RRB Technician Grade I 2024

Technician Grade I Signal · CEN RRB 02/2024 · Question Paper Compilation

English

All 4 Shifts (Sets) · Official Answer Key

About this Compilation

This booklet compiles all **4 shift papers** of the **RRB Technician Grade I 2024** examination (CEN RRB 02/2024) 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 in shift order, numbered 1 onward within each set.
- Diagram and wide-table questions appear at full width at the end of their set.
- The correct answer is highlighted in green with a tick.

More from QMaths

Check your marks, normalized score and zone-wise rank free at **rank.qmaths.in**. Master English vocabulary with the **Blackbook** app.

Index — All Sets (click to open)

Q1

Which of the following correctly describes the most useful biasing conditions of the emitter-base and base-collector junctions (common base configuration) for a Bipolar Junction Transistor (BJT) among its different modes of operation?

A. Cut-off Mode: Both emitter-base and base-collector junctions are forward-biased.

B. Saturation Mode: Both emitter-base and base-collector junctions are reverse-biased.

C. Active Mode: Emitter-base junction is forward-biased, and base-collector junction is reverse-biased. ✓

D. Active Mode: Emitter-base junction is reverse-biased, and base-collector junction is forward-biased.

Q2

If 16th and 20th terms of an A.P. be 385 and 441 respectively, then its 90th term is:

A. 1421 ✓

B. 1420

C. 1423

D. 1419

Q3

In SI units, what is the unit of angular momentum?

A. kg m s−1

B. kg m−1s

C. kg m2s−1 ✓

D. kg m2s−2

Q4

Which feature is commonly found in modern anti-virus software to help with real-time threat detection?

A. Manual updates

B. Cloud-based detection ✓

C. Offline scanning

D. Passive scanning

Q5

The p-type material is formed by doping a pure germanium or silicon crystal with impurity atoms having _____ valence electrons. The element most frequently used for this purpose is _____.

A. five; antimony

B. three; gallium ✓

C. five; arsenic

D. three; phosphorus

Q6

What is the purpose of the 'grep' command in the Linux operating system?

A. To search for a specific pattern in a file ✓

B. To rename files

C. To display system processes

D. To display the calendar

Q7

Which of the following options is NOT used to perform the next animation or advance to the next slide in MS PowerPoint?

A. N ✓

B. Page Down

C. Enter

D. Shift+F5

Q8

In the case of a conservative force, the potential energy _____.

A. is zero

B. depends on the work done by friction

C. is path dependent

D. can be defined for any configuration of the system ✓

Q9

What is the name of the astronaut who was selected for the Axiom-4 mission to the International Space Station (ISS) in August 2024?

A. Sharmila Bhattacharya

B. Shubhanshu Shukla ✓

C. Ashwin Vasavada

D. Kamlesh Lulla

Q10

Which menu option allows you to change the height and width of cells in MS-Excel?

A. Insert

B. Format ✓

C. Review

D. Page Layout

Q11

Match the options from Group A with Group B regarding Auto Fill Options in MS-Excel sheets.

Group A Group B
1. Copy Cells. I. Copy only the cell formatting
2. Fill Formatting Only II. Copy the entire contents of the cell, including the formulas and the formatting
3. Fill Without Formatting III. Copy the contents of the cell, including the formulas but not the formatting

A. 1-II, 2-III, 3-I

B. 1-II, 2-I, 3-III ✓

C. 1-I, 2-II, 3-III

D. 1-III, 2-I, 3-II

Q12

What is the formula for the heat produced in a conductor due to the electric current flowing through it?

A. $H = IR^2t$

B. $H = IRt$

C. $H = I^2Rt$ ✓

D. $H = I^2R/t$

Q13

How do you view hidden files and folders in File Explorer in the Windows OS?

A. Go to 'Settings' → Select 'Hidden files'

B. Go to 'View' → Select 'Show hidden items' ✓

C. Go to 'Edit' → Select 'Show hidden items'

D. Right-click → Select 'View hidden files'

Q14

Which of the following options is used to search for help topics in MS-Word 2021?

A. Use the 'Tell me what you want to do' search box. ✓

B. Click the 'Help' button in the Ribbon.

C. Access 'Help' from the 'View' tab.

D. Go to the 'File' tab and select 'Help'.

Q15

What does the clock speed of a CPU measure?

A. The number of instructions executed per second ✓

B. The amount of cache memory

C. The amount of data processed per second

D. The temperature of the CPU

Q16

Which of the following terms will replace the question mark (?) in the given series to make it logically complete?
PU16 QV18 RW22 SX28 ?

