correctly compares vacuoles in plant and animal cells?

- A. Plant cells have large vacuoles, animal cells have small ones
- B. Both plant and animal cells have equal-sized vacuoles
- C. Vacuoles are absent in both plant and animal cells
- D. Animal cells have larger vacuoles than plant cells

**Q116 Plant vs animal cell differences**

Which of the following cell organelle is present ONLY in animal cells but not in plant cells?

- A. Golgi apparatus
- B. Vacuole
- C. Mitochondria
- D. Centrosome



Q117 Plant vs animal cell differences

In a hypotonic solution, which of the following statements is correct for animal tissues compared with plant tissues?

- A. Animal cells have thicker cellulose walls than plants.
- B. Animal cells are more likely to lyse without an external wall. ✓
- C. Animal cells shrink more than plant cells in dilute media.
- D. Animal cells resist swelling due to a rigid wall.

Q118 Prokaryotic vs eukaryotic cells

Prokaryotic cells differ from eukaryotic cells in having which of the following?

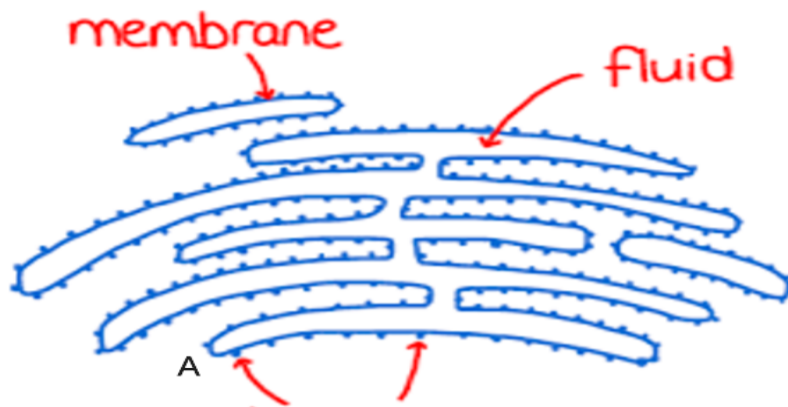
- A. Membrane-bound organelles
- B. A true nucleus
- C. Ribosomes
- D. No membrane-bound nucleus ✓

Q119 General Science

The diffusion of water through a selectively permeable membrane is known as ____.

- A. osmosis ✓
- B. transpiration
- C. diffusion
- D. active transport

Q120 Mitochondria (powerhouse) and ribosome



What is the primary function of the structure 'A' attached to the rough endoplasmic reticulum in the given diagram?

- A. Digestion of food particles
- B. Storing genetic material
- C. Production of fat molecules
- D. Manufacturing proteins ✓



Q1 Audible range and ultrasonic/infrasonic

Which of the following is true about infrasonic sound?

- A. Frequency > 20 kHz
- B. Cannot travel in air
- C. Frequency < 20 Hz
- D. Frequency between 20 Hz and 20 kHz

**Q2 Audible range and ultrasonic/infrasonic**

Which animal is known to communicate using infrasound?

- A. Bat
- B. Rhinoceros
- C. Dolphin
- D. Rat

**Q3 Audible range and ultrasonic/infrasonic**

Which category of sound frequency is used by rhinoceroses, whales, and elephants for communication?

- A. Ultrasound
- B. Audible sound
- C. Infrasound
- D. Supersonic sound

**Q4 Audible range and ultrasonic/infrasonic**

Which of the following animals produces infrasound?

- A. Whales and elephants
- B. Birds and snakes
- C. Dogs and cats
- D. Horses and cows

**Q5 Audible range and ultrasonic/infrasonic**

Which of the following sound frequencies is inaudible to humans?

- A. 2000 Hz
- B. 5000 Hz
- C. 25,000 Hz
- D. 50 Hz

**Q6 Echo and reverberation**

What is the primary cause of reverberation in a hall or room?

- A. Absorption of sound by soft materials
- B. Variation in air temperature
- C. Multiple reflections of sound from hard surfaces
- D. Bending of sound waves

**Q7 Echo and reverberation**

The speed of sound in air is approximately 340 m/s. If a reflecting surface is 17 m away, how long does it take for an echo to return to the source?

- A. 0.1 s
- B. 0.05 s
- C. 0.5 s
- D. 1 s

**Q8 Echo and reverberation**

The working principle of a stethoscope is based on the _____.

- A. absorption of high-frequency sound
- B. reflection of sound
- C. conversion of sound into electric signals only
- D. conversion of sound into light for observation

**Q9 Echo and reverberation**

How does the sound of a patient's heartbeat reach the doctor's ears through a stethoscope?

- A. The sound travels directly through the stethoscope without any reflection.
- B. The stethoscope uses electricity to amplify the heartbeat sound.
- C. The sound is carried by moving air from the chest to the doctor's ears.

In stethoscopes, the sound of the patient's heartbeat reaches the doctor's ears by multiple reflection of sound.



Q10 Echo and reverberation

The effect of multiple reflections of sound in large halls or auditoriums is, _____.

- A. it converts sound into heat
- B. it helps in uniform distribution of sound ✓
- C. it blocks sound propagation
- D. it eliminates all echoes

Q11 Echo and reverberation

What is the minimum time gap needed between the original sound and its echo for us to hear a clear echo?

- A. 10 seconds
- B. 0.1 seconds ✓
- C. 0.01 seconds
- D. 1 second

Q12 Echo and reverberation

Which of the following will NOT produce an echo?

- A. A wall at 10 m distance ✓
- B. A mountain at 50 m distance
- C. A tall building at 30 m distance
- D. A cliff at 100 m distance

Q13 Echo and reverberation

If the speed of sound in air is 344 m/s, what is the minimum distance required for an observer to hear a distinct echo?

- A. 17.2 m ✓
- B. 34.4 m
- C. 344 m
- D. 0.1 m

Q14 Echo and reverberation

The main purpose of having a curved ceiling in a concert hall is to _____.

- A. Prevent sound from entering the hall
- B. Increase the pitch of music
- C. Absorb all sound
- D. Focus sound waves to reach all parts of the hall evenly ✓

Q15 Echo and reverberation

For a distinct echo to be heard, the minimum time interval between the original sound and the reflected sound should be approximately _____.

- A. 0.1 s ✓
- B. 0.5 s
- C. 0.01 s
- D. 1 s

Q16 Echo and reverberation

Which of the following is the correct way to reduce reverberations?

- A. Using sound-absorbent materials ✓
- B. Using hard concrete floor
- C. Removing furniture
- D. Using marble walls

Q17 Echo and reverberation

A stethoscope helps a doctor hear a patient's heartbeat clearly. Which principle does a stethoscope use for this purpose?

- A. Multiple reflection of sound ✓
- B. Interference of sound
- C. Refraction of sound
- D. Diffraction of sound

Q18 Echo and reverberation

Why are ceilings of concert halls often made curved?

- A. To reflect sound uniformly in all directions ✓
- B. To reduce the speed of sound in air
- C. To completely stop reverberation
- D. To absorb sound and reduce loudness

Q19 Echo and reverberation

Which of the following DOES NOT use the concept of multiple reflection of sound waves?

- A. Vibrating tuning fork ✓
- B. Trumpet
- C. Stethoscope
- D. Megaphones



Q20 Echo and reverberation

The main reason an echo is NOT heard clearly in a small room is:

- A. Sound intensity decreases too quickly over short distances
- B. Sound frequency is too high
- C. Sound travels too slowly
- D. Time interval between original sound and echo is too short ✓

Q21 Echo and reverberation

Which of the following is the correct reason for constructing the ceilings of large halls in a curved shape?

- A. To provide more storage space above the ceiling
- B. To reduce the overall height of the hall
- C. To reduce construction cost
- D. To allow sound to distribute evenly in the hall ✓

Q22 Echo and reverberation

Which of the following devices work on the principle of multiple reflections of sound waves?

- A. Microscope
- B. Stethoscope ✓
- C. Megaphone
- D. Thermometer

Q23 Echo and reverberation

The main purpose of designing a hall with curved walls and ceilings is _____.

- A. to make the sound louder only near the stage
- B. to reduce the speed of sound
- C. to make the hall look beautiful
- D. to ensure uniform sound distribution ✓

Q24 Echo and reverberation

A girl clapped her hands near a cliff and heard the echo after 4 s. What is the distance of the cliff from the girl if the speed of the sound is taken as 320 m s^{-1} ?

- A. 1280 m
- B. 320 m
- C. 640 m ✓
- D. 80 m

Q25 Echo and reverberation

To hear a distinct echo, what should be the minimum time interval between the original sound and the reflected sound?

- A. 1.0 s
- B. 0.2 s
- C. 0.01 s
- D. 0.1 s ✓

Q26 Echo and reverberation

Why are the ceilings of places like concert halls and cinema halls usually made curved?

- A. To make the hall look more attractive
- B. To block the sound from reflecting
- C. To reduce the size of the building
- D. To help sound reflect and reach all parts of the hall ✓

Q27 Echo and reverberation

A girl clapped her hands near a cliff and heard the echo after 8 s. What is the distance of the cliff from the girl if the speed of the sound is taken as 320 m s^{-1} ?

- A. 80 m
- B. 320 m
- C. 1280 m ✓
- D. 640 m

Q28 Echo and reverberation

Megaphone, horn and stethoscope are the devices used to _____.

- A. Control amplitude of sound
- B. Change pitch
- C. Produce, transmit, and amplify sound ✓
- D. Block sound

Q29 Echo and reverberation

Please select the correct option for the assertion-reason statement.

Assertion: The ceiling conference halls are made curved.
Reason: Curved ceilings help the sound to spread evenly in the hall.

- A. Both assertion and reason are true and reason is the correct explanation of assertion. ✓
- B. Assertion is false and reason is true.
- C. Assertion is true but reason is false.
- D. Both assertion and reason are false.



Q30 Echo, Resonance, Doppler Effect

Which of the following is NOT correct?

- A. Multiple reflections improve sound distribution in large halls
- B. Multiple reflections are undesirable in small rooms
- C. Multiple reflections can cause reverberation
- D. Multiple reflections change the pitch of sound ✓

Q31 Echo, Resonance, Doppler Effect

What is reverberation?

- A. Loss of sound energy in air
- B. Spreading of sound in all directions
- C. Persistence of sound due to multiple reflections of sound waves ✓
- D. Change in pitch of sound

Q32 Echo, Resonance, Doppler Effect

In stethoscopes, the sound of the heartbeat is transmitted to the doctor's ears because:

- A. the sound waves undergo successive refraction in the tube
- B. the sound waves are absorbed by the tube walls
- C. the sound waves are guided by multiple reflections in the tube ✓
- D. the sound waves are amplified by electricity

Q33 Frequency, wavelength, amplitude, pitch

The frequency of a sound wave is 50 Hz. How much time will it take to complete one wave?

- A. 50 s
- B. 5 s
- C. 0.02 s ✓
- D. 0.2 s

Q34 Frequency, wavelength, amplitude, pitch

When we hit a table lightly, the sound produced is soft because the:

- A. speed of sound decreases
- B. wavelength becomes shorter
- C. amplitude of vibration is small ✓
- D. frequency of vibration is low

Q35 Frequency, wavelength, amplitude, pitch

Which of the following increases when the amplitude of a wave increases?

- A. Wavelength
- B. Speed
- C. Frequency
- D. Energy of the wave ✓

Q36 Frequency, wavelength, amplitude, pitch

Which of the following correctly defines the amplitude of a wave?

- A. The number of vibrations per second
- B. The speed with which the wave travels
- C. The distance between two consecutive crests
- D. The maximum displacement of the particle from its mean position ✓

Q37 Frequency, wavelength, amplitude, pitch

Compared to a soft sound, a louder sound wave of the same frequency is characterised by _____.

- A. Higher pitch
- B. Larger amplitude ✓
- C. Smaller speed
- D. Smaller wavelength

Q38 Frequency, wavelength, amplitude, pitch

Which of the following is true regarding loudness of sound?

- A. Loudness depends on the amplitude. ✓
- B. Loudness depends on the wavelength.
- C. Loudness depends on the speed of wave.
- D. Loudness depends on the frequency.

Q39 Frequency, wavelength, amplitude, pitch

A high-pitch and a low-pitch sound have _____, respectively.

- A. high amplitude and low frequency
- B. high frequency and low frequency ✓
- C. low amplitude and high frequency
- D. low frequency and high frequency



Q40 Frequency, wavelength, amplitude, pitch

If the speed of a wave is 300 m/s and its wavelength is 0.75 m, the frequency of the wave is _____.

- A. 300 Hz
- B. 75 Hz
- C. 225 Hz
- D. 400 Hz

**Q41** Frequency, wavelength, amplitude, pitch

A sound of 100 Hz is compared with a sound of 500 Hz. Which of the following statements is correct?

- A. 500 Hz sound has a higher pitch.
- B. 100 Hz sound has a higher pitch.
- C. Both have the same pitch.
- D. Pitch cannot be compared.

**Q42** Frequency, wavelength, amplitude, pitch

Which wave characteristic determines the loudness of a sound?

- A. Wavelength
- B. Pitch
- C. Amplitude
- D. Frequency

**Q43** Frequency, wavelength, amplitude, pitch

A sound wave has a frequency of 250 Hz. The time taken for one complete vibration is:

- A. 0.40 s
- B. 4.0 s
- C. 0.25 s
- D. 0.004 s

**Q44** Frequency, wavelength, amplitude, pitch

The frequency of a sound wave is 250 Hz. What is its time period?

- A. 25 s
- B. 40 s
- C. 0.004 s
- D. 0.25 s

**Q45** Frequency, wavelength, amplitude, pitch

The speed of sound (v) is calculated by multiplying which two wave properties?

- A. Wavelength and Frequency
- B. Wavelength and Amplitude
- C. Amplitude and Time Period
- D. Amplitude and Frequency

**Q46** Frequency, wavelength, amplitude, pitch

If the frequency of a sound wave increases but its speed remains constant, then its wavelength will:

- A. Become zero
- B. Remain the same
- C. Increase
- D. Decrease

**Q47** Frequency, wavelength, amplitude, pitch

A sound wave has a frequency of 1600 Hz. If the wavelength of the wave is 0.2 m, what will be the speed of the wave?

