



RRB JE 2024 CBT-2 Chemical & Metallurgical Supervisor

Chemical & Metallurgical Supervisor · CEN 03/2024 · CBT-2 · Question Paper

English

Complete Paper · 150 Questions · Official Answer Key

About this Compilation

This booklet contains the complete question paper of the **RRB JE 2024 CBT-2 (Chemical & Metallurgical Supervisor)** examination in **English**, with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

How to use

- Use the **Index** page to jump directly to any set (clickable).
- Questions appear section by section in the order of the paper, numbered 1 onward.
- Diagram and wide-table questions appear at full width at the end of their section.
- The correct answer is highlighted in green with a tick.

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Index — All Sets (click to open)

Set 1

22 Apr 2025
2:30 PM - 4:30 PM

General Abilities

50 Questions • Answer Key

Q1 General Abilities

Electricity production is categorised under which of the following economic sectors?

- A. Primary sector
- B. Secondary sector** ✓
- C. Quaternary sector
- D. Tertiary sector

Q2 General Abilities

The people of _____ were famously involved in execution of the Chipko movement.

- A. Garhwal Himalayas** ✓
- B. Delhi
- C. Gujarat
- D. Assam

Q3 General Abilities

Which of the following correctly differentiates mixtures and compounds?

Feature	Mixture	Compound
A) Separation	Can be separated by physical methods	Requires chemical methods
B) Composition	Fixed ratio	Variable ratio
C) Properties	Always the same as constituents	Different from constituents
D) Formation	By chemical reaction	By simple mixing

- A. Option C (Properties) is correct
- B. Option B (Composition) is correct
- C. Option A (Separation) is correct** ✓
- D. Option D (Formation) is correct

Q4 General Abilities

A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?

- A. 7.500 J
- B. 3.750 J
- C. 5.625 J** ✓
- D. 1.875 J

Q5 General Abilities

The main reason for which we are dependent on air is our _____.

- A. respiration** ✓
- B. excretion
- C. osmoregulation
- D. digestion

Q6 General Abilities

In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?

- A. 100 metres T20
- B. 600 metres T20
- C. 400 metres T20** ✓
- D. 200 metres T20

Q7 General Abilities

Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?

- A. BR Ambedkar
- B. Ivor Jennings
- C. LM Singhvi** ✓
- D. HM Seervai

Q8 General Abilities

In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?

- A. Navigation with Indian Constellation (NavIC)** ✓
- B. Global Navigation Satellite System (GLONASS)
- C. Global Positioning System (GPS)
- D. Galileo



Q9 General Abilities

The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?

A. Article 123



B. Article 72

C. Article 356

D. Article 110

Q10 General Abilities

What is the primary function of a computer firewall?

A. To detect and remove computer viruses

B. To prevent unauthorised access to a private network



C. To speed up internet connectivity

D. To store user passwords securely

Q11 General Abilities

Who is known as the leader of the Green Revolution in India?

A. C Subramaniam

B. Dr. Rajendra Prasad

C. Prof. MS Swaminathan



D. Tribhuvandas Kishibhai Patel

Q12 General Abilities

An alloy is considered a homogeneous mixture because:

A. it exhibits uniform composition throughout



B. it contains two or more phases

C. its components can be separated by filtration

D. its components are chemically combined in fixed proportions

Q13 General Abilities

Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?

A. =MULTIPLY(A2,B2)

B. =A2-B2

C. =A2*B2



D. =A2+B2

Q14 General Abilities

A concave lens has a focal length of -2 cm. What is its power?

A. -50 D



B. -0.5 D

C. 0.5 D

D. 25 D

Q15 General Abilities

Which type of RAM is faster and DOES NOT require refreshing?

A. ROM

B. DRAM

C. SRAM



D. Flash Memory

Q16 General Abilities

The kinetic energy of an object is derived using which of the following equations of motion?

A. $v = u + at$

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



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

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

Q17 General Abilities

The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is ____.

A. UV-A

B. UV-C

C. UV-B



D. UV-D

Q18 General Abilities

Which of the following bridges is constructed over the Brahmaputra River in India?

A. Howrah Bridge

B. Mahatma Gandhi Setu

C. Pamban Bridge

D. Dhola-Sadiya Bridge



Q19 General Abilities

Which of the following is NOT toxic to non-target organisms in the soil?

A. Organic fertilisers



B. Pesticides

C. Herbicides

D. Fungicides

Q20 General Abilities

Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?