A. TY36 ✓

B. TY37

C. TZ37

D. TZ36

Q17

A metal rod of length 1.5 m moves with a velocity of 10 m/s through a uniform magnetic field of 2 T. What is the magnitude of the induced EMF if the rod moves at an angle of 60° to the magnetic field?

A. 30 volts

B. 36 volts

C. 18 volts

D. 26 volts ✓

Q18

Tamper Protection is a feature that prevents unauthorised apps from changing your security settings. Which of the following Operating Systems supports the same?

A. Linux
B. Windows XP
C. Windows 10 ✓
D. Windows Vista

Q19

Which of the following will NOT produce an induced current in a coil?

A. Rotating the coil within a magnetic field
B. Moving the coil parallel to the magnetic field lines ✓
C. Moving the coil towards a stationary magnet
D. Increasing the number of turns in the coil while changing the magnetic flux

Q20

The points (-5, 1), (1, k) and (4, -2) are collinear if the value of k is

A. 3
B. 1
C. -1 ✓
D. 2

Q21

What is the role of chemically inactive gases in a light bulb?

A. To reduce the bulb's light output
B. To prolong the life of the filament ✓
C. To increase the filament's temperature
D. To cool the filament

Q22

In microprocessor 8085, which of the following is a 16-bit register?

A. Flag register
B. Stack pointer ✓
C. Z register
D. W register

Q23

A and B are two independent events. If P(A) = 0.4 and P(B) = 0.6, then the P(A or B) is equal to:

A. 0.66
B. 0.68
C. 0.78
D. 0.76 ✓

Q24

In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.
Question: A, B, C, D and E are sitting around a circular table facing the centre. Who sits to the immediate right of A?
Statement (I): Only one person sits between D and C. E sits to the immediate right of D.
Statement (II): B sits to the immediate left of D. Only one person sits between B and E. Only one person sits between E and C.

A. Data in Statement II alone is sufficient to answer the question while data in statement I is not. ✓
B. Data in statements I and II together are sufficient to answer the question.
C. Data in statements I and II together are NOT sufficient to answer the question.
D. Data in Statement I alone is sufficient to answer the question while data in statement II is not.

Q25

The estimated rate of unemployment for the year 2018–19 in urban areas was _____%.

A. 6.8
B. 7.7 ✓
C. 9
D. 5.2

Q26

The quality factor Q of a series RLC circuit at resonance is a measure of the _____.

A. resonance frequency
B. rate of energy loss relative to energy stored ✓
C. energy stored in the circuit
D. total impedance of the circuit

Q27

The most common topologies used in LAN networks are _____.

A. insider threats, LAN sockets, viruses and malware
B. mesh and ring only
C. wired, wireless, and virtual
D. bus, ring, and star ✓

Q28

In an electric motor, what is the purpose of the commutator?

A. To reverse the direction of current in the armature ✓
B. To supply current to the armature
C. To increase the motor speed
D. To decrease the motor speed

Q29

Convert binary number 1101.1101 into decimal equivalent.

A. 13.8125 ✓
B. 13.625
C. 12.8125
D. 12.625

Q30

Which of the following is an ancient Jain text written by Acharya Umaswami that explains the Jain philosophy in the most systematic form acceptable to all sects of Jainism?

A. Svayambhu Stotra
B. Atthapahuda
C. Pravacanasara
D. Tattvarthasutra ✓

Q31

Which of the following household appliances uses the principle of electromagnetic induction?

A. Electric Iron
B. Electric Fan ✓
C. Toaster
D. Refrigerator

Q32

Refer to the following letter, number and symbol series and answer the question that follows.

(Left) 6 2 8 # 7 \ 2 L % 9 3 3 \ / + H 2 $ S P # H (Right)

How many such symbols are there that are immediately preceded by a letter and immediately followed by a number?

A. One ✓
B. Four
C. Three
D. Two

Q33

How can a user define cell address in an MS Excel sheet?

A. Column letter plus row letter
B. Column letter plus row number ✓
C. Column number plus row letter
D. Column number plus row number

Q34

Select the most appropriate option to fill in the blank.
Intel 8051 microcontroller has ____ 16-bit timer/counter registers.

A. three
B. four
C. one
D. two ✓

Q35

What is the function of the 'AutoFit' feature in MS PowerPoint?