- A. 32 m/s
- B. 8000 m/s
- C. 800 m/s
- D. 320 m/s

**Q48** Frequency, wavelength, amplitude, pitch

Which of the following sounds has the lowest pitch?

- A. A bird's chirp (1500 Hz)
- B. A tuning fork (512 Hz)
- C. A child's voice (350 Hz)
- D. A man's deep voice (100 Hz)

**Q49** Frequency, wavelength, amplitude, pitch

Which of the following pairs of frequency and time period is correctly related?

- A. 5 Hz and 5 s
- B. 1 Hz and 2 s
- C. 10 Hz and 0.1 s
- D. 2 Hz and 0.2 s



Q50 Frequency, wavelength, amplitude, pitch

An ultrasonic wave has a frequency of 33 kHz. What will be the wavelength of this wave, if its speed is 330 m/s?

- A. 100 m
- B. 0.01 m
- C. 0.1 m
- D. 10 m

**Q51** Frequency, wavelength, amplitude, pitch

A sound wave has a wavelength of 0.5 m and frequency 680 Hz. The speed of sound is:

- A. 1360 m/s
- B. 170 m/s
- C. 340 m/s
- D. 680 m/s

**Q52** Frequency, wavelength, amplitude, pitch

Which of the following statements is/are true about the loudness and softness of a sound wave?

- (i) A loud sound has less amplitude as compared to a soft sound.
- (ii) A loud sound has more energy associated with it as compared to a soft sound.
- (iii) The loudness of a sound wave is the measure of the response of the ear to the sound.

- A. Only (i)
- B. Both (ii) and (iii)
- C. Only (iii)
- D. Both (i) and (ii)

**Q53** Frequency, wavelength, amplitude, pitch

For a given wave, if the speed becomes three times and the wavelength becomes three times, the frequency ____.

- A. becomes three times
- B. remains the same
- C. becomes nine times
- D. becomes one-third

**Q54** Frequency, wavelength, amplitude, pitch

If the frequency of a vibrating object is 50 Hz, what is its time period?

- A. 5 s
- B. 0.02 s
- C. 2 s
- D. 0.2 s

**Q55** Frequency, wavelength, amplitude, pitch

A man's pitch is ____ than child's pitch.

- A. same
- B. higher
- C. sometimes higher and sometimes lower
- D. lower

**Q56** Frequency, wavelength, amplitude, pitch

What happens to the sound when the source vibrates faster?

- A. The frequency and pitch become lower.
- B. The sound stops producing compressions and rarefactions.
- C. The frequency and pitch become higher.
- D. The pitch stays the same, but frequency decreases.

**Q57** Frequency, wavelength, amplitude, pitch

When the frequency of vibration of a sound source increases, the resulting sound will have ____.

- A. Higher pitch
- B. Greater loudness
- C. Lower pitch
- D. Smaller amplitude

**Q58** Frequency, wavelength, amplitude, pitch

A sound wave has a speed of 320 m/s. If the wavelength of the wave is 0.4 m, what is the frequency of this wave?

- A. 128 Hz
- B. 80 Hz
- C. 1280 Hz
- D. 800 Hz

**Q59** Frequency, wavelength, amplitude, pitch

If the wavelength of light is 600 nm and its speed is 3×10^8 m/s, the frequency is approximately ____.

- A. 3×10^8 Hz
- B. 2×10^{12} Hz
- C. 6×10^{10} Hz
- D. 5×10^{14} Hz



Q60 SONAR and ultrasound applications

Which of the following is NOT an application of ultrasound?

- A. Cleaning the objects
- B. Regular hearing tests ✓
- C. Medical imaging
- D. Detecting cracks in metal blocks

Q61 SONAR and ultrasound applications

In industries, how are ultrasonic waves primarily used to ensure the structural integrity of metallic components such as machine parts and bridges?

- A. To polish the surface of the metal
- B. To detect cracks and flaws inside the block ✓
- C. To change the density of the metal
- D. To heat the metal to remove impurities

Q62 SONAR and ultrasound applications

Why are ultrasounds preferred for cleaning objects with complex shapes?

- A. Their high frequency dislodges dirt particles ✓
- B. They produce magnetic effect
- C. They increase temperature of solution
- D. They have very high speed in liquids

Q63 SONAR and ultrasound applications

What is ultrasonography used for during pregnancy?

- A. To measure the mother's weight
- B. To check the mother's heartbeat
- C. To detect birth defects and monitor the baby's growth ✓
- D. To find the blood group of the baby

Q64 Sound as mechanical wave / needs medium

Select the correct option regarding the following two statements labelled Assertion and Reason.

Assertion: Sound waves are non-mechanical waves.

Reason: Sound waves require a material medium for their propagation.

- A. Assertion is true but reason is false.
- B. Assertion is false but reason is true. ✓
- C. Both assertion and reason are true and reason is the correct explanation of assertion.
- D. Both assertion and reason are false.

Q65 Sound as mechanical wave / needs medium

How does the sound of a patient's heartbeat travel from the chest piece to the doctor's ear through a stethoscope?

- A. By multiple reflection of sound ✓
- B. By conversion to electrical signals
- C. By direct transmission without reflection
- D. By refraction of sound waves

Q66 Sound as mechanical wave / needs medium

Why are sound waves classified as mechanical waves?

- A. They are characterised by the motion of particles in a medium ✓
- B. They oscillate perpendicular to wave propagation
- C. They cause light oscillations
- D. They do not require a medium to travel

Q67 Sound as mechanical wave / needs medium

Which of the following is essential for the propagation of sound waves?

- A. Light source
- B. Medium ✓
- C. Vacuum
- D. Magnet

Q68 Sound as mechanical wave / needs medium

Which of the following statements about sound propagation is true?

- A. Sound can travel in a vacuum.
- B. Sound travels at the same speed in all mediums.
- C. Sound is the fastest in gases, slower in liquids and the slowest in solids.
- D. Sound is the fastest in solids, slower in liquids and the slowest in gases. ✓

Q69 Sound as mechanical wave / needs medium

Which of the following statements about sound propagation is correct?

- A. Sound travels faster in gases than in solids.
- B. Sound travels in the form of transverse waves in air.
- C. Sound can travel in vacuum.
- D. Sound requires a medium for propagation. ✓



Q70 Sound as mechanical wave / needs medium

Which of the following is the correct reason for NOT being able to hear sound on the Moon?

A. The Moon has no atmosphere. ✓

B. The Moon is very far away from the Earth.

C. The Moon is very cold.

D. The Moon has craters.

Q71 Sound as mechanical wave / needs medium

In a sound wave, the particles of the medium ____.

A. rotate continuously

B. vibrate along the direction of wave propagation ✓

C. vibrate perpendicular to the direction of wave propagation

D. do not vibrate

Q72 Sound as mechanical wave / needs medium

Which of the following is an example of a vibrating body producing sound?

A. A moving car

B. A pendulum swinging silently

C. A ringing tuning fork ✓

D. A stationary fan

Q73 Speed of sound in media

The speed of sound in air is about 343 m/s at room temperature. What happens to its speed when it travels through water?

A. It becomes zero

B. It increases ✓

C. It remains the same

D. It decreases

Q74 Speed of sound in media

In which of the following media is the speed of sound the highest?

A. Air at room temperature

B. Water

C. Vacuum

D. Iron ✓

Q75 Speed of sound in media

Why do we see the flash of lightning before we hear the sound of thunder?

A. Light and sound travel at the same speed

B. Light is brighter than sound

C. Light travels slower than sound

D. Sound travels slower than light ✓

Q76 Speed of sound in media

When the temperature of air increases, the speed of sound waves:

A. increases ✓

B. decreases

C. remains constant

D. becomes zero

Q77 Ultrasound & Applications

Which of the following is an application of ultrasound in industry?

A. Making objects lighter in weight

B. Detecting cracks in metal blocks ✓

C. Used in refrigerators for cooling

D. Increasing the speed of sound in solids

Q78 Ultrasound & Applications

Which of the following is the primary use of ultrasound in echocardiography?

A. Examine the structure and function of the heart ✓

B. Cleaning or removing arterial blockages

C. Determining body weight

D. Measuring blood sugar levels

Q79 Wave Properties (Frequency, Wavelength)

A sound wave has a frequency of 4 kHz and a wavelength of 15 cm. How much time will it take to cover a distance of 1.8 km?

A. 4 seconds

B. 3 seconds ✓

C. 0.003 seconds

D. 0.03 seconds



Q80 Wave Properties (Frequency, Wavelength)

Which of the following statements is NOT correct?

- A. Soft sound has small amplitude
- B. Loudness depends on amplitude
- C. Loudness depends on frequency ✓
- D. Loud sound has large amplitude

Q81 Wave Properties (Frequency, Wavelength)

Sounds of single frequency and mixture of several frequencies are known as _____, respectively.

- A. noise and tone
- B. note and tone
- C. tone and note ✓
- D. tone and noise

Q82 Wave Properties (Frequency, Wavelength)

Which of the following statements is correct?

- A. High pitch means low frequency.
- B. Pitch has no relation with frequency.
- C. High pitch means high frequency. ✓
- D. Low pitch means high frequency.

Q83 Wave Properties (Frequency, Wavelength)

Why are megaphones, loudhailers and some musical instruments designed with a tube followed by a conical opening?

- A. To direct most of the sound waves forward toward the audience without spreading it ✓
- B. To absorb the sound waves
- C. To spread the sound in all directions
- D. To make the sound quieter

Q84 Wave types (transverse/longitudinal)

Sound waves in air are longitudinal because:

- A. Particles move along the direction of propagation ✓
- B. Particles move perpendicular to direction of propagation
- C. Particles move randomly
- D. Air molecules do not vibrate

Q85 Wave types (transverse/longitudinal)

What happens in a longitudinal wave?

- A. Particles oscillate up and down about their mean position
- B. Particles stay completely still as the wave passes
- C. Particles oscillate back and forth about their position of rest ✓
- D. Particles move in circles around their rest position

Q86 Wave types (transverse/longitudinal)

What do we call the low-pressure area created when a vibrating object moves backward?

- A. Compression
- B. Wavelength
- C. Rarefaction ✓
- D. Reflection

Q87 Wave types (transverse/longitudinal)

Read the given Assertion (A) and Reason (R) carefully and select the correct option.

(A): Sound waves are transverse waves.

(R): Sound waves require a material medium for their propagation.

- A. Both assertion and reason are false.
- B. Assertion is false and reason is true. ✓
- C. Assertion is true but reason is false.
- D. Both assertion and reason are true and reason is the correct explanation of assertion.

Q88 Wave types (transverse/longitudinal)

In a longitudinal wave, particle's motion is _____.

- A. parallel to the wave direction ✓
- B. perpendicular to the wave motion
- C. random
- D. circular

Q89 General Science

What term describes the rapid to and fro motion of an object that is essential for producing sound?

- A. Rarefaction
- B. Refraction
- C. Vibration ✓
- D. Compression



Q90 General Science

Megaphones, loudhailers, and shehnais are designed to:

- A. focus sound waves in a particular direction ✓
- B. reduce the intensity of sound waves
- C. spread sound waves equally in all directions
- D. convert sound waves into electrical signals

Q91 General Science

Which of the following shows the correct chain of events when a vibrating body produces sound?

- A. Sound → Vibration → Medium vibration → Ear detects
- B. Vibration → Particles of medium vibrate → Sound wave propagates → Sound is heard ✓
- C. Vibration → Electricity → Sound
- D. Vibration → Light → Heat → Sound

Q92 General Science

The stethoscope works on which principle?

- A. Dispersion of sound
- B. Multiple reflection of sound ✓
- C. Diffraction of sound
- D. Refraction of sound

Q93 Wave Properties (Frequency, Wavelength)

$1/T$

- A. λ
- B. v
- C. v ✓
- D. A



Q1 Extraction & Metallurgy

What is anode mud?

- A. Insoluble impurities settle at anode in electrolytic refining ✓
- B. Soluble impurities in solution in electrolytic refining
- C. A solution of soil and water
- D. Insoluble impurities settle at cathode in electrolytic refining

Q2 Extraction & Metallurgy

Metallurgy is:

- A. heating sulphide ore in excess of air
- B. prevention of iron from corrosion
- C. removing gangue from ores
- D. extraction of metals in pure form from their ores ✓

Q3 Extraction & Metallurgy

What is the role of sulphuric acid in the anodising process of aluminium?

- A. It dissolves aluminium completely.
- B. It acts as an electrolyte to help form a thicker oxide layer. ✓
- C. It prevents oxidation of aluminium.
- D. It reacts with aluminium to form aluminium chloride.

Q4 Extraction & Metallurgy

Which of the following refining methods is very important commercially?

- A. Ionic methods
- B. Chemical methods ✓
- C. Physical methods
- D. Electrochemical methods

Q5 Extraction of metals (metallurgy basics)

Which of the following metals is extracted in the middle of the activity series?

- A. Sodium
- B. Potassium
- C. Gold
- D. Iron ✓

Q6 Extraction of metals (metallurgy basics)

The processes used for removing the gangue from the ore are based on the differences between which properties of the gangue and the ore?

- A. Refractive index
- B. Only physical
- C. Chemical or physical ✓
- D. Only chemical

Q7 Extraction of metals (metallurgy basics)

Which of the following metals is purified by distillation?

- A. Silver
- B. Copper
- C. Zinc ✓
- D. Iron

Q8 Extraction of metals (metallurgy basics)

Which of the following metallic oxides can be reduced to metals by heating alone?

- A. Manganese oxide
- B. Iron (III) oxide
- C. Mercuric oxide ✓
- D. Zinc oxide

Q9 Extraction of metals (metallurgy basics)

During the process of electrolytic refining of metals, on passing the current through the electrolyte, the impure metal from the _____ dissolves into the electrolyte.

- A. both anode and cathode
- B. cathode
- C. salt bridge
- D. anode ✓

Q10 Extraction of metals (metallurgy basics)

What is used as the anode during electrolytic refining?

- A. An inert electrode
- B. A rod of graphite
- C. A strip of impure metal to be refined ✓
- D. A strip of pure metal to be refined



Q11 Extraction of metals (metallurgy basics)

The _____ ores are converted to their respective oxides by the process of roasting.