A. United States

B. France

C. Canada

D. Sweden

**Q21 General Abilities**

What does LAN stand for?

A. Large Area Network

B. Limited Access Node

C. Linked Access Network

D. Local Area Network

**Q22 General Abilities**

A sound wave with a low frequency will have _____.

A. a low amplitude

B. a high pitch

C. a short wavelength

D. a low pitch

**Q23 General Abilities**

Which of the following was NOT an artisan guild during the Mauryan period?

A. Bankers and Merchants

B. Potters

C. Astrologers



D. Carpenters

Q24 General Abilities

Who among the following developed the notation system for Hindustani classical music?

A. Ustad Bismillah Khan

B. Pandit Vishnu Narayan Bhatkhande



C. Ustad Amjad Ali Khan

D. Pandit Ravi Shankar

Q25 General Abilities

Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?

A. TEXT()



B. FORMAT()

C. VALUE()

D. NUMBERTOTEXT()

Q26 General Abilities

Which of the following is NOT a source of collection of municipal solid waste?

A. Waste from homes

B. Radioactive waste



C. Waste from schools

D. Waste from hospitals

Q27 General Abilities

What happens to the pH of pure water when a few drops of lemon juice are added?

A. The pH becomes neutral

B. The pH increases

C. The pH decreases



D. The pH remains the same

Q28 General Abilities

Where can one find the option to change a PowerPoint template?

A. Home → Layout

B. Design → Themes



C. Insert → Themes

D. View → Slide Master



Q29 General Abilities

Why do covalent compounds generally have low melting and boiling points?

- ☒ A. They have weak intermolecular forces.
- ☐ B. They have a rigid lattice structure.
- ☐ C. They have strong electrostatic forces.
- ☐ D. They contain metallic bonds.

Q30 General Abilities

The President has the power to dissolve which house of Parliament?

- ☐ A. Legislative Assembly
- ☐ B. Both Rajya Sabha and Lok Sabha
- ☒ C. Lok Sabha only
- ☐ D. Rajya Sabha only

Q31 General Abilities

Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?

- ☒ A. Carl Zeiss AG
- ☐ B. Jenoptik
- ☐ C. Leica
- ☐ D. Schneider Kreuznach

Q32 General Abilities

Which function key is used to move text or graphics in a document?

- ☐ A. F5
- ☐ B. F1
- ☒ C. F2
- ☐ D. F12

Q33 General Abilities

A metal wire is stretched, but it does not break easily. This property is known as:

- ☐ A. hardness
- ☒ B. ductility
- ☐ C. malleability
- ☐ D. brittleness

Q34 General Abilities

Who among the following established the Bengal Chemical Swadeshi Stores?

- ☒ A. Acharya PC Ray
- ☐ B. BG Tilak
- ☐ C. Dadabhai Naoroji
- ☐ D. Surendranath Banerjee

Q35 General Abilities

An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be ____.

- ☐ A. 17.5 cm
- ☐ B. -9.37 cm
- ☒ C. -37.5 cm
- ☐ D. -10.0 cm

Q36 General Abilities

What is the primary function of a firewall tool in a computer network?

- ☐ A. To speed up internet connections
- ☒ B. To monitor and control incoming and outgoing network traffic
- ☐ C. To store data securely
- ☐ D. To detect and remove viruses

Q37 General Abilities

Which of the following elements has an atomic number of 8?

- ☐ A. Carbon
- ☒ B. Oxygen
- ☐ C. Nitrogen
- ☐ D. Hydrogen

Q38 General Abilities

Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?

- ☐ A. Harmanpreet Kaur
- ☒ B. Smriti Mandhana
- ☐ C. Jhulan Goswami
- ☐ D. Mithali Raj



Q39 General Abilities

Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.

- A. diseases
- B. mutations ✓
- C. emotional defects
- D. syndromes

Q40 General Abilities

Which of the following options is NOT a greenhouse gas?

- A. Carbon dioxide
- B. Nitrous oxide
- C. Methane
- D. Carbon tetrachloride ✓

Q41 General Abilities

For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.

- A. 1984
- B. 1992
- C. 1986 ✓
- D. 1972

Q42 General Abilities

A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?

- A. 25%
- B. 45%
- C. 16.67% ✓
- D. 20%

Q43 General Abilities

What is the general orientation of the Himalayan ranges in the northwestern part of India?

- A. East-South
- B. Northeast to Southwest
- C. South-North
- D. Northwest to Southeast ✓

Q44 General Abilities

What happens when you click on the 'Forward' button in an email?