- A. chloride
- B. sulphide
- C. sulphite
- D. carbonate

**Q12 Extraction of metals (metallurgy basics)**

The process used for removing gangue from the ore works on the basis of difference of their chemical or physical properties and is called _____ of ores.

- A. enrichment
- B. polishing
- C. colouring
- D. weighing

**Q13 Extraction of metals (metallurgy basics)**

The most common electrolyte to be used for electrolytic refining of copper would be the solution of acidified:

- A. copper chloride
- B. copper oxide
- C. copper carbonate
- D. copper sulphate

**Q14 Extraction of metals (metallurgy basics)**

The method of extraction of a metal depends on its:

- A. Position in the reactivity series
- B. Atomic number
- C. Colour
- D. Mass number

**Q15 Extraction of metals (metallurgy basics)**

What is the process known for removing impurities from ores?

- A. Refining
- B. Smelting
- C. Concentration
- D. Roasting

**Q16 Extraction of metals (metallurgy basics)**

What are the unwanted impurities such as soil and sand present in an ore called?

- A. Alloy
- B. Flux
- C. Slag
- D. Gangue

**Q17 Extraction of metals (metallurgy basics)**

The extraction of metals from their ores is known as which of the following?

- A. Mining
- B. Smelting
- C. Metallurgy
- D. Refining

**Q18 Extraction of metals (metallurgy basics)**

Which of the following methods is NOT used for the ore enrichment?

- A. Dredging
- B. Hydraulic washing
- C. Leaching
- D. Froth floatation

**Q19 Extraction of metals (metallurgy basics)**

What is the main purpose of the 'enrichment of ores' process in metallurgy?

- A. To remove undesirable impurities (gangue) from the ore.
- B. To convert the metal ore into its molten form.
- C. To refine the extracted metal to increase its purity.
- D. To combine the metal with other elements to form alloys.

**Q20 Extraction of metals (metallurgy basics)**

What is the primary reason ores are enriched prior to the extraction of metals?

- A. To eliminate earthy impurities such as sand and unwanted rock
- B. To enhance the melting point of the mineral content for refining
- C. To improve the final metal's resistance to corrosion and rust
- D. To alter the internal crystal structure of the ore for conversion



Q21 Extraction of metals (metallurgy basics)

During electrolytic refining, which substance(s) get(s) collected at the cathode?

- A. Organic matter left from ores
- B. The same metal with new bonds
- C. Insoluble impurities and gases
- D. Pure form of the impure metal ✓

Q22 Extraction of metals (metallurgy basics)

Impurities are converted to compounds by adding refining agents in which type of refining method?

- A. Ionic method
- B. Chemical method ✓
- C. Physical method
- D. Electro-chemical method

Q23 Extraction of metals (metallurgy basics)

In electrolytic refining, the pure metal is used as:

- A. a cathode ✓
- B. an electrolyte
- C. an anode
- D. sulphur

Q24 Extraction of metals (metallurgy basics)

How are the metals in the middle of the activity series usually extracted?

- A. By heating alone
- B. By dissolving in water
- C. By reduction using carbon ✓
- D. By electrolysis

Q25 Extraction of metals (metallurgy basics)

Which method is commonly used for extracting moderately reactive metals such as iron from their ores?

- A. Chemical reduction of the ore using carbon-based reducing agents ✓
- B. Direct heating of the metallic ore strongly in the presence of air
- C. Dissolving and melting of the ore material in concentrated acids
- D. Electrolysis performed on the molten form of metal oxide ores

Q26 Extraction of metals (metallurgy basics)

Which of the following statements are correct in relation to the extraction of metals?

- a. The metals which lie high in the reactivity series are extracted by the electrolysis of molten ore.
- b. The metals of medium reactivity series exist as sulphides and carbonates in nature.
- c. It is easier to extract a metal from its sulphide in comparison to oxides.

- A. Only a and c
- B. All a, b, and c
- C. Only b and c
- D. Only a and b ✓

Q27 Extraction of metals (metallurgy basics)

In electrolytic refining, the impure metal is used as which of the following?

- A. Anode ✓
- B. Electrolyte
- C. Salt
- D. Cathode

Q28 Extraction of metals (metallurgy basics)

What is the purpose of enrichment of ore before extraction?

- A. To increase weight
- B. To convert it into salt
- C. To remove impurities ✓
- D. To remove moisture

Q29 Extraction of metals (metallurgy basics)

Which method is used to purify metals like Zinc and Copper?

- A. Alloying
- B. Electrolytic refining ✓
- C. Roasting
- D. Smelting



Q30 Extraction of metals (metallurgy basics)

How are metals like gold and silver, which are low in reactivity, extracted?

- A. By displacement reaction
- B. By simple heating or chemical methods**
- C. By electrolytic reduction
- D. By reacting with acids

Q31 Extraction of metals (metallurgy basics)

What is the correct sequence of steps followed in extracting metals like zinc from their sulphide or carbonate ores?

- A. Electrolysis → Roasting → Purification
- B. Dissolution in acid → Filtration → Heating
- C. Roasting or calcination → Reduction to metal → Purification**
- D. Direct heating → Purification

Q32 Extraction of metals (metallurgy basics)

Which method is used to extract metals that are high in the reactivity series?

- A. Roasting
- B. Heating with carbon
- C. Calcination
- D. Electrolytic reduction**

Q33 Extraction of metals (metallurgy basics)

Metals high in the activity series may be extracted by the process of:

- A. only heating
- B. electrolytic reduction**
- C. heating with carbon
- D. calcination

Q34 Extraction of metals (metallurgy basics)

Which roasting operation shown below burns out sulphur from a sulphide ore?

- A. Oxidising**
- B. Chloridising
- C. Smelting
- D. Volatilising

Q35 Extraction of metals (metallurgy basics)

Which method is used to extract metals such as sodium and aluminium, which are at the top of the reactivity series?

- A. Electrolytic reduction of their molten chlorides or oxides**
- B. Calcination of their carbonate ores
- C. Roasting of their sulphide ores
- D. Reduction with carbon

Q36 Extraction of metals (metallurgy basics)

Which process is used for the extraction of aluminium from bauxite?

- A. Roasting followed by reduction
- B. Electrolysis of molten aluminium oxide**
- C. Calcination followed by carbon reduction
- D. Displacement by zinc

Q37 Extraction of metals (metallurgy basics)

Which process is used for heating metal oxides to extract metals like copper and silver?

- A. Roasting
- B. Smelting**
- C. Electrolysis
- D. Thermal Decomposition

Q38 Extraction of metals (metallurgy basics)

In the electrolytic refining of copper, which of the following correctly describes the role of electrodes?

- A. Both electrodes are made of pure copper
- B. Both electrodes are made of impure copper
- C. Impure copper is used as anode and pure copper as cathode**
- D. Pure copper is used as anode and impure copper as cathode

Q39 Extraction of metals (metallurgy basics)

The sulphide ores of metals, which lie in the middle of activity series, are first converted to oxides. The necessary condition for this conversion is:

- A. absence of oxygen
- B. presence of excess air**
- C. presence of high pressure
- D. presence of high temperature



Q40 Extraction of metals (metallurgy basics)

In electrolytic refining, the impure metal is used as the:

- A. electrolyte
- B. separator
- C. cathode
- D. anode

**Q41 Extraction of metals (metallurgy basics)**

What is the main purpose of refining a metal after it has been extracted?

- A. To increase the melting point of the metal
- B. To convert the metal into an alloy
- C. To reduce the reactivity of the metal
- D. To remove impurities from the extracted metal

**Q42 Extraction of metals (metallurgy basics)**

What is a necessary property of the electrolyte used during the refining of metals by electrolysis?

- A. It must be composed of both water and a layer of neutral oil
- B. It must remain completely non-reactive throughout the procedure
- C. It must efficiently conduct heat during the electrochemical process
- D. It must be an aqueous or molten solution of a suitable metal salt

**Q43 Important metals (Fe/Cu/Al/Au/Ag) uses**

Anodising is typically performed on which metal?

- A. Zinc
- B. Copper
- C. Aluminium
- D. Steel

**Q44 Nonmetals and uses (C/S/P/halogens)**

Which of the following is a general physical property of nonmetals?

- A. High electrical conductivity
- B. High melting and boiling points
- C. Dull appearance (non-lustrous)
- D. Malleability and ductility

**Q45 Nonmetals and uses (C/S/P/halogens)**

Which of the following is a diatomic molecule formed by a non-metallic element?

- A. O₂
- B. Na
- C. Mg
- D. He

**Q46 Nonmetals and uses (C/S/P/halogens)**

Which non-metal exhibits a lustrous shine like metals?

- A. Flourine
- B. Iodine
- C. Sulphur
- D. Chlorine

**Q47 Nonmetals and uses (C/S/P/halogens)**

Which of the following non-metals is found liquid at room temperature?

- A. Phosphorous
- B. Iodine
- C. Bromine
- D. Nitrogen

**Q48 Nonmetals and uses (C/S/P/halogens)**

Which of the following non-metals exhibits a metallic lustre despite being chemically non-metallic?

- A. Phosphorus
- B. Nitrogen
- C. Sulphur
- D. Iodine

**Q49 Nonmetals and uses (C/S/P/halogens)**

Which of the following is a typical physical property of non-metals?

- A. They are ductile and shiny like metals.
- B. They are brittle and poor conductors of electricity.
- C. They are malleable and sonorous.
- D. They conduct heat and electricity well.



Q50 Nonmetals and uses (C/S/P/halogens)

Which of the following statements about the physical properties of non-metals is correct?

- A. Non-metals have high density and high melting points.
- B. Non-metals are generally brittle in solid state. ✓
- C. Non-metals are malleable and ductile.
- D. Non-metals are good conductors of electricity.

Q51 Nonmetals and uses (C/S/P/halogens)

Which of the following is the characteristic property of a non-metal?

- A. Poor conductor of electricity ✓
- B. Ductility
- C. High melting point
- D. Sonorous

Q52 Nonmetals and uses (C/S/P/halogens)

Which of the following is a non-metal?

- A. Zinc
- B. Chlorine ✓
- C. Mercury
- D. Copper

Q53 Ores and minerals (match metal to ore)

Which of the following types of ore is pyrite?

- A. Nitrate
- B. Halide
- C. Oxide
- D. Sulphide ✓

Q54 Physical & Chemical Properties

What is corrosion?

- A. Neutralisation reaction
- B. Physical change
- C. Endothermic reaction
- D. Chemical change ✓

Q55 Physical/chemical properties of metals

Which of the following statements correctly describes a typical physical property of metals?

- A. Metals are poor conductors of heat and electricity.
- B. Metals are generally brittle and break easily when hammered.
- C. Metals have low melting and boiling points.
- D. Metals are sonorous and produce sound when struck. ✓

Q56 Physical/chemical properties of metals

Which of the following metals is characterised by low density and softness?

- A. Potassium ✓
- B. Magnesium
- C. Aluminium
- D. Copper

Q57 Physical/chemical properties of metals

Which two physical properties allow metals to be drawn into thin wires and beaten into thin sheets, respectively?

- A. Ductility and malleability ✓
- B. Lustre and hardness
- C. Sonorous and conductivity
- D. High melting point and solid state

Q58 Physical/chemical properties of metals

Which of the following is a physical property of metals?

- A. Poor conductor of heat and brittle
- B. Form gases at room temperature
- C. Soft and break with light force
- D. Highly ductile and malleable ✓

Q59 Physical/chemical properties of metals

Which of the following is a typical physical property of a metal?

- A. Non-lustrous
- B. Poor conductor of electricity
- C. Brittle
- D. Malleable ✓



Q60 Physical/chemical properties of metals

Which of the following metals can be shaped into leaves by pressure of the fingers?

- A. Gold
- B. Sodium
- C. Iron
- D. Silver

**Q61 Reactivity Series**

What happens when a zinc rod is placed in aqueous copper sulphate solution?

- A. No chemical change observed.
- B. The temperature of the solution falls.
- C. The blue colour of the copper sulphate solution fades.
- D. Heat is required to start the reaction.

**Q62 Reactivity Series**

Metals found at the bottom of the activity series (e.g., gold, silver, platinum) are typically found in nature in which state?

- A. As sulphides that require calcination
- B. As highly reactive oxides
- C. As carbonates that require roasting
- D. In their free state

**Q63 Reactivity Series**

Which of the following metals reacts most vigorously with water?

- A. Iron
- B. Lead
- C. Zinc
- D. Sodium

**Q64 Reactivity Series**

The reactivity series, also known as the activity series, is a list of metals arranged in order of their:

- A. increasing reactivity
- B. first decreasing, then increasing reactivity
- C. decreasing reactivity
- D. first increasing, then decreasing reactivity

**Q65 Reactivity Series**

Read the statements given below and select the correct option.

Statement I: Zinc displaces copper from copper sulphate solution, but copper cannot displace zinc from zinc sulphate solution.

Statement II: Zinc is more reactive than copper in the reactivity series.

- A. Only statement II is correct.
- B. Both statements are correct, but Statement II does not explain Statement I.
- C. Both statements are correct, and Statement II correctly explains Statement I.
- D. Only statement I is correct.

**Q66 Reactivity Series**

Which of the following metals is most likely to be found in the free state in nature due to its low reactivity?

- A. Iron
- B. Zinc
- C. Copper
- D. Gold

**Q67 Reactivity Series**

Which metal is placed just above copper in the reactivity series?

- A. Aluminium
- B. Lead
- C. Iron
- D. Zinc

**Q68 Reactivity Series**

Which metal will displace iron from iron sulfate solution?

- A. Silver
- B. Zinc
- C. Copper
- D. Chromium



Q69 Reactivity Series

What does the reactivity series of metals represent?

- A. A list of metals arranged in increasing order of their density.
- B. A list of metals arranged in decreasing order of their reactivity. ✓
- C. A list of non-metals arranged by their ability to form ions.
- D. A list of metals arranged in increasing order of their melting points.

Q70 Reactivity Series

Which metal lies between magnesium and iron in the activity series?

- A. Zinc ✓
- B. Silver
- C. Copper
- D. Potassium

Q71 Reactivity Series

The metal which will NOT displace lead from its salt solution is:

- A. Copper ✓
- B. Magnesium
- C. Calcium
- D. Aluminium

Q72 Reactivity Series

Arrange the following metals: K, Ca, Al in the order of increasing reactivity.

- A. $Al < Ca < K$ ✓
- B. $K < Al < Ca$
- C. $Ca < K < Al$
- D. $K < Ca < Al$

Q73 Reactivity Series

The correct order of reactivity of the following metals is:

K, Mg, Al, Zn

- A. $Zn > Mg > Al > K$
- B. $Mg > K > Zn > Al$
- C. $K > Al > Mg > Zn$
- D. $K > Mg > Al > Zn$ ✓

Q74 Reactivity Series

Which metal is placed at the starting of the reactivity series?

- A. Aluminium
- B. Gold
- C. Potassium ✓
- D. Iron

Q75 Reactivity Series

Which of the following metals reacts most vigorously with cold water?

- A. Cobalt
- B. Copper
- C. Iron
- D. Sodium ✓

Q76 Reactivity Series

Which metal reacts violently with cold water?

- A. Sodium ✓
- B. Copper
- C. Magnesium
- D. Aluminium

Q77 Reactivity Series

If a piece of aluminium is added to iron(II) sulphate ($FeSO_4$) solution, what will happen?

- A. Iron will get deposited. ✓
- B. Blue solution will be formed.
- C. There will be no reaction.
- D. Aluminium will get deposited.

Q78 Reactivity Series

Which of the following metals reacts with dilute hydrochloric acid to produce hydrogen gas?

- A. Silver
- B. Zinc ✓
- C. Gold
- D. Copper



Q79 Reactivity Series

Which of the following metals, according to the reactivity series, is the most reactive?

- A. Copper
- B. Zinc
- C. Iron
- D. Potassium** ✓

Q80 Reactivity Series

Which of the following metals is least reactive?

- A. Sodium
- B. Gold** ✓
- C. Magnesium
- D. Zinc

Q81 Reactivity Series

In which of the following metals will the rate of formation of bubbles be fastest when it reacts with dil. HCl?

- A. Fe
- B. Al
- C. Mg** ✓
- D. Zn

Q82 Reactivity Series

Refer to the two statements given below and choose the correct option.

Statement A: Acids react with all metals to form hydrogen gas.

Statement B: Gold and platinum also react with acids to release hydrogen.

- A. Statement A is correct but B is incorrect.
- B. Both statements A and B are correct.
- C. Both statements A and B are incorrect.** ✓
- D. Statement A is incorrect but B is correct.

Q83 Reactivity Series

When a more reactive metal is placed in the salt solution of a less reactive metal, it:

- A. gets oxidised
- B. displaces the less reactive metal** ✓
- C. gets reduced
- D. does not react

Q84 Reactivity Series

Metals low in the activity series, such as gold and silver, are typically found in their free state in nature, because:

- A. they react vigorously with acids
- B. they are very unreactive** ✓
- C. they are highly reactive with oxygen and water
- D. they have very low melting points

Q85 Reactivity Series

Which of the following metals does NOT react with dilute hydrochloric acid under normal conditions?

- A. Aluminium
- B. Copper** ✓
- C. Zinc
- D. Iron

Q86 Reactivity Series

Select the correct option regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Zinc can displace copper from copper sulphate solution.

Reason (R): Zinc is less reactive than copper.

- A. Both A and R are true, and R is not the correct explanation of A.
- B. A is false, but R is true.
- C. Both A and R are true, and R is the correct explanation of A.
- D. A is true, but R is false.** ✓

Q87 Reactivity Series

Which of the following are the most reactive and the least reactive metals, respectively, in a reactivity series?

- A. Magnesium, Gold
- B. Potassium, Gold** ✓
- C. Sodium, Gold
- D. Magnesium, Silver

Q88 Reactivity Series

Based on the reactivity series, which of the following metals is the least reactive?

- A. Fe (iron)
- B. K (potassium)
- C. Au (gold)** ✓
- D. Ca (calcium)



Q89 Reactivity Series

Which metal is placed highest in the reactivity series?

- A. Gold
- B. Silver
- C. Copper
- D. Sodium



Q90 Extraction of metals (metallurgy basics)

Which of the following is the correct sequence in extraction of metals from ore?

- A. Refining → Concentration → Reduction
- B. Concentration → Electrolysis → Roasting
- C. Concentration → Reduction → Refining
- D. Reduction → Refining → Concentration



Q1 DNA, RNA, gene, chromosome

During reproduction, why is it important to create DNA copies?

A. For inheritance of traits



B. For respiration

C. For digestion

D. For blood circulation

Q2 DNA, RNA, gene, chromosome

The DNA in the cell nucleus is the information source for the making of which of the following substances?

A. Glucose

B. Protein



C. Lipid

D. Fructose

Q3 DNA, RNA, gene, chromosome

What is the name of the semiconservative process in which DNA duplicates into two identical molecules?

A. Mutation

B. Translation

C. Transcription

D. Replication

**Q4 DNA, RNA, gene, chromosome**

What is the main purpose of creating DNA copies during reproduction?

A. To make organisms immune to diseases

B. To change the structure of cells

C. To pass genetic information to offspring



D. To produce identical twins

Q5 Genetic engineering and GMO basics

Through which of the following ways can scientists incorporate desirable characters into crop varieties?

A. Hybridisation



B. Weed control

C. Fertilisers

D. Irrigation

Q6 Genetic engineering and GMO basics

Which of the following is a crop variety improvement method by introducing a gene that would provide the desired characteristics?

A. Genetically modified crops



B. Budding

C. Natural vegetative reproduction

D. Grafting

Q7 Genetic engineering and GMO basics

Which of the following is NOT a method of introducing desirable character in crop varieties?

A. Intergeneric hybridisation

B. Intragenic hybridisation



C. Interspecific hybridisation

D. Intervarietal hybridisation

Q8 Genetic terms (dominant/recessive etc)

In sexually reproducing organisms, how many versions of each trait does a child inherit?

A. One version in total

B. One version from each parent



C. One version from father only

D. Two versions from the mother only

Q9 Heredity & Mendel's Laws

In some reptiles, the sex of the offspring is determined by:

A. Presence or absence of a Y chromosome

B. Temperature at which eggs are incubated



C. Sex chromosomes

D. Hormonal levels in the mother

Q10 Heredity & Mendel's Laws

Which of the following types of reproduction ensures that offspring inherit features from both parents in animals?

A. Sexual reproduction



B. Budding

C. Binary fission

D. Cloning



Q11 Heredity & Mendel's Laws

In terms of chromosome contribution, which of the following is correct?

- A. Both parents contribute either X or Y
- B. Mother can contribute X or Y
- C. Mother always contributes X, father contributes X or Y ✓
- D. Father contributes only X chromosome

Q12 Mendel laws of inheritance

Which one of the following correctly represents Mendel's conclusion about inheritance?

- A. Each trait is controlled by two factors. ✓
- B. Each trait is controlled by one factor.
- C. Each trait is controlled by one chromosome.
- D. Each trait is controlled by three genes.

Q13 Mendel laws of inheritance

In Mendel's experiment, what did he observe in the F1 generation when he crossed a tall (TT) and a short pea (tt) plant?

- A. All were medium height
- B. Half were tall, half was short
- C. All were short
- D. All were tall ✓

Q14 Mendel laws of inheritance

If tall (T) is dominant over short (t), and round seeds (R) are dominant over wrinkled (r), identify the genotype of a plant that shows short height and round seeds.

- A. ttRR ✓
- B. TtRr
- C. TtRR
- D. Ttrr

Q15 Mendel laws of inheritance

Which of the following was the scientist who blended his knowledge of science and mathematics to arrive at the laws of inheritance?

- A. Gregor Johann Mendel ✓
- B. E Rutherford
- C. Camillo Golgi
- D. John Dalton

Q16 Mendel laws of inheritance

Read the given Assertion (A) and Reason (R) carefully and select the correct option.

(A): Mendel chose pea plants for his experiments because they were easy to grow and showed distinct contrasting traits.

(R): Pea plants reproduce asexually, allowing Mendel to control crosses easily.

- A. A is true, but R is false ✓
- B. Both A and R are true, and R is the correct explanation of A
- C. A is false, but R is true
- D. Both A and R are true, but R is not the correct explanation of A

Q17 Mendel laws of inheritance

Which of the following can be considered a reason for Mendel's success in formulating laws of inheritance?

- A. He was a well-trained scientist. ✓
- B. He had supernatural power.
- C. He had knowledge of mathematics.
- D. He was a monk.

Q18 Mendel laws of inheritance

Mendel conducted his experiments on which plant?

- A. Bean plant
- B. Tomato
- C. Pea plant ✓
- D. Sunflower

Q19 Mendel laws of inheritance

Which of the following is NOT a trait Mendel studied in pea plants?

- A. Seed shape
- B. Leaf size ✓
- C. Plant height
- D. Flower position

Q20 Mendel laws of inheritance

Why do recessive traits like 't' for dwarfness in pea plants only show up when both alleles are recessive?

- A. Dominant alleles mask recessive alleles. ✓
- B. Recessive alleles are stronger.
- C. Recessive alleles cannot be passed on.
- D. Recessive alleles are never expressed.



Q21 Mendel laws of inheritance

Why did Mendel use true-breeding plants as parents in his crosses?

- A. To get large number of plants quickly
- B. To grow them in similar soil condition
- C. To study environmental effects on growth of plants
- D. To study inheritance patterns ✓

Q22 Mendel laws of inheritance

During inheritance studies, how many copies of the factor was proposed by Mendel, which was controlling traits present in sexually reproducing organisms?

- A. Three
- B. Two ✓
- C. Four
- D. One

Q23 Mendel laws of inheritance

Which of the following explains the absence of recessive traits in the F_1 generation and their reappearance in the F_2 generation in Mendel's experiment?

- A. Recessive alleles are hidden in F_1 but reappear in F_2 due to segregation. ✓
- B. Recessive traits skip generations randomly
- C. Recessive traits become dominant in F_2 generation.
- D. Recessive traits are completely destroyed in the F_1 generation

Q24 Mendel laws of inheritance

Which of the following characteristics of pea was a dominant trait, used by Mendel in his experiments?

- A. Green Seeds
- B. Wrinkled Seeds
- C. Dwarf Plants
- D. Tall Plants ✓

Q25 Mendel laws of inheritance

According to Mendel, when a tall pea plant (TT) is crossed with a short pea plant (tt), the F_1 offspring will be:

- A. 50% tall (Tt), 50% short (tt)
- B. all tall (Tt) ✓
- C. all short (tt)
- D. 75% tall (TT/Tt), 25% short (tt)

Q26 Mendel laws of inheritance

How many contrasting characters were used by Mendel to formulate the laws of inheritance?

- A. 5
- B. 8
- C. 4
- D. 7 ✓

Q27 Mendel laws of inheritance

Which of the following contrasting visible characters of garden peas are NOT used by Mendel?

- A. Green/white seeds ✓
- B. Tall/short plants
- C. White/violet flowers
- D. Round/wrinkled seeds

Q28 Mendel laws of inheritance

Which law did Mendel derive from his monohybrid cross?

- A. Law of Segregation ✓
- B. Law of Constant Proportion
- C. Law of Evolution
- D. Law of Independent Assortment

Q29 Mendel laws of inheritance

What was Mendel's contribution to genetics?

- A. Laws of Inheritance ✓
- B. Inheritance of Acquired Traits
- C. Theory of Evolution
- D. Discovery of DNA

Q30 Mendel laws of inheritance

Which of the following crosses will produce all heterozygous offspring in the F_1 generation?

- A. $Tt \times Tt$
- B. $TT \times tt$ ✓
- C. $tt \times tt$
- D. $TT \times TT$



Q31 Mendel laws of inheritance

A plant breeder crosses two pure-breeding pea plants—one producing round seeds and the other producing wrinkled seeds. Based on Mendel's findings, what phenotype would all the seeds in the F_1 generation display?

- A. Half round, half wrinkled
- B. A mix of round and wrinkled in varying proportions
- C. Round seeds** ✓
- D. Wrinkled seeds

Q32 Mutation and variation basics

Which of the following life processes is important to bring variation in species?

- A. Transportation
- B. Sexual reproduction** ✓
- C. Autotrophic nutrition
- D. Heterotrophic nutrition

Q33 Mutation and variation basics

Which of the following ensures genetic variation in sexually reproducing animals?

- A. Gametes are formed by mitosis
- B. Only one parent is involved
- C. Offspring receive genes from both parents** ✓
- D. Fertilisation occurs inside the body

Q34 Mutation and variation basics

Why is variation primarily important in a population of organisms?

- A. It always gives instant result within the same generation.
- B. It increases the chance of survival under changing environmental conditions** ✓
- C. It ensures that all individuals are identical
- D. It helps organisms reproduce faster

Q35 Mutation and variation basics

Read the given statements with regards to importance of variation produced by sexual reproduction in plants and select the most appropriate option.

Statement A: Reproduction is linked to the stability of populations of species.

Statement B: Variation is thus not useful for the survival of species over time.

- A. Both Statement A and statement B is incorrect
- B. Statement A is correct but statement B is incorrect** ✓
- C. Both Statement A and statement B is correct
- D. Statement A is incorrect but statement B is correct

Q36 Mutation and variation basics

The importance of genetic variation in organisms is that _____.

- A. it enables sexual reproduction
- B. it leads to uniformity in the progeny
- C. it increases the chances of survival of an organism** ✓
- D. it gives rise to dominant and recessive traits

Q37 Mutation and variation basics

Small changes in DNA copies during reproduction are important because they _____.

- A. always cause harmful effects
- B. provide variations which may help in survival** ✓
- C. prevent fertilisation from happening
- D. stop reproduction in the next generation

Q38 Mutation and variation basics

Why does sexual reproduction result in greater variation among offspring?

- A. It occurs only in humans.
- B. It produces exact replicas of the parent.
- C. It allows combination of genetic material from two individuals.** ✓
- D. It involves copying of identical DNA.



Q39 Mutation and variation basics

Which of the following statements about variations is INCORRECT?

- A. Ensures species survival during disasters
- B. Provides resilience against diseases
- C. Variation makes species prone to extinction. ✓
- D. Variation enables adaptation to changing environments.