- A. A blank email opens.
- B. The email is automatically sent to all contacts.
- C. The email is permanently deleted.
- D. The original message is copied into a new email draft. ✓

Q45 General Abilities

The atomic mass of sulphur is 32 u, and sulphur exists as S_8 molecules. What is the molecular mass of sulphur?

- A. 256 u ✓
- B. 128 u
- C. 32 u
- D. 64 u

Q46 General Abilities

A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.

- A. random motion
- B. uniform motion ✓
- C. rotational motion
- D. non-uniform motion

Q47 General Abilities

In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.

- A. chlorine
- B. organochlorine
- C. phosphates
- D. DDT ✓

Q48 General Abilities

Which operating system is known for its open-source nature and community-driven development for desktops and laptops?

- A. Windows
- B. macOS
- C. iOS
- D. Linux ✓



Q49 General Abilities

Due to global warming, the temperature of the earth has increased by _____

- A. 0.5°C
- B. 0.8°C
- C. 0.6°C ✓
- D. 0.7°C

Q50 General Abilities

Which of the following will increase the heat produced by a heating element?

- A. Increasing the current flowing through the wire ✓
- B. Using a material with high conductivity
- C. Using a wire of lower resistance
- D. Decreasing the applied voltage

Technical Abilities

100 Questions • Answer Key

Q51 Technical Abilities

The cycle on which an air refrigerator works is known as _____.

- A. Carnot cycle
- B. Bell Coleman cycle ✓
- C. Stirling cycle
- D. Ericson cycle

Q52 Technical Abilities

Which of the following are the Miller Indices of a close packed plane in the FCC crystal?

- A. (110)
- B. (111) ✓
- C. (100)
- D. (112)

Q53 Technical Abilities

Why is biodiversity important for agriculture?

- A. Because it reduces the need for pollination
- B. Because it decreases the nutritional value of crops
- C. Because it promotes the use of monoculture farming
- D. Because it supports pollinators and maintains healthy soil ✓

Q54 Technical Abilities

In the context of space exploration, what is the primary reason for using cryogenic liquid fuels like liquid hydrogen and liquid oxygen in rocket propulsion systems?

- A. They are cheaper to produce than solid fuels.
- B. They produce minimal greenhouse gas emissions.
- C. They provide the highest specific impulse among chemical propellants. ✓
- D. They are easier to store and handle than other fuels.

Q55 Technical Abilities

In a compound gear train, the 'Train Value' is:

- A. the ratio of the speed of the driving gear to the speed of the driven gear
- B. the ratio of the number of teeth on the driven gear to the driver gear
- C. the product of the gear ratios in all stages
- D. the reciprocal of the velocity ratio ✓

Q56 Technical Abilities

Which of the following correctly depicts the progressive metamorphism of coal and its effect on the increase in rank?

- A. Peat → Lignite → Anthracite → Bituminous coal → Graphite
- B. Peat → Lignite → Bituminous coal → Anthracite → Graphite ✓
- C. Lignite → Peat → Bituminous coal → Anthracite → Graphite
- D. Lignite → Bituminous coal → Peat → Anthracite → Graphite

Q57 Technical Abilities

Select the correct option based on the given statements about the soundness test of cement.

Statement 1: The soundness test ensures that cement does not undergo excessive expansion after setting.

Statement 2: Excess magnesia (MgO) and free lime (CaO) in cement cause volume expansion.

- A. Statement 1 is true, but Statement 2 is false.
- B. Both statements are true, and Statement 2 explains Statement 1. ✓
- C. Both statements are true, but Statement 2 does not explain Statement 1.
- D. Statement 1 is false, but Statement 2 is true.



Q58 Technical Abilities

For semiconductor the energy (E_g) band gap (at room temperature) between valence band and conduction band is _____.

A. $E_g < 3\text{eV}$ ✓

B. $E_g > 3\text{eV}$

C. $E_g = 0\text{eV}$

D. $E_g = 7\text{eV}$

Q59 Technical Abilities

The architecture of an operating system consists of:

A. Kernel and Shell ✓

B. Hardware only

C. CPU and Memory

D. Kernel only

Q60 Technical Abilities

What makes biodiesel a sustainable alternative to traditional diesel?

A. It is produced from renewable sources like vegetable oils. ✓

B. It is derived from crude oil.

C. It has a higher energy density.

D. It is cheaper to produce.

Q61 Technical Abilities

Which of the following is the most fundamental principle of surveying?