Q40 Mutation and variation basics

What is the meaning of the phrase "the DNA copies generated will be similar, but may not be identical"?

- A. All DNA copies are identical clones.
- B. The original DNA is destroyed after copying.
- C. DNA copies may have slight differences. ✓
- D. Each DNA copy is totally unrelated.

Q41 Mutation and variation basics

Why is variation important in sexually reproducing plants?

- A. It decreases the genetic diversity within the population.
- B. It increases the chances of survival by enabling adaptation to environmental changes. ✓
- C. It ensures all offspring are identical to the parent, maintaining uniformity.
- D. It limits the adaptability of the species to changing environments.

Q42 Mutation and variation basics

Select the INCORRECT statement regarding variation in plants.

- A. Asexual reproduction is a regular source of variations in a population. ✓
- B. They are produced during sexual reproduction.
- C. They are produced due to inaccuracy in the copying of DNA.
- D. Individuals within a population are unique due to the variations.

Q43 Mutation and variation basics

Which of the following is a result of the genetic variation introduced by sexual reproduction?

- A. Decreased chances of survival
- B. Evolution ✓
- C. Production of genetically identical offspring
- D. Formation of identical twins

Q44 Mutation and variation basics

Why is variation important in a population of organisms?

- A. It causes extinction of all organisms.
- B. It helps some individuals survive if environmental conditions change. ✓
- C. It prevents reproduction.
- D. It makes organisms identical.

Q45 Mutation and variation basics

If two daughter cells produced by cell division show minor differences in their structure, which process during DNA copying most likely caused these variations?

- A. The absence of DNA blueprints in the nucleus
- B. Minor variations occur during DNA copying due to the inherent unreliability of biochemical reactions. ✓
- C. Errors in protein synthesis after DNA copying
- D. The separation of DNA copies into new cells is incomplete

Q46 Mutation and variation basics

What does variation within a species ensure?

- A. Better adaptability and chances of survival ✓
- B. Similar response to environmental changes
- C. No mutations
- D. No evolution

Q47 Mutation and variation basics

In a large population of sweet pea plants growing in stable conditions, which of the following best explains why genetic variation through sexual reproduction is still crucial for their long-term survival?

- A. Variation helps sweet pea plants avoid cross-pollination, maintaining purity of the parental line.
- B. Sweet pea plants reproduce faster sexually than asexually, ensuring more biomass production.
- C. Genetic variation ensures uniform flower color and height across future generations.
- D. Hidden (recessive) alleles in sweet peas may offer resistance against future environmental stress. ✓



Q48 Mutation and variation basics

Two children of the same parents resemble each other but are not exactly alike because _____.

- A. each of them shows variation in their DNA copying mechanisms
- B. they show different combinations of the genetic variation existing in their parents ✓
- C. each of them inherits all genetic characters from one parent only
- D. their parents show very little genetic variation

Q49 Mutation and variation basics

What is the advantage of combining DNA from two different individuals in sexually reproducing animals?

- A. It increases genetic variation within the population. ✓
- B. It speeds up the reproduction process.
- C. It reduces the need for specialized reproductive organs.
- D. It eliminates errors in DNA copying.

Q50 Sex determination in humans

In a genetic lab, a fertilised human embryo is found to have XX chromosomes. Which of the following is true?

- A. The embryo lacks sex chromosomes.
- B. The embryo will become a human female. ✓
- C. The embryo will become a human male.
- D. The embryo has an extra Y chromosome.

Q51 Sex determination in humans

Which of the following pairs of human male chromosome is mismatched in size?

- A. Twentieth pair autosomes
- B. First pair autosomes
- C. Sex chromosomes ✓
- D. Thirteenth pair autosomes

Q52 Sex determination in humans

In human beings, how is the sex of a child determined?

- A. By the difference in number of chromosomes inherited by the child
- B. By the environmental conditions prevailing during development of the foetus
- C. By the inheritance of an X chromosome from the mother
- D. By the inheritance of X or Y chromosome from the father ✓

Q53 Sex determination in humans

What is the percentage of having a male child if the sex chromosomes of the father are XY and those of the mother are XX?

- A. 50% ✓
- B. 75%
- C. 100%
- D. 25%

Q54 Sex determination in humans

What determines the sex of a child in humans?

- A. Number of autosomes
- B. Mitochondrial DNA
- C. Father's sperm ✓
- D. Mother's ovum

Q55 Sex determination in humans

In humans, which parent determines the sex of the child?

- A. Father ✓
- B. Mother
- C. Child's own choice
- D. Both equally

Q56 Sex determination in humans

A child is born with one X chromosome from the mother and one Y chromosome from the father. Which statement accurately describes the consequence of this chromosomal combination?

- A. The child will develop as a female because X chromosome is always dominant over Y chromosome.
- B. The child will develop as a male due to the presence of the Y chromosome. ✓
- C. The child will not develop male characteristics without two Y chromosomes.
- D. The child's sex is determined by the mother, as she provides the X chromosome.

Q57 General Science

Which of the following environmental cues determined the sex of fertilised egg in few reptiles?

- A. Water
- B. Temperature ✓
- C. Touch
- D. Wind velocity



Q58 General Science

What is the primary mechanism through which sexual reproduction generates genetic diversity in the offspring?

- A. Frequent cell divisions during gamete formation
- B. Variation in chromosome number among the gametes
- C. Inaccuracies in DNA copying during gamete formation in maternal and paternal parents
- D. Random distribution of maternal or paternal chromosomes from each chromosome pair to the gametes ☒



Q1 General Science

Which of the following options best describes the term Culture Fishery?

- A. Farming of the fishes** ✓
- B. Catching fishes from marine water
- C. Capturing fishes from artificial resources
- D. Capturing fishes from natural resources

Q2 General Science

Which of the following methods is part of the fresh initiatives in irrigation to improve water availability for crops?

- A. Manuring and chemical spraying
- B. Drip irrigation and crop rotation
- C. Sprinkler irrigation and ploughing
- D. Rainwater harvesting and watershed management** ✓

Q3 General Science

Select the correct feature about sexual reproduction in organisms.

- A. It produces offspring exactly similar to the parent(s).
- B. It passes the DNA of only one parent to the offspring.
- C. It combines the DNA of two parents in the offspring.** ✓
- D. It produces a large number of offspring.

Q4 General Science

How is intercropping beneficial over single crop farming?

- A. Utilises nutrients efficiently and prevents spread of diseases** ✓
- B. Reduces labour cost
- C. Increases irrigation needs
- D. Requires less land

Q5 General Science

What is the sequence of stages involved in the budding process of hydra?

- A. Bud initiation → Bud detachment → Bud maturation → New individual
- B. Bud initiation → Bud maturation → Bud detachment → New individual** ✓
- C. Bud maturation → Bud initiation → Bud detachment → New individual
- D. New individual → Bud maturation → Bud detachment → Bud initiation

Q6 General Science

A poultry farmer wants birds that consume less feed, tolerate high heat, and produce quality chicks. Which strategy should he follow?

- A. Use only indigenous birds
- B. Cross-breed exotic and local poultry** ✓
- C. Shift to fish farming
- D. Feed birds twice a day

Q7 General Science

How does fumigation help in the safe storage of food grains?

- A. It increases the weight of the grains.
- B. It adds nutrients to the grains.
- C. It prevents moisture loss from grains.
- D. It kills pests and insects that could otherwise damage stored grains.** ✓

Q8 General Science

Which of the following statements about movement is INCORRECT?

- A. Movement is a characteristic of living organisms.
- B. Living organisms show internal or molecular movement, even when external movement is not visible.
- C. Molecular movement is only found in animals, not plants.** ✓
- D. Growth-related movement in plants, like bending toward light, is a form of movement.



Q9 General Science

Which statement is INCORRECT about fragmentation (asexual reproduction)?

- A. Produces genetically identical offspring
- B. Occurs in multicellular organisms
- C. Spore formation is a type of fragmentation process ✓
- D. Involves maturation before splitting

Q10 General Science

Which of the following is NOT a biotic loss during the storage of grains?

- A. Loss by rodents
- B. Loss by mites
- C. Loss by inappropriate moisture ✓
- D. Loss by insects

Q11 General Science

Which of the following is a popular marine fish variety found in India?

- A. Pomfret ✓
- B. Mrigal
- C. Rohu
- D. Catla

Q12 General Science

Which of the following is NOT a method of reproduction by a solitary individual organism?

- A. Fission
- B. Fragmentation
- C. Sexual reproduction ✓
- D. Regeneration

Q13 General Science

What is the purpose of cross-breeding exotic and local cattle breeds?

- A. To make the animals more aggressive
- B. To reduce food requirements
- C. To combine long lactation with disease resistance ✓
- D. To make animals smaller in size

Q14 General Science

Which of the following reproductive method will generate greater diversity in population?

- A. Binary fission
- B. Budding
- C. Sexual reproduction ✓
- D. Fragmentation

Q15 General Science

Which of the following is NOT a method of irrigation?

- A. Wells
- B. Check dams ✓
- C. River lift systems
- D. Canals

Q16 General Science

Which of the following statements correctly describes the process of budding in organisms like Hydra?

- A. A bud forms as an outgrowth due to repeated cell division and detaches when mature. ✓
- B. A bud forms from specialised cells inside the organism and remains attached for life.
- C. A bud forms from a broken body part and grows into a new organism.
- D. A bud forms only during sexual reproduction and fuses with the parent organism.

Q17 General Science

The poultry birds grown for the purpose of meat production are called _____.

- A. Fowls
- B. Broilers. ✓
- C. Layers.
- D. Cocks.

Q18 General Science

Identify the way that is NOT used by insect pests to attack the plants.

- A. By boring into stem and fruits
- B. By sucking the cell sap
- C. By cutting the root, stem and leaf
- D. By creeping on stem ✓



Q19 General Science

Which type of cells are used by organisms like hydra for reproduction in the process budding?

- A. Photosynthetic cells
- B. Gametic cells
- C. Regenerative cells ✓
- D. Stomatal cells

Q20 General Science

Which of the following methods of asexual reproduction allows a new organism to develop from a cut or broken body part?

- A. Spore formation
- B. Binary fission
- C. Fragmentation ✓
- D. Budding

Q21 General Science

What happens when insects suck the sap from leaves of crop plants?

- A. Plant produces more flowers
- B. Plant gets pollinated
- C. Plant health is affected ✓
- D. Plant grows stronger

Q22 General Science

Which of the following statements is true about modern fish farming?

- A. Enzymes are used to help fish grow bigger
- B. Fish farming cannot be done in ponds
- C. Hormones are used for fish breeding ✓
- D. All fish seeds are collected from rivers

Q23 General Science

A government scheme promotes the rearing of fish in artificially controlled freshwater ponds. What is this type of fishing called?

- A. Capture fishing
- B. Culture fishing ✓
- C. Marine fishing
- D. Saltwater fishing

Q24 General Science

In poultry farming, what are the primary purposes for developing improved breeds?

- A. Only manure production
- B. Egg and meat production ✓
- C. Decoration and sports
- D. Wool and milk production

Q25 General Science

What is mixed cropping?

- A. Growing the same crop on a field in all seasons
- B. Alternating between growing crops in one season and leaving the field empty in the following season
- C. Rotating crops on a field seasonally
- D. Growing multiple crops on a field in the same season ✓

Q26 General Science

The fluid content inside the plasma membrane, which also contains many specialised cell organelles, is called:

- A. vacuoplasm
- B. cytoplasm ✓
- C. plasmin
- D. nucleoplasm

Q27 General Science

Asexual reproduction has differences from sexual reproduction. Which of the following is NOT representing asexual reproduction?

- A. Regeneration
- B. Binary fission
- C. Involvement of both male and female reproductive parts ✓
- D. Fragmentation

Q28 General Science

What is the benefit of developing dwarf broiler parents in poultry?

- A. To increase flight ability
- B. To make them resistant to rain
- C. To lay larger eggs
- D. To reduce feed consumption and improve meat yield ✓



Q29 General Science

The bud in Hydra:

A. grows as an outgrowth



B. forms inside the parent's body

C. develops on a stalk

D. forms through spores

Q30 General Science

Which of the following is NOT an abiotic resistance for crop?

A. Drought

B. Heat

C. Insects



D. Salinity

Q31 General Science

What is the main goal of crop variety improvement?

A. To grow only ornamental plants

B. To reduce the number of crops grown

C. To develop crops with better yield and useful traits



D. To increase water content in soil

Q32 General Science

Some organisms show binary fission by division in any plane but some shows division in a definite orientation. Which of the following shows definite orientation of binary fission?

A. Leishmania



B. Paramecium

C. Amoeba

D. Plasmodium

Q33 General Science

What can be the consequences of improper storage of grains?

A. Stronger grains

B. More fragrance

C. Pest attack and spoilage



D. Better nutrition

Q34 General Science

Which of the following statements about asexual reproduction is INCORRECT?

A. It involves the fusion of male and female gametes.



B. It involves only one parent.

C. It produces offspring that are genetically identical clones of the parent.

D. Fission is a method of asexual reproduction.

Q35 General Science

Which of the following is a major condition for successful beekeeping?

A. Presence of pollinating insects

B. Availability of flowering plants throughout the year



C. Growing wheat and rice

D. Use of pesticides

Q36 General Science

Which of the following correctly distinguishes binary fission from multiple fission in unicellular organisms?

A. Binary fission produces two daughter cells, whereas multiple fission produces many daughter cells at once.



B. Binary fission occurs only in multicellular organisms, while multiple fission occurs in unicellular ones.

C. Binary fission results in many daughter cells, while multiple fission forms only two.

D. Binary fission requires spores, but multiple fission does not.

Q37 General Science

Which of the following breeds of cows is resistant to diseases?

A. Aseel

B. Jersey

C. Red Sindhi



D. Brown Swiss

Q38 General Science

Which of the following best describes the relation between a cell's shape and its role?

A. Cell shape is random.

B. Cell shape supports its specific function.



C. All cells are round regardless of function.

D. All cells have the same function.



Q39 General Science

In what way do insect pests negatively impact crop yield?

- A. By enriching the soil with nutrients
- B. By supporting flower formation
- C. By damaging roots, stems, and fruits of plants ✓
- D. By spreading seeds to new areas

Q40 General Science

Which cropping pattern involves growing two or more crops together on the same land at the same time, but in a defined row or spatial arrangement?