A. Avoiding triangulation methods

B. Measuring distances accurately only when required

C. Taking measurements without reference to control points

D. Working from whole to part ✓

Q62 Technical Abilities

Which of the following is the primary source of calcium in Portland cement production?

A. Limestone ✓

B. Shale

C. Clay

D. Iron ore

Q63 Technical Abilities

Which property of copper makes it ideal for electrical wiring?

A. High electrical conductivity ✓

B. High density

C. Low thermal conductivity

D. Low ductility

Q64 Technical Abilities

In a cascade refrigeration system:

A. refrigeration effect is obtained using a single refrigerant

B. two different refrigerants are used, refrigerant with low NBP is placed in the evaporator and refrigerant with high NBP is placed in condenser ✓

C. two different refrigerants are used, either of the refrigerants can be placed in the evaporator or condenser side

D. high NBP is placed in evaporator and refrigerant with low NBP is placed in condenser

Q65 Technical Abilities

Which of the following raw materials in blast furnace iron making acts as a fuel source to provide the heat, acts as a reducing agent, and provides an open permeable bed through which slag and metal pass down into the hearth and hot reducing gases pass upwards?

A. Coal

B. Dolomite

C. Limestone

D. Coke ✓

Q66 Technical Abilities

The expression $\oint dQ = \oint dW$ is valid when _____.

A. the second law of thermodynamics is applied to an open system in a flow process

B. the first law of thermodynamics is applied to an open system in a flow process

C. the first law of thermodynamics is applied to a closed system for a cyclic process ✓

D. the second law of thermodynamics is applied to a closed system for a cyclic process



Q67 Technical Abilities

What will be the output of the following C code?

```
void main()
{
int result=1;
if (++result >1)
printf("%d",result+=3);
else
printf("%d",result+=5);
}
```

A. 5



B. 6

C. 4

D. 7

Q68 Technical Abilities

Which of the following polymers soften when heated and harden when cooled?

A. Crosslinked polymers

B. Thermoplastic polymers



C. Thermosetting polymers

D. Network polymers

Q69 Technical Abilities

What is the boiling point of ethyl alcohol (ethanol) at standard atmospheric pressure?

A. 120 °C

B. 78.2 °C



C. 51.2 °C

D. 100 °C

Q70 Technical Abilities

How does hard water affect the lifespan of boiler components?

A. It has no effect on lifespan

B. It extends the lifespan due to better heat retention

C. It improves the efficiency of components

D. It accelerates wear and tear on components

**Q71 Technical Abilities**

Which of the following is a consequence of climate change that threatens biodiversity?

A. Increased agricultural yields

B. Melting ice caps affecting polar habitats



C. Expansion of natural habitats

D. Decrease in human population

Q72 Technical Abilities

What will be the output of the following C code?

```
#include <stdio.h>
void main()
{
int Array[5]={12,32,56,78};
printf("%d",Array[4]);
}
```

A. 78

B. 0



C. 4

D. Error

Q73 Technical Abilities

Which of the following pairs is correctly matched regarding door fittings?

A. Door Stopper - Used to hold the door at an angle



B. Tower Bolt - Used to open the door automatically

C. Hinges - Used to lock the door

D. Aldrop - Used for sliding doors

Q74 Technical Abilities

What is the function of an oxidiser in an explosive material?

A. To control the rate of reaction

B. To decrease the sensitivity of the explosive

C. To contribute atoms of oxidising elements for the fuel to burn



D. To absorb heat and prevent explosion

Q75 Technical Abilities

What is the number of the nearest neighbour atoms in contact with any atom in the BCC crystal?

A. 6

B. 4

C. 12

D. 8



Q76 Technical Abilities

Which of the following is the deformation behaviour of glassy thermoplastics below their glass transition temperatures?

A. Brittle



B. Ductile

C. Flexible

D. Soft

Q77 Technical Abilities

Select the correct statement.

A. Stefan-Boltzmann Law is obtained by integrating Wien's Displacement Law over all wavelengths.

B. Stefan-Boltzmann Law is obtained by integrating Wien's Displacement Law over all frequencies.

C. Stefan-Boltzmann Law is obtained by integrating Plank's Law over all wavelengths.



D. Stefan-Boltzmann Law is obtained by integrating Plank's Law over all frequencies

Q78 Technical Abilities

What is the primary advantage of using a multi-level cache hierarchy?