- A. Intercropping ✓
- B. Crop rotation
- C. Mixed cropping
- D. Monocropping

Q41 General Science

Which of the following is an asexual method of reproduction in organisms like amoeba?

- A. Fragmentation
- B. Binary fission ✓
- C. Spore formation
- D. Budding

Q42 General Science

Which crop variety improvement method involves selecting parents with desirable traits and crossing them?

- A. Hybridisation ✓
- B. Mutation
- C. Tissue Culture
- D. Genetic Engineering

Q43 General Science

Which of the following suits the best for the order of budding in organisms?

1. Bud Formation
2. Cytoplasmic Division
3. Nucleus Division
4. Detachment of Bud

- A. 1 – 2 – 3 – 4
- B. 2 – 1 – 3 – 4
- C. 3 – 1 – 2 – 4
- D. 1 – 3 – 2 – 4 ✓

Q44 General Science

In cattle farming, milk-producing buffaloes are called _____.

- A. broilers
- B. layers
- C. milch ✓
- D. shellfish

Q45 General Science

Why are grains first dried in sunlight and then in shade before storage?

- A. To make them soft
- B. To save time
- C. To reduce moisture content and prevent spoilage ✓
- D. To reduce the colour of grains

Q46 General Science

Growing of two or more crops simultaneously on the same field is called _____.

- A. Mono-cropping
- B. Mixed cropping ✓
- C. Inter-cropping
- D. Intra-cropping

Q47 General Science

What are animals used for tilling, irrigation and carting referred to as?

- A. Milch animals
- B. Draught animals ✓
- C. Carnivorous animals
- D. Wild animals

Q48 General Science

Which of the following best describes fragmentation as a method of asexual reproduction?

- A. The parent body breaks into pieces, and each piece grows into a new organism. ✓
- B. A single cell divides into two identical daughter cells.
- C. The parent organism divides into many cells which develop into spores.
- D. A new organism grows from a bud formed on the parent's body.



Q49 General Science

Plastids are absent in which of the following cells?

- A. Leaf cells
- B. Stem cells
- C. Root cells
- D. Muscle cells



Q50 General Science

Why do fodder crops require tall plants with profuse branching?

- A. To improve soil fertility
- B. To reduce harvesting time
- C. To provide maximum green matter for fodder
- D. To increase grain yield



Q51 General Science

Which of the following activities CANNOT be taken as a defining characteristic of life?

- A. Visible movement like walking or running
- B. Molecular movement within the cells
- C. Breathing and internal maintenance of cells
- D. Growth-related movement of plants



Q52 General Science

Which of the following steps can increase the expected yield of a crop?

- A. Irrigation at terminal stage of crop.
- B. Irrigation at early stages of crop.
- C. Irrigation at every stage of crop.
- D. Irrigation at right stage of crop.



Q53 General Science

The way of obtaining fish from natural resources is called _____.

- A. Farming fishing
- B. Culture fishing
- C. Composite fishing
- D. Capture fishing



Q54 General Science

What is the advantage of cross-breeding local and exotic cattle breeds?

- A. Lower adaptability to environment
- B. Denser wool yield
- C. Higher meat and milk yield
- D. Faster reproduction rate



Q55 General Science

Which of the following organisms shows the phenomenon of regeneration?

- A. Planaria
- B. House fly
- C. Mosquito
- D. Honey bee



Q56 General Science

Which multicellular organism shows fragmentation as a common mode of asexual reproduction?

- A. Spirogyra
- B. Orange
- C. Bryophyllum
- D. Jasmine



Q1 Anomalous expansion of water

Why does ice float on the surface of water?

A. Because the density of ice is less than that of water ✓

B. Because the weight of ice is very small

C. Because ice is at a lower temperature

D. Because it displaces water equal to its weight

Q2 Change of state / evaporation cooling

Which of the following factors does NOT increase the rate of evaporation?

A. Increase in surface area

B. Increase in humidity ✓

C. Increase in wind speed

D. Increase of temperature

Q3 Change of state / evaporation cooling

Which of the following conditions will NOT favour evaporation?

A. Low Humidity

B. High Wind Speed

C. High Humidity ✓

D. High Temperature

Q4 Change of state / evaporation cooling

Which of the following conditions will NOT increase the rate of evaporation?

A. Decreased Wind Speed ✓

B. Increased Temperature

C. Increased Surface Area

D. Decreased Humidity

Q5 Change of state / evaporation cooling

Which of the following options is INCORRECT regarding when rate of evaporation increases?

A. Increase in surface area

B. Increase in humidity ✓

C. Increase in temperature

D. Increase in wind speed

Q6 Change of state / evaporation cooling

The phenomenon of change of a liquid into vapour at any temperature below its boiling point is called:

A. evaporation ✓

B. sublimation

C. solidification

D. condensation

Q7 Change of state / evaporation cooling

When we pour acetone (nail polish remover) on our palm, we feel cold because:

A. it evaporates rapidly, absorbing heat from the palm ✓

B. it releases cold vapours

C. it blocks nerve signals on the skin

D. it reacts with water present on the palm

Q8 Change of state / evaporation cooling

How does surface area affect the rate of evaporation?

A. Smaller surface area increases evaporation

B. Larger surface area increases evaporation ✓

C. Surface area has no effect

D. Evaporation only occurs with liquids in closed containers

Q9 Change of state / evaporation cooling

Which of the following conditions will increase the rate of evaporation of a liquid?

A. Decrease in surface area

B. Increase in humidity

C. Increase in wind speed ✓

D. Decrease in temperature

Q10 Change of state / evaporation cooling

Which of the following conditions DOES NOT support an increase in the rate of evaporation?

A. An increase in humidity ✓

B. An increase of temperature

C. An increase in wind speed

D. An increase of surface area



Q11 Change of state / evaporation cooling

During evaporation, when the average kinetic energy of molecules decreases, what is the effect on temperature?

- A. No effect on temperature.
- B. It decreases. ✓
- C. It will remain the same.
- D. It increases.

Q12 Change of state / evaporation cooling

Which statement correctly defines the process of evaporation?

- A. It requires the liquid to freeze before changing to the gas form
- B. It takes place only at the boiling temperature of a liquid
- C. It changes a liquid to gas from the surface below boiling point ✓
- D. It changes solids directly into vapors upon heating strongly

Q13 Change of state / evaporation cooling

Why do we spread cloths while putting them for drying in open sky?

- a. Increasing the surface area will increase the rate of evaporation
- b. Increase in wind speed will not allow the cloth to fly
- c. To remove wrinkles

- A. Only a and b
- B. a, b and c
- C. Only a ✓
- D. Only a and c

Q14 Change of state / evaporation cooling

Which of the following statements about evaporation is true?

- A. It occurs only at the surface of the liquid ✓
- B. It occurs only at boiling point
- C. It occurs throughout the liquid
- D. It requires no heat

Q15 Change of state / evaporation cooling

If you want to make water evaporate faster, what should you do?

- A. Cover the container.
- B. Place it in a cool, humid room.
- C. Increase the temperature and expose it to a fan. ✓
- D. Use a narrow, deep container.

Q16 Change of state / evaporation cooling

Evaporation takes place at which temperature?

- A. Only at 100°C
- B. At any temperature ✓
- C. Only at boiling point
- D. Only below freezing point

Q17 Change of state / evaporation cooling

Which factor does NOT increase the rate of evaporation?

- A. Decrease in temperature ✓
- B. Increase in wind speed
- C. Decrease in humidity
- D. Increase in surface area

Q18 Conductors vs insulators of heat

Metals are generally good conductors of heat. Which of the following is an exception to this?

- A. Mercury ✓
- B. Aluminium
- C. Copper
- D. Iron

Q19 Everyday heat (cooker/thermos/why sweat)

Why do we feel cool when sweat evaporates from our skin?

- A. Sweat absorbs heat from our skin to evaporate. ✓
- B. Sweat releases heat during evaporation.
- C. Sweat turns into ice before evaporation.
- D. Sweat forms crystals that cool the skin.



Q20 Heat vs temperature

What will be the change in kinetic energy of the particles of solid if temperature is increased?

A. Kinetic energy increases. 

B. Kinetic energy decreases.

C. Kinetic energy becomes zero.

D. Kinetic energy remains same.

Q21 Specific heat and latent heat

What is the energy absorbed during change of state at constant temperature called?

A. Kinetic energy

B. Latent heat 

C. Specific heat

D. Thermal energy

Q22 Specific heat and latent heat

Where does the heat energy go when the solid melts but its temperature remains the same?

A. It is used to overcome the forces of attraction between the particles. 

B. It is lost to the surroundings while overcoming the forces of repulsion.

C. It is lost to the surroundings while overcoming the forces of attraction.

D. It is used to overcome the forces of repulsion between the particles.

Q23 Specific heat and latent heat

Why does the temperature of ice remain constant during the melting of ice?

A. Ice reflects heat

B. Heat is used to break the bonds between molecules 

C. Ice becomes denser

D. Ice absorbs heat but does not melt

Q24 General Science

Which of the following does NOT occur with an increase in temperature?

A. Change in state of matter

B. Decrease in inter-particle space 

C. Increase in kinetic energy

D. Increase in particle movement



Q1 Animal Kingdom (Phyla Overview)

Which of the following best describes the nutrition process in amoeba?

- A. Ingestion → Egestion → Absorption → Digestion
- B. Absorption → Ingestion → Digestion → Egestion
- C. Diffusion → Ingestion → Digestion → Absorption
- D. Ingestion → Digestion → Absorption → Egestion ✓

Q2 Animal Kingdom (Phyla Overview)

In fish production, which of the following comes under the category of shellfish?

A. Molluscs ✓

B. Tuna

C. Bombay duck

D. Silver carp

Q3 Animal Kingdom (Phyla Overview)

Budding in Hydra is best classified as:

- A. fragmentation
- B. fission
- C. sexual reproduction
- D. asexual reproduction ✓

Q4 Animal Kingdom (Phyla Overview)

What is the transformation of a larva into an adult frog through drastic changes called?

- A. Fertilisation
- B. Metamorphosis ✓
- C. Zygote formation
- D. Gamete formation

Q5 Animal Kingdom (Phyla Overview)

The unicellular organism amoeba has a _____ shape.

- A. fixed
- B. sleeper
- C. changing ✓
- D. star

Q6 Five kingdom classification

Select the group of organisms in which asexual reproduction occurs by fission.

- A. Flowering plants
- B. All seed plants
- C. All plants
- D. Blue-green algae ✓

Q7 Plant Kingdom (Divisions)

Which of the following plants reproduces by means of spores?

- A. Egg plant
- B. Moss ✓
- C. Gram
- D. Rose

Q8 Plant Kingdom (Divisions)

Which of the following plants is a weed?

- A. Vigna unguiculata
- B. Cyperus rotundus ✓
- C. Oryza sativa
- D. Pisum sativum

Q9 Scientific names of common organisms

Match the common name of the bee with its scientific name.

Column I (Common Name).	Column II (Scientific Name)
1. Indian bee	A. Apis mellifera
2. Rock bee	B. Apis cerana indica
3. Little bee	C. Apis dorsata
4. Italian bee	D. Apis florea

- A. 1-B, 2-C, 3-D, 4-A ✓
- B. 1-C, 2-D, 3-B, 4-A
- C. 1-A, 2-B, 3-C, 4-D
- D. 1-D, 2-A, 3-C, 4-B



Q10 Scientific names of common organisms

In India, cows are classified under which scientific species name?

- A. *Bos taurus*
- B. *Bos bubalis*
- C. *Bubalus bubalis*
- D. *Bos indicus* ✓

Q11 Scientific names of common organisms

The common name for *Apis florea* is:

- A. The Asian bee
- B. The dwarf bee
- C. The little bee ✓
- D. The giant bee

Q12 Vertebrate classes (fish to mammal)

Which of the following living organisms have bones that help in body movements?

- A. Earthworm
- B. Snake ✓
- C. Snail
- D. Cockroach

Q13 Vertebrate classes (fish to mammal)

Which of the following is NOT a marine fish?

- A. Rohu ✓
- B. Pomfret
- C. Mackerel
- D. Bhetki

Q14 Virus, bacteria, fungi, algae basics

Which of the following organisms multiplies by the means of multiple fission mode of reproduction?

- A. Plasmodium ✓
- B. Leishmania
- C. Hibiscus
- D. Garden pea

Q15 Virus, bacteria, fungi, algae basics

Which of the following organisms reproduce by the method of binary fission?

- A. Leishmania ✓
- B. Neem plant
- C. Rose plant
- D. Butterfly

Q16 Virus, bacteria, fungi, algae basics

Read the given statements as select the most appropriate option.

Statements:

A: Small bulb like projection from yeast cell is bud.

B: Chain of bud formation is found in the budding process of yeast.

- A. Both Statement A and Statement B are correct ✓
- B. Statement B is correct and Statement A is incorrect
- C. Both Statement A and Statement B are incorrect
- D. Statement A is correct and Statement B is incorrect

Q17 Virus, bacteria, fungi, algae basics

Which of the following organisms reproduces by binary fission?

- A. Spirogyra
- B. Planaria
- C. Hydra
- D. Amoeba ✓

Q18 Virus, bacteria, fungi, algae basics

Which feature of Spirogyra allows fragmentation to be successful?

- A. Single-celled structure
- B. Complex tissues
- C. Simple filamentous body ✓
- D. Presence of seeds

Q19 Virus, bacteria, fungi, algae basics

A farmer stores grains from his crop yield in a damp and warm room. After a few weeks, the grains get spoiled and their quantity reduces. What is the most likely reason for this?

- A. Grains were eaten by birds and insects
- B. Grains got washed away with water
- C. Poor irrigation before harvesting
- D. Improper storage conditions ✓



Q20 Virus, bacteria, fungi, algae basics

Which structure in *Rhizopus* is directly involved in the process of reproduction through spore formation?

- A. Hyphae
- B. Mycelium
- C. Rhizoids
- D. Sporangia



Q21 General Science

Which of the following statements is INCORRECT about regeneration?

- A. Regeneration involves specialised cells and requires cell division.
- B. Fragmentation occurs in simple multicellular organisms like Spirogyra.
- C. In complex animals, regeneration is limited to repair of tissues, not formation of a whole organism.
- D. Dogs can regrow lost body parts and form whole new individuals.



Q1 Carbon dioxide and carbon monoxide

_____ is precipitated, when carbon dioxide is passed through lime water.

- A. CaSO_4
- B. Ca(OH)_2
- C. CaCO_3 ✓
- D. $\text{Ca(HCO}_3)_2$

Q2 Carbon dioxide and carbon monoxide

Which of the following gases is evolved when dilute hydrochloric acid reacts with sodium hydrogencarbonate?

- A. Carbon dioxide ✓
- B. Nitrogen
- C. Oxygen
- D. Hydrogen

Q3 Carbon dioxide and carbon monoxide

The gas released on the reaction of metal carbonate with hydrochloric acid turns lime water milky. The released gas is:

- A. Carbon dioxide ✓
- B. Hydrogen
- C. Chlorine
- D. Carbon monoxide

Q4 Carbon dioxide and carbon monoxide

Which gas reacts with sodium hydroxide to form sodium bicarbonate and sodium carbonate?

- A. CO
- B. SO_2
- C. NO_2
- D. CO_2 ✓

Q5 Carbon dioxide and carbon monoxide

On mixing sodium bicarbonate with dil. HCl, sodium chloride is formed and a gas is evolved. This gas when passed through lime water turns it milky. The evolved gas is:

- A. CO
- B. CO_2 ✓
- C. H_2
- D. Cl_2

Q6 Carbon dioxide and carbon monoxide

When CO_2 reacts with calcium hydroxide, it gives calcium carbonate and water. Which property of CO_2 is seen in this reaction?

- A. Basic property
- B. Acidic property ✓
- C. Oxidising property
- D. Neutral property

Q7 Carbon dioxide and carbon monoxide

What is the ratio of carbon to oxygen by mass, in carbon dioxide?

- A. 3:8 ✓
- B. 2:4
- C. 1:2
- D. 6:8

Q8 Chemical names of common substances

Vinegar is a 5-8% solution of which of the following?

- A. Acetic acid in water ✓
- B. Calcium carbonate in water
- C. Formic acid in water
- D. Sodium hydroxide in water

Q9 Chemical names of common substances

What is the chemical formula of aluminium oxide?

- A. AlO_3
- B. Al_2O_3 ✓
- C. AlO
- D. Al_2O



Q10 Common chemicals and their uses (match)

Which of the following industries uses sodium hydroxide for processing wood pulp?

- A. Food Industry
- B. Soap Industry
- C. Textile Industry
- D. Paper Industry

**Q11 Fertilizers and their nutrients (NPK)**

What is the primary objective of implementing nutrient management practices in agriculture?

- A. Pouring polluted water on crops
- B. Enhancing soil erosion
- C. Mixing plastic residues into the field
- D. Improving crop productivity and quality

**Q12 Food additives / preservatives**

Why the manufacturers of chips flush chips bags with nitrogen before packing?

- A. Nitrogen prevents rancidity.
- B. Nitrogen acts as preservative.
- C. Nitrogen acts as taste enhancer.
- D. Nitrogen prevents reduction of oil.

**Q13 Food additives / preservatives**

Flushing of which gas is usually preferred in order to prevent the rancidity of the packaged food items?

- A. Dinitrogen trioxide
- B. Nitrogen dioxide
- C. Nitrogen
- D. Nitric oxide

**Q14 Food additives / preservatives**

Which of the following methods is commonly used to prevent rancidity in packaged food items?

- A. Adding acids to the food
- B. Heating the food before packing
- C. Flushing with nitrogen gas before sealing
- D. Storing food in oxygen-rich containers

**Q15 Gas laws (Boyle/Charles basics)**

Which of the following is a result of increasing the pressure on a gas?

- A. Increase in kinetic energy
- B. Increase in inter-particle space
- C. Evaporation of the gas
- D. Decrease in inter-particle space

**Q16 Gas laws (Boyle/Charles basics)**

If you apply pressure to a gas, what happens to the intermolecular spaces and forces?

- A. Intermolecular spaces and forces both increase.
- B. Intermolecular spaces increase, intermolecular forces decrease.
- C. Intermolecular spaces decrease, intermolecular forces increase.
- D. Both intermolecular spaces and forces remain unchanged.

**Q17 Gas laws (Boyle/Charles basics)**

If the temperature of a gas is increased at constant volume, what happens to the pressure?

- A. It decreases.
- B. It cannot be determined.
- C. It increases.
- D. It remains the same.

**Q18 Gas laws (Boyle/Charles basics)**

Which of the following best explains the liquefaction of gases under high pressure?

- A. Gases expand indefinitely, so pressure has no effect
- B. Higher pressure reduces the space between particles, leading to liquefaction
- C. Increased molecular size leads to condensation
- D. Higher pressure increases temperature, leading to phase change

**Q19 Gas laws (Boyle/Charles basics)**

Applying pressure to a gas causes:

- A. Volume to increase
- B. Particles to come closer
- C. Particles to move faster
- D. Temperature to decrease



Q20 Gas laws (Boyle/Charles basics)

A sealed syringe containing air is pressed from one end while keeping the other end closed. What is the most likely outcome of this action in terms of the state of air inside the syringe?

- A. The volume of air increases and pressure decreases
- B. The temperature of air inside drops significantly
- C. The volume of air decreases and its pressure increases ☒
- D. The air escapes completely from the syringe

Q21 Oxygen, nitrogen, hydrogen (properties)

What is the role of nitrogen gas in chip packets?

- A. It prevents oxidation ☒
- B. It adds crispiness
- C. It adds flavour
- D. It absorbs moisture



Q1 Biodiversity & Conservation

Which of the following is/are NOT consequence(s) of large dams?

- A. Economic problems
- B. Deforestation
- C. Afforestation** ✓
- D. Social problems

Q2 Biodiversity & Conservation

Which of the following is a key goal of conserving forests and biodiversity?

- A. To promote tourism
- B. To expand national parks
- C. To preserve inherited biodiversity** ✓
- D. To allow more industrial use of forests

Q3 Biodiversity & Conservation

Which incident was responsible for the beginning of the Chipko Movement in the village of Reni?

- A. Sale of forest by local residents
- B. Approval given to a contractor to fell trees near the village** ✓
- C. Industrial development planned by villagers
- D. Government decision to use forest land for farming

Q4 Biodiversity & Conservation

What is the key realization that can lead to more sustainable use of natural resources?

- A. Only future generations must benefit from resources
- B. Selfish exploitation causes environmental harm and misery** ✓
- C. Rules alone can ensure conservation
- D. Unlimited growth is always beneficial

Q5 Biodiversity & Conservation

The Chipko Andolan refers to which of the following?

- A. Use of advanced technologies for reducing environmental pollution
- B. Government-sponsored water harvest schemes
- C. Active participation of local communities in protecting forests** ✓
- D. Government-sponsored environmental protection schemes

Q6 Biodiversity & Conservation

Who sacrificed her life along with 363 others in 1731 to protect the Khejri trees in Rajasthan?

- A. Amrita Devi Bishnoi** ✓
- B. Medha Patkar
- C. Sunita Narain
- D. Vandana Shiva

Q7 Biodiversity & Conservation

Which of the following contributes directly to forest conservation?

- A. Mining
- B. Urbanization
- C. Social Forestry** ✓
- D. Logging

Q8 Biodiversity & Conservation

Select the correct option regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): Monoculture plantations often fail to meet the diverse needs of forest-dependent villagers.
Reason (R): These plantations provide medicinal herbs, food and fuel for villagers.

- A. Both A and R are true, but R is not the correct explanation of A.
- B. A is true, but R is false.** ✓
- C. Both A and R are true, and R is the correct explanation of A.
- D. A is false, but R is true.



Q9 Biodiversity & Conservation

What was the primary goal of the Chipko Movement of the Garhwal region?

A. Protection of the forest



B. Cutting of forest

C. Grazing of forest

D. Aforestation

Q10 Biodiversity & Conservation

Which of the following is an example of judicious use of natural resources?

A. Deforestation

B. Excessive use of fossil fuels

C. Open mining

D. Rainwater harvesting

**Q11 Ecosystem & Food Chain**

Which organism is a key indicator of a healthy aquatic ecosystem?

A. Lichen

B. Cockroach

C. Fish



D. Earthworm

Q12 Pollution (Air, Water, Soil, Noise)

What happens to biodegradable substances when they are released in the environment?

A. They persist forever.

B. They get broken down into simpler components.



C. They get converted into toxic chemicals.

D. They deplete the ozone layer.

Q13 Pollution (Air, Water, Soil, Noise)

Materials that have NOT been broken down by the action of bacteria or saprophytes, but somehow degraded by physical processes, are called:

A. Dividable

B. Non-biodegradable



C. Decaying

D. Biodegradable

Q14 General Science

Water harvesting is important because it:

A. Recharges groundwater



B. Decreases the water supply to downstream areas

C. Purifies the water bodies

D. Reduces the mineral density in water bodies

Q15 General Science

Which of the following is a major environmental disadvantage of big dams?

A. Submergence of forests



B. Creation of recreational spaces

C. Water conservation

D. Increased biodiversity

Q16 General Science

Which of the following is a traditional water harvesting method in Rajasthan, India?

A. Johad



B. Borewell

C. Check dam

D. Hand pump



Q1 Affected organ by disease (match)

Asthma primarily affects which part of the respiratory system?

A. Diaphragm

B. Bronchi and bronchioles ✓

C. Alveoli

D. Trachea

Q2 Bacterial Diseases (TB, Cholera, etc.)

Which of the following sexually transmitted diseases is caused by a bacterium?

A. Warts

B. Typhoid

C. HIV-AIDS

D. Gonorrhoea ✓

Q3 Bacterial Diseases (TB, Cholera, etc.)

The sexual act is a very intimate connection of bodies and there are many diseases that can be transmitted sexually. Which of the following is caused by bacteria?

A. Warts

B. Gonorrhoea only

C. Both gonorrhoea and syphilis ✓

D. Syphilis only

Q4 Communicable vs non-communicable

Which of the following human diseases can be transmitted during sexual act?

A. Cancer

B. Diabetes

C. Protein Energy Malnutrition

D. Acquired Immuno Deficiency Syndrome ✓

Q5 Disease-causing organism (pathogen match)

Which of the following methods of reproduction is found in Plasmodium?

A. Budding

B. Layering

C. Grafting

D. Multiple fission ✓

Q6 Disease-causing organism (pathogen match)

Which of the following is a common category of agents that can cause diseases in poultry fowl?

A. Sunlight exposure

B. Vitamins and minerals only

C. Viruses, bacteria, and fungi ✓

D. Purely genetic factors

Q7 Viral Diseases (COVID, Dengue, etc.)

Which of the following statements is true about HIV transmission?

A. HIV can be transmitted through mosquito bites.

B. HIV can be transmitted through aerosols.

C. HIV can be transmitted through casual contact.

D. HIV can be transmitted through sexual acts. ✓

Q8 Viral Diseases (COVID, Dengue, etc.)

Which of the following groups is most at risk of HIV infections?

A. People who do not exercise regularly

B. People who exercise regularly

C. People who maintain personal hygiene

D. Individuals who have multiple unprotected sexual partners ✓

Q9 Viral Diseases (COVID, Dengue, etc.)

Which of the following is NOT responsible for the transmission of HIV-infection?

A. Sharing infected needles

B. Sexual contact with infected person

C. Hugging of infected person ✓

D. Transfusion of contaminated blood

Q10 Viral Diseases (COVID, Dengue, etc.)

A man contracts HIV even though his partner is healthy. Which of the following behaviours from his personality could explain this?

A. Using sterilised needles

B. Having protected sex

C. Having multiple unprotected sexual partners ✓

D. Maintaining a healthy diet



Q11 Viral Diseases (COVID, Dengue, etc.)

In HIV infection, the 'window period' refers to the phase during which _____.

A. HIV antibodies are detectable in tests

B. symptoms are severe

C. HIV antibodies are not detectable in tests



D. the patient dies

Q12 Viral Diseases (COVID, Dengue, etc.)

The sexually transmitted disease AIDS is caused by which of the following?

A. Protozoa

B. Helminths

C. Bacteria

D. Virus



Q1 Measuring Instruments

Which of the following instruments is used to determine the purity of a milk sample?

A. Thermometer

B. Lactometer

C. Barometer

D. Hydrometer

Q2 Measuring instruments and what they measure

A student connects a voltmeter across the terminals of a glowing bulb. What does the voltmeter measure?

A. Potential difference across the bulb

B. Resistance of the bulb

C. Current through the bulb

D. Heat produced by the bulb

Q3 Measuring instruments and what they measure

Which of the following pairs correctly matches the device with its main use?

A. Megaphone – Listening to heartbeat

B. Stethoscope – Directing sound to a large audience

C. Horn – Measuring blood pressure

D. Horn – Amplifying musical sound

Q4 SI base units and quantities

Which of the following is NOT a base unit in the International System of Units (SI)?

A. Second

B. Kilogramme

C. Joule

D. Metre

Q5 SI derived units (newton/joule/watt/pascal)

The newton (N) is the SI unit of force. Which of the following expresses one newton (N) in terms of the fundamental SI units (kilogram, metre and second)?

A. $\text{kg.m}^2/\text{s}$

B. kg.m/s^2

C. $\text{kg/m}^2.\text{s}$

D. kg.m.s

Q6 SI derived units (newton/joule/watt/pascal)

Which of the following is the SI unit of weight?

A. Newton

B. Joule

C. Kilogram

D. Pascal

Q7 Scalars and vectors (identify)

Magnetic field is a quantity that has _____.

A. only direction

B. both magnitude and direction

C. neither magnitude nor direction

D. only magnitude

Q8 Units of physical quantities (match)

Which of the following correctly matches a measurable property of matter with its SI unit?

A. Density – Kilogram per cubic metre

B. Volume – Cubic centimetre

C. Temperature – Calorie

D. Pressure – Newton

Q9 Units of physical quantities (match)

What quantity is measured in cubic centimetres (cm^3)?

A. Temperature

B. Pressure

C. Mass

D. Volume

Q10 Units of physical quantities (match)

The SI unit of average speed is:

A. m/s

B. m/s^2

C. km/hr

D. cm/s



Q11 Units of physical quantities (match)

Which of the following is the correct unit of average speed in SI system?