A. Increased main memory capacity

B. Reduced power consumption

C. Improved disk read/write speeds

D. Decreased memory access latency

**Q79 Technical Abilities**

Which of the following methods is commonly NOT used for the commercial preparation of ammonium chloride?

A. Reacting ammonium sulphate with sodium chloride, involving heating, evaporation and cooling

B. Reacting ammonia with hydrogen chloride gas or hydrochloric acid

C. Reacting sodium chloride with carbon dioxide and ammonia in the Solvay process

D. Electrolysis of ammonium salts

**Q80 Technical Abilities**

Transformers work on the principle of ____.

A. displacement current

B. self induction

C. mutual induction



D. conservation of charge

Q81 Technical Abilities

Which of the following statements describes the relationship between rolling friction and static friction?

A. Rolling friction is always equal to static friction

B. Rolling friction is much smaller than static friction



C. Rolling friction is much greater than static friction

D. Rolling friction is slightly greater than static friction

Q82 Technical Abilities

How does hard water affect energy consumption in boilers?

A. Stabilises energy consumption

B. Increases energy consumption



C. Decreases energy consumption

D. No effect on energy consumption

Q83 Technical Abilities

Which of the following ceramics exhibits piezoelectricity?

A. BaTiO₃



B. MgO

C. ZrO₂

D. Al₂O₃

Q84 Technical Abilities

Which of the following impurities is commonly found in Coal Oven Gas (COG) and must be removed before its use?

A. Argon (Ar)

B. Oxygen (O₂)

C. Ammonia (NH₃)



D. Helium (He)

Q85 Technical Abilities

_____ type of flame is commonly used for welding mild steel.

A. Carburising

B. Neutral



C. Oxidising

D. Reducing



Q86 Technical Abilities

Which of the following polymers are composed of extended, rod-shaped and rigid molecules and in the liquid condition the molecules can become aligned in highly ordered configurations?

- A. Ultrahigh Molecular Weight Polyethylene
- B. Thermoplastic Elastomers
- C. Liquid Crystal Polymers** ✓
- D. Foams

Q87 Technical Abilities

Which of the following is an example of an abiotic factor in an ecosystem?

- A. A community of bacteria
- B. A forest of pine trees
- C. The amount of sunlight** ✓
- D. A population of deer

Q88 Technical Abilities

A thermocouple vacuum gauge operates on the principle that at low pressures, the thermal conductivity of a gas is the function of ____.

- A. temperature
- B. pressure** ✓
- C. density
- D. resistivity

Q89 Technical Abilities

Which of the following statements is INCORRECT about ammonium nitrate?

- A. It is hygroscopic in nature.
- B. It is highly soluble in water.
- C. It has pH more than 7.5.** ✓
- D. It decomposes at the temperature 210°C-260°C.

Q90 Technical Abilities

Which of the following raw materials is the chief source of sulphur in the blast furnace pig iron?

- A. Haematite
- B. Limestone
- C. Dolomite
- D. Coke** ✓

Q91 Technical Abilities

Which of the following is a major application of liquefied natural gas (LNG)?

- A. Raw material for fertiliser production
- B. Coolant in industrial processes
- C. Fuel for power generation** ✓
- D. Feedstock for plastic production

Q92 Technical Abilities

By reverse biasing the PN junction diode, the width of depletion layer ____.

- A. remains same as that of in forward bias PN junction
- B. decreases
- C. increases** ✓
- D. is independent of bias

Q93 Technical Abilities

Match the Plane Table Methods with their Characteristics.

Method	Characteristic
P) Radiation	1) Uses two known points to locate an unknown point
Q) Intersection	2) Involves connecting several stations in sequence
R) Resection	3) Used when a single point is fixed and multiple points are determined
S) Traversing	4) Determines the position of the instrument station

- A. P-2, Q-4, R-3, S-1
- B. P-4, Q-2, R-1, S-3
- C. P-1, Q-3, R-2, S-4
- D. P-3, Q-1, R-4, S-2** ✓

Q94 Technical Abilities

In an energy diagram of P-N junction, when the junction is at equilibrium ____.

- A. an energy gradient exists across the depletion region** ✓
- B. no energy gradient exists across the depletion region
- C. an energy gap between the conduction and valance bands decreases
- D. an energy gap between the conduction and valance bands increases



Q95 Technical Abilities

Which process is used to produce coal oven gas?