A. m/s^2

B. km/h^2

C. s/m^2

D. m/s



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General Science

3 Questions • Answer Key

Q1 General Science

Which of the following statements is correct?

- A. Electrons have much smaller mass than protons and neutrons. ☒
- B. The size of the nucleus is large as compared to the size of the atom.
- C. The electrons revolve around the nucleus in triangular paths.
- D. The electrons do not revolve around the nucleus in circular paths.

Q2 General Science

Which of the following statements is true?

- A. More work done in less time means more power. ☒
- B. Work done does not affect power.
- C. Power decreases when work increases.
- D. Power and work are independent of each other.

Q3 General Science

Which of the following statements is NOT correct?

- A. Gravitational force is always attractive
- B. Gravitational force is strongest among small bodies ☒
- C. The value of G is constant everywhere
- D. Every object attracts every other object in the universe



General Science

7 Questions • Answer Key

Q1 Balanced diet and malnutrition

A mother who is malnourished during pregnancy is likely to:

- A. have a faster delivery
- B. produce more milk
- C. give birth to an underweight baby ✓
- D. have a stronger immune system

Q2 Minerals (Iron, Calcium, etc.)

Which of the following is a micronutrient?

- A. Manganese ✓
- B. Phosphorous
- C. Nitrogen
- D. Magnesium

Q3 Nutrients (carbs/proteins/fats/minerals)

Which of the following nutrients is a macronutrient?

- A. Potassium ✓
- B. Copper
- C. Iron
- D. Zinc

Q4 Vitamins (A-K), sources and functions

Which of the following vitamins are maintained at high levels in poultry feed to support optimal growth and health?

- A. Vitamin B9 and B12
- B. Vitamin A, D and E ✓
- C. Vitamin B1, B2, B3
- D. Vitamin C and K

Q5 General Science

For the life processes, the transfer of a source of energy from outside the body of the organism is called _____.

- A. excretion
- B. digestion
- C. respiration
- D. nutrition ✓

Q6 General Science

What is the primary purpose of the process of nutrition in living organisms?

- A. To form oxygen molecules required for photosynthesis
- B. To produce carbon dioxide and other waste materials
- C. To obtain energy and raw materials from external sources ✓
- D. To regulate visible movement and reproduction

Q7 General Science

Some organisms take in whole food material and break it down inside their bodies. This is called _____ nutrition.

- A. saprophytic
- B. holozoic ✓
- C. parasitic
- D. autotrophic



Q1 Foreign Scientists

Which scientist suggested that a magnet exerts an equal and opposite force on a current-carrying conductor?

A. Ampere



B. Oersted

C. Maxwell

D. Faraday

Q2 Foreign Scientists

The Law of Conservation of Mass was given by:

A. Joseph Proust

B. John Dalton

C. Antoine Lavoisier



D. Ernest Rutherford

Q3 Foreign Scientists

Name the scientist who defined elements as substances that CANNOT be broken down into simpler form by chemical reactions.

A. Robert Hookie

B. Antoine Laurent Lavoisier



C. Charles Darwin

D. Robert boyle

Q4 Foreign Scientists

The gravitational constant (G) was first measured by _____.

A. Newton

B. Galileo

C. Cavendish



D. Kepler



General Science

3 Questions • Answer Key

Q1 General Science

If the speed of an object changes with time, the distance–time graph will be:

- A. A straight line parallel to the time axis
- B. A straight line inclined to the time axis
- C. A horizontal straight line
- D. A curved line



Q2 General Science

In galvanisation, which metal is used to coat iron?

- A. Aluminum
- B. Lead
- C. Zinc
- D. Copper



Q3 General Science

How are ionic compounds formed between metals and non-metals?

- A. By transfer of electrons from metal atoms to non-metal atoms.
- B. By the formation of a sea of delocalised electrons.
- C. By sharing of electrons between atoms.
- D. By mutual attraction between positively charged nuclei



Q1 General Science

Which practice demonstrates judicious energy use at home?

- A. Overusing air-conditioners
- B. Heating an empty room continuously
- C. Keeping all appliances on standby mode
- D. Using bulbs or fluorescent tubes

**Q2** General Science

Which of the following is NOT true regarding the speed of sound?

- (i) Speed of sound increases with the increase in the temperature of the medium.
- (ii) Speed of sound in solid state is greater than the speed of sound in gaseous state.
- (iii) Speed of sound decreases with the increase in the temperature of the medium.
- (iv) Speed of sound is independent of the properties of the medium through which it travels.

- A. Both (i) and (ii)
- B. Both (i) and (iv)
- C. Both (ii) and (iii)
- D. Both (iii) and (iv)



Q1 Discoverers in biology (cell/blood circ.)

Who first described the nucleus as a cell organelle in 1831?

A. Robert Brown



B. Rudolf Virchow

C. Anton van Leeuwenhoek

D. Robert Hooke

Q2 Discoverers in biology (cell/blood circ.)

Who first observed the densely stained reticular structures near the nucleus, now known as Golgi bodies?

A. Anton van Leeuwenhoek

B. Robert Hooke

C. Camillo Golgi



D. Matthias Schleiden



Q1 Biotech Basics (genetic engineering, GM/Bt crops, cloning, stem cells)

Why are climate-resistance hybrid crop varieties important for future farming?

- A. Hybrid crops are unaffected by unpredictable weather ☒
- B. Hybrid crops reduce the role of farmers
- C. Hybrid crops are easier to store
- D. Hybrid crops look more attractive



Q1 Radioactivity & Nuclear Energy

According to Bohr's model, electromagnetic radiations possess dual character properties behaving like:

- A. sound and waves
- B. mass and magnetic effect
- C. waves and particles ☒
- D. waves and electrons



Geography

10 Questions • Answer Key

Q1 Green Revolution & Other Revolutions

Which of the following is NOT an advantage of short-duration crop varieties?

A. Higher chances of crop damage



B. Reduced production cost

C. Possibility of multiple cropping

D. Quick harvesting

Q2 Irrigation Projects & Canals

Providing water to crops at optimal times during their growth cycle directly contributes to what outcome?

A. Higher expected yields



B. Delayed maturation

C. Increased vulnerability to pests

D. Decreased nutrient uptake

Q3 Irrigation Projects & Canals

Which of the following is the irrigation method in which water is tap from deeper strata by pumps?

A. Canals

B. Tube wells



C. River life system

D. Rain-fed

Q4 Irrigation Projects & Canals

A village that regularly suffers from drought wants to store water for dry seasons to irrigate the agricultural field. Which method will help most?

A. Rainwater harvesting and watershed management



B. Spraying pesticides

C. Growing short-duration crops

D. Sprinkler irrigation

Q5 Irrigation Projects & Canals

A farmer lives near a river, but the canal system in his area receives an irregular water supply from the reservoir. What should he ideally adopt for irrigation?

A. Use of sprinklers only

B. Flood irrigation

C. Wells

D. River lift system



Q6 Irrigation Projects & Canals

What do 'check dams' refer to?

A. Dams built only for industrial water supply

B. Small huts near rivers

C. Earthen or concrete structures across flooded gullies



D. Crescent-shaped hills for farming

Q7 Multipurpose River Valley Projects (Bhakra, DVC, Nagarjuna Sagar)

Which of the following statement is true regarding big dams and flood control?

A. Big dams do not increase the risk of floods.

B. Big dams can help in flood control by regulating river flow.



C. Big dams are never used for flood control.

D. Big dams completely eliminate the possibility of floods.

Q8 Multipurpose River Valley Projects (Bhakra, DVC, Nagarjuna Sagar)

Which of the following is a primary advantage of constructing a big dam?

A. Decentralised energy production

B. Immediate increase in local biodiversity

C. Prevention of all downstream flooding

D. Generation of hydroelectric power



Q9 Types of Farming (subsistence, commercial, plantation)

Which of the following is an example of growing two or more crops simultaneously on the same land field in a definite pattern?

- A. Hydroponics
- B. Monocropping
- C. Inter-cropping ☒
- D. Aeroponics

Q10 General Science

Which of the following fish production methods are done in the region of Kashmir?

- A. Pearl Culture
- B. Aqua Culture ☒
- C. Brackish Water Fisheries
- D. Marine Fisheries



Q1 General Science

The disease-causing pathogens in plants can be transmitted through_____.

A. Both Soil and Air



B. Soil

C. Air

D. Neither Soil nor Air



Q1 Gandhian Era

Which of the following statements is INCORRECT about DNA copies produced during the process of reproduction?

- A. DNA copies are single stranded.
- B. DNA copying is a completely error-free process. ☒
- C. Copying of DNA is a pre-requisite for reproduction.
- D. DNA copies generated are similar but not identical.



Q1 General Science

Which of the following is considered a major factor contributing to poor living standards in society?

A. Inequality in the distribution of resources



B. Overuse of technology in urban areas

C. Only the rapid growth of the population

D. Only the level of education in society



Schemes, Reports, Indices & Organisations

7 Questions • Answer Key

Q1 Blue (fish), Yellow (oilseeds), Golden (fruits/honey)

Apiaries help us in the production of which of the following food materials?

- A. Milk
- B. Fish
- C. Honey ✓
- D. Poultry egg

Q2 Blue (fish), Yellow (oilseeds), Golden (fruits/honey)

What is the name of the place where bees are kept for commercial honey production?

- A. Sanctuary
- B. Apiary ✓
- C. Aquarium
- D. Aviary

Q3 Blue (fish), Yellow (oilseeds), Golden (fruits/honey)

A farmer wants to improve both the quantity and quality of honey produced on their farm. What practice should they adopt?

- A. Reduce the number of flowering plants
- B. Ensure nectar-rich flowers bloom throughout the season ✓
- C. Remove all wildflowers from the area
- D. Keep the bees in shaded areas away from plants

Q4 Blue (fish), Yellow (oilseeds), Golden (fruits/honey)

Which of the following are cultivated for the pearls they make?

- A. Sardines
- B. Pomfrets
- C. Prawns
- D. Oysters ✓

Q5 Blue (fish), Yellow (oilseeds), Golden (fruits/honey)

Which of the following types of animal husbandry helps us in honey production?

- A. Culture fishery
- B. Cattle farming
- C. Bee-keeping ✓
- D. Poultry

Q6 Kharif vs Rabi vs Zaid Crops

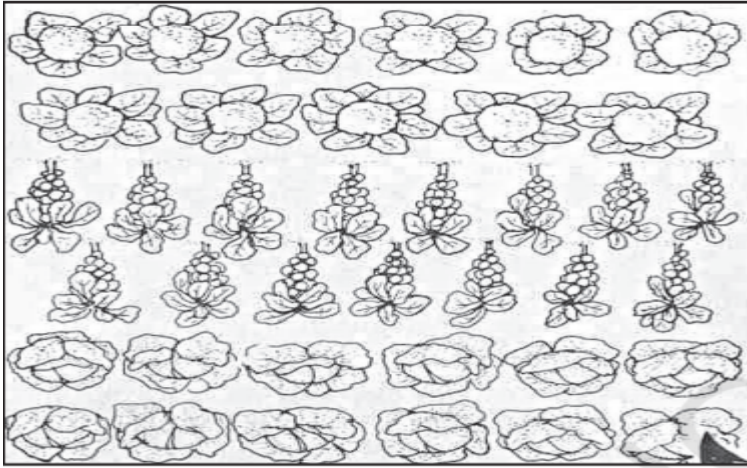
Rabi crops are harvested in which season?

- A. Monsoon
- B. Winter
- C. Summer ✓
- D. Autumn



Q7 Kharif vs Rabi vs Zaid Crops

Identify the cropping pattern in the given picture.



A. Mixed cropping

B. Terrace farming

C. Inter cropping



D. Crop rotation



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Static GK

6 Questions • Answer Key

Q1 General Science

Which of the following statements is correct?

- A. Sound travels faster in vacuum than in air.
- B. Sound can travel in vacuum because it is longitudinal.
- C. Sound requires a medium to travel and is longitudinal. ✓
- D. Sound waves are transverse and need a medium.

Q2 General Science

The thalamus (receptacle) in flowers performs which of the following functions?

- A. Supports flower parts and can become part of the fruit. ✓
- B. Produces nectar.
- C. Produces pollen grains.
- D. Forms the ovules.

Q3 General Science

The _____ helps in the movement of mucus along the lining of the respiratory tract.

- A. simple squamous epithelium
- B. ciliated columnar epithelium ✓
- C. stratified squamous epithelium
- D. cuboidal epithelium

Q4 General Science

Which of the following is/are used in poultry farming?

- A. Sardines
- B. Catla
- C. Leghorn breed ✓
- D. Prawns

Q5 General Science

What will happen to a Hydra if it is cut into multiple pieces?

- A. Each piece will regenerate to form new individuals. ✓
- B. Each piece will reproduce by budding.
- C. All pieces will die immediately.
- D. Only the head part will grow into a complete individual.

Q6 General Science

What is the colour of the precipitate formed when silver nitrate reacts with sodium chloride?

- A. Green
- B. Yellow
- C. White ✓
- D. Blue



Static GK

2 Questions • Answer Key

Q1 General Science

What is an ion?

- A. A proton
- B. A molecule
- C. An atom or group of atoms with a positive or negative charge ☒
- D. A neutral atom

Q2 General Science

The Law of Constant Proportions applies to the:

- A. Both mixtures and compounds
- B. Pure chemical compounds ☒
- C. Mixtures of substances
- D. Elements



Q1 First Institutions & Events

Which of the following life processes is NOT essential to maintain the life of an individual organism?

- A. Excretion
- B. Nutrition
- C. Respiration
- D. Reproduction

**Q2** First Institutions & Events

Which of the following statements is NOT correct about linear velocity?

- A. Linear velocity is constant for uniform motion.
- B. Linear velocity depends on displacement and time.
- C. It is the rate of change of displacement.
- D. The SI unit of linear velocity is m/s^2 .



Q1 General Science

A biologist cuts a hydra into two unequal parts. One part has a fully formed bud. What is most likely to happen to the bud?

- A. The bud will die instantly
- B. The bud will turn into a spore
- C. The hydra will not survive
- D. The bud will mature into a new hydra