A. Destructive distillation of coal



B. Fractional distillation

C. Electrolysis

D. Steam reforming

Q96 Technical Abilities

What is the drawback of hot forging compared to cold forging?

A. Poor surface finish and lower dimensional accuracy



B. Reduced ductility of the material

C. Increased residual stresses

D. Increased hardness of the final product

Q97 Technical Abilities

Which of the following is a technique used to control gaseous pollutants by transferring them into a liquid?

A. Filtration

B. Adsorption

C. Absorption



D. Incineration

Q98 Technical Abilities

In a full mesh topology with 7 nodes, how many direct connections are required?

A. 14

B. 21



C. 7

D. 11

Q99 Technical Abilities

In a p-type semiconductor, the acceptor energy level is located:

A. slightly above the valence band



B. in the middle of conduction band and valence band

C. slightly below the conduction band

D. slightly below the valence band

Q100 Technical Abilities

The refrigerant enters in the evaporator as _____ in the ideal vapour compression cycle.

A. low-pressure liquid-vapor mixture



B. low-pressure vapor

C. high-pressure liquid

D. low-pressure liquid

Q101 Technical Abilities

Which of the following is true for a hydraulic load cell?

A. This technology is cheaper than all other types of load cells.

B. These type of load cells are not effective devices in outdoor environments.

C. The load cell is completely filled with oil.



D. The piston does actually come in contact with the load cell.

Q102 Technical Abilities

What is the purpose of using A-weighting in noise measurement?

A. To measure peak sound pressure from machinery

B. To mirror the range of human hearing sensitivity



C. To measure low-frequency components of sound

D. To represent noise levels without any frequency weights

Q103 Technical Abilities

Which of the following steps is typically NOT involved in the preparation of glycerine for injection?

A. Coarse filtration

B. Ultra-filtration

C. Decolorisation using activated carbon

D. Fermentation



Q104 Technical Abilities

Which of the following characteristics is primarily responsible for most polymeric materials being poor conductors of electricity?

A. Low tensile strength

B. Unavailability of free electrons



C. Weak bonding

D. Low melting temperature



Q105 Technical Abilities

Which of the following polymers have extensive covalent crosslinks between adjacent molecular chains?

- A. Thermoplastic polymers
- B. Linear polymers
- C. Polyethylene
- D. Network polymers

**Q106 Technical Abilities**

What is the lowest temperature at which rubber-like behaviour persists for many of the common elastomers and below which an elastomer becomes brittle?

- A. Neel temperature
- B. Glass transition temperature
- C. Curie temperature
- D. Critical temperature

**Q107 Technical Abilities**

For mass production of small components, which of the following is the most suitable pattern?

- A. Sweep pattern
- B. Skeleton pattern
- C. Match plate pattern
- D. Loose piece pattern

**Q108 Technical Abilities**

Which of the following materials is commonly used in piezoelectric transducers?

- A. Silicon
- B. Quartz
- C. Aluminium
- D. Copper

**Q109 Technical Abilities**

What is the correct way to create a hyperlink in HTML?

- A. <url>www.xyz.com</url>
- B. <a>www.xyz.com
- C. <link href="www.zyx.com">Click Here</link>
- D. Click Here

**Q110 Technical Abilities**

What will be the output of the following C code?

```
#include <stdio.h>
int main() {
    int a = 10, b = 20;
    if (a = b > 15)
        printf("True");
    else
        printf("False");
    return 0;
}
```

- A. Compile-time error
- B. TrueFalse
- C. False
- D. True

**Q111 Technical Abilities**

Which of the following equations represents the voltage-pressure relationship in a piezoelectric transducer?

- A. $V = gP/t$
- B. $V = P/gt$
- C. $V = gPt$
- D. $V = g/Pt$

**Q112 Technical Abilities**

The emissive power of certain black bodies is P. If the temperature of the black body is tripled, the emissive power will become _____.

- A. 3P
- B. 81P
- C. 9P
- D. 27P

**Q113 Technical Abilities**

Which of the following components has the highest percentage in coal oven gas?

- A. Methane (CH₄)
- B. Carbon dioxide (CO₂)
- C. Carbon monoxide (CO)
- D. Hydrogen (H₂)



Q114 Technical Abilities

What is the mechanism of plastic deformation in non-crystalline ceramics?

A. Viscous flow



B. Cross-slip

C. Slip

D. Twinning

Q115 Technical Abilities

What is the primary indicator of the biological health of a water body?

A. pH

B. Turbidity

C. Dissolved oxygen



D. Electrical conductivity

Q116 Technical Abilities

The 'Moody's Chart' is used to determine the _____.

A. velocity of flow

B. Reynolds number

C. friction factor in pipe flow



D. hydraulic radius

Q117 Technical Abilities

Which of the following statements removes a primary key constraint from an existing table whose name is BookStore?

A. DROP PRIMARY KEY FROM BookStore;

B. ALTER TABLE BookStore DROP PRIMARY KEY;



C. ALTER TABLE BookStore REMOVE PRIMARY KEY;

D. DELETE PRIMARY KEY FROM BookStore;

Q118 Technical Abilities

For a certain material, the values of transmissivity and reflectivity are specified as 0.88 and 0.07, respectively. The absorptivity of that material is _____.

A. 0.07

B. 0.88

C. 0.05



D. 1

Q119 Technical Abilities

Which of the following is NOT a way that sulfur is released into the atmosphere?

A. Burning of fossil fuels

B. Volcanic activity

C. Photosynthesis



D. Decomposition of organic molecules

Q120 Technical Abilities

Which property of brass makes it suitable for musical instruments?

A. High melting point

B. High electrical conductivity

C. Excellent acoustic properties



D. Low density

Q121 Technical Abilities

Which of the following statements is NOT true?

A. In total internal reflection no transmission of light take place

B. For total internal reflection light ray must travel from denser medium to rarer medium

C. Incidence angle must be greater than critical angle

D. At critical angle incident angle is 90°

**Q122 Technical Abilities**

Which material is used to insulate the commutator segments in a DC generator?

A. Plastic

B. Rubber

C. Fiberglass

D. Mica

**Q123 Technical Abilities**

A router determines the best path between source and destination for sending data using:

A. MAC addresses

B. data packets

C. port numbers

D. IP addresses



Q124 Technical Abilities

What does the %d format specifier represent in scanf()?

- A. Floating-point input
- B. Integer input** ✓
- C. String input
- D. Character input

Q125 Technical Abilities

A solid shaft is replaced by a hollow shaft of the same material and weight. To achieve the same strength in torsion, the outer diameter of the hollow shaft should be:

- A. equal to the diameter of the solid shaft
- B. greater than the diameter of the solid shaft** ✓
- C. less than the diameter of the solid shaft
- D. independent of the diameter of the solid shaft

Q126 Technical Abilities

Which of the following is a disadvantage of Monel?

- A. Susceptibility to corrosion
- B. Poor machinability
- C. High cost** ✓
- D. Low strength

Q127 Technical Abilities

What is the purpose of dechlorination in tertiary wastewater treatment?

- A. To add chlorine to kill bacteria and viruses
- B. To remove the chlorine that was used to disinfect the water** ✓
- C. To filter out large solid contaminants
- D. To purify wastewater through oxidation

Q128 Technical Abilities

Molybdenum is commonly used in _____.

- A. high carbon steel
- B. stainless steel
- C. high-speed steel** ✓
- D. low carbon steel

Q129 Technical Abilities

Which of the following is NOT a property of nuclear force?

- A. It depends on charge.** ✓
- B. It has saturation property.
- C. Nuclear force is much stronger than Coulomb's force.
- D. It is attractive in nature.

Q130 Technical Abilities

Which property of zinc makes it suitable for galvanising steel?

- A. High density
- B. Corrosion resistance** ✓
- C. High melting point
- D. High electrical conductivity

Q131 Technical Abilities

Calculate the mass defect of the Helium nucleus which consists of 2 proton and 2 neutrons. The masses of the individual particle are:

Mass of proton – 1.007276 u
Mass of neutron – 1.008665 u
Mass of helium nucleus – 4.001503 u

- A. 0.048377 u
- B. 0.040377 u
- C. 0.038377 u
- D. 0.030379 u** ✓

Q132 Technical Abilities

There are two tables: Professor and Department. In order to retrieve all employees and their department names, even if some employees are not assigned to a department, which JOIN should be used?

- A. FULL JOIN
- B. INNER JOIN
- C. LEFT JOIN** ✓
- D. RIGHT JOIN

Q133 Technical Abilities

Molybdenum is added to steel to _____.

- A. improve ductility
- B. increase corrosion resistance
- C. reduce weight
- D. improve hardness and strength** ✓



Q134 Technical Abilities

Which type of winding is commonly used in core-type transformers?

- A. Helical winding
- B. Cylindrical winding ✓
- C. Disk winding
- D. Sandwich winding

Q135 Technical Abilities

A light incidence on a mirror at an angle 30° , calculate the angle of reflection.

- A. 60°
- B. 90°
- C. 30° ✓
- D. 45°

Q136 Technical Abilities

Which of the following statements about a hub in a star topology is true?

- A. It prevents collisions.
- B. It forwards data to all connected devices. ✓
- C. It improves network security.
- D. It filters traffic based on MAC addresses.

Q137 Technical Abilities

Select the correct option based on the given statements regarding bamboo reinforcement in concrete structures.

Statement 1: Bamboo can be used as reinforcement in concrete structures.

Statement 2: Bamboo reinforcement provides strength equal to steel in all conditions.

- A. Statement 1 is false, but Statement 2 is true.
- B. Both Statements 1 and 2 are false.
- C. Statement 1 is true, but Statement 2 is false. ✓
- D. Both Statements 1 and 2 are true.

Q138 Technical Abilities

A grey body ($\epsilon = 0.8$) emits the same amount of heat as the black body at 1075 K. The required temperature of the grey body will be _____.

- A. 113.672°C
- B. 113.672 K
- C. 1136.72 K ✓
- D. 1136.72°C

Q139 Technical Abilities

Why has carbon tetrachloride production and use been restricted in the UK?

- A. It is a known carcinogen
- B. It depletes the ozone layer ✓
- C. It causes respiratory issues
- D. It is a highly flammable substance

Q140 Technical Abilities

What is the dimension of strain?

- A. $[M^0L^3T^0]$
- B. $[M^1L^1T^1]$
- C. $[M^0L^0T^0]$ ✓
- D. $[M^1L^2T^{-2}]$

Q141 Technical Abilities

Which liquid fuel is most commonly used in automobiles worldwide?

- A. Gasoline ✓
- B. Kerosene
- C. Natural gas
- D. Ethanol

Q142 Technical Abilities

In a common emitter transistor, the collector current (I_c) is 10 mA and the base current (I_B) is 0.1 mA. Calculate the current gain of the transistor.

- A. 0.1
- B. 100 ✓
- C. 1
- D. 10

Q143 Technical Abilities

By which of the following methods do the conducting polymers which have an electron energy band structure characteristic of that for an electrical insulator at 0 K become conductive?

- A. Annealing
- B. Crazing
- C. Doping ✓
- D. Heat treatment



Q144 Technical Abilities

What is the typical carbon content range in high carbon steel?

- A. 0.01% to 0.1%
- B. 2.0% to 4.0%
- C. 0.1% to 0.3%
- D. 0.6% to 1.5%

**Q145 Technical Abilities**

Which of the following is an example of a solid lubricant?

- A. Silicone grease
- B. Calcium grease
- C. Lithium grease
- D. Graphite

**Q146 Technical Abilities**

Which of the following are the various types of load cells used to convert slowly varying forces into electrical signals?

- A. Dynamic load cells, hydraulic load cells and pneumatic load cells
- B. Dynamic load cells, hydraulic load cells and strain gauge load cells
- C. Hydraulic load cells, pneumatic load cells and strain gauge load cells
- D. Dynamic load cells, pneumatic load cells and strain gauge load cells

**Q150 Technical Abilities**

A concave lens forms an image at a distance of 20 cm from the lens when an object is placed at a distance of 30 cm from the lens. Calculate the power of the lens.

- A. $\frac{3}{5}D$
- B. $-\frac{3}{5}D$
- C. $-\frac{5}{3}D$
- D. $\frac{5}{3}D$

**Q147 Technical Abilities**

What is the difference between armature torque (T_a) and shaft torque (T_s) called?

- A. Electrical torque
- B. Rotor resistance torque
- C. Eddy current torque
- D. Loss torque

**Q148 Technical Abilities**

What is the primary reason platinum metal is preferred over other metals for Resistance Temperature Detector (RTD) construction?

- A. It exhibits a perfectly linear resistance-temperature relationship.
- B. It is the most cost-effective metal for temperature sensing.
- C. It has a high thermal conductivity.
- D. It has a stable and non linear relation ship between temperature and resistance.

**Q149 Technical Abilities**

Which of the following is a physical property of benzene?

- A. It reacts vigorously with water
- B. It is a colourless liquid with a sweet odour
- C. It is denser than water
- D. It is highly reactive due to the presence of double bonds