A. Aligns text to the centre of the text box
B. Automatically adds bullet points to text
C. Changes the text colour based on the slide background
D. Automatically adjusts the size of the text to fit the text box ✓

Q36

By which of the following Acts did the rule of the East India Company end in India, and the rule of the crown begin?

- **A.** Government of India Act of 1858 ✓
- **B.** Pitt's India Act of 1784
- **C.** Regulating Act of 1813
- **D.** Government of India Act of 1853

Q37

Which rule is commonly used to determine the direction of the induced EMF in a conductor moving in a magnetic field?

- **A.** Lenz's Law
- **B.** Fleming's Right-Hand Rule ✓
- **C.** Ampere's Law
- **D.** Fleming's Left-Hand Rule

Q38

Which of the following statements is true about the accuracy of an analog to digital (A/D) converter?

- **A.** A dual-slope integrating-type A/D converter has a small accuracy than a single-slope integrating-type A/D converter.
- **B.** A dual-slope integrating-type A/D converter has the same accuracy as a single-slope integrating-type A/D converter.
- **C.** A dual-slope integrating-type A/D converter has a very small accuracy than a single-slope integrating-type A/D converter.
- **D.** A dual-slope integrating-type A/D converter has a higher accuracy than a single-slope integrating-type A/D converter. ✓

Q39

What was the unemployment rate (UR) in urban areas as of January – March 2024 for persons of age 15 years and above?

- **A.** 53.25%
- **B.** 67.18%
- **C.** 48.35%
- **D.** 6.7% ✓

Q40

The derived unit for electrical conductance, the Siemens (S), can be expressed in terms of SI base units as _____.

- **A.** $kg \cdot m^2 \cdot s^{-3} \cdot A^{-1}$
- **B.** $kg^{-1} \cdot m^{-2} \cdot s^3 \cdot A^2$ ✓
- **C.** $kg^{-1} \cdot m^2 \cdot s^3 \cdot A^2$
- **D.** $kg \cdot m^2 \cdot s^{-3} \cdot A^{-2}$

Q41

In a school there are 26 teachers who teach mathematics or physics. Of these, 14 teach mathematics and 6 teach both physics and mathematics. How many teach physics ?

- **A.** 12 ✓
- **B.** 8
- **C.** 14
- **D.** 10

Q42

When the displacement of a spring is reduced to half its original value, and the spring constant remains unchanged, what happens to the spring's potential energy?

- **A.** It decreases to 1/4 of its original value ✓
- **B.** It decreases to 1/2 of its original value
- **C.** It remains unchanged
- **D.** It increases to 2 times its original value

Q43

The quadratic equation whose roots are 9 and 11 is:

- **A.** x2+ 20x + 100 = 0
- **B.** x2+ 20x - 99 = 0
- **C.** x2- 20x + 99 = 0 ✓
- **D.** x2- 20x + 98 = 0

Q44

A car engine generates a force of 10000 N to move the car 1.2 km in 2 minutes. What is the power of the engine?

- **A.** 1000 kW
- **B.** 100 kW ✓
- **C.** 10 kW
- **D.** 200 kW

Q45

If you need to attach a large file that exceeds the email provider's limit, what is a common solution?

- A. Break the file into smaller parts and send multiple emails.
- B. Compress the file into a .zip format.
- C. Use a cloud storage service and share the link. ✓
- D. Reduce the file's resolution.

Q46

What does the middle finger represent in Fleming's Left-Hand Rule?

- A. Direction of current ✓
- B. Direction of force
- C. Direction of magnetic field
- D. Direction of induced EMF

Q47

In a certain code language,
'R + S' means 'R is the mother of S',
'R @ S' means 'R is the husband of S',
'R # S' means 'R is the sister of S' and
'R % S' means 'R is the father of S'.
How is N related to P if 'M # N + O % P @ Q # T'?

- A. Mother
- B. Father's mother ✓
- C. Father's sister
- D. Sister

Q48

The Mozilla Firefox/Google Chrome/Microsoft Edge requires support for the _____ protocol.

- A. HTTP 1.2
- B. HTTP 3.1
- C. HTTP 2.1
- D. HTTP 1.1 ✓

Q49

The first and last terms of an A.P. are 28 and 31. If the sum of its terms is 236, then the number of terms will be?

- A. 8 ✓
- B. 5
- C. 6
- D. 11

Q50

After Indian Hockey Federation was dismissed in 2008 by IOA, _____ was formed.

- A. Indian Hockey
- B. Hockey India ✓
- C. National Hockey Federation
- D. Hockey Association

Q51

In an AC circuit, if the power factor is 1, it means that _____.

- A. the circuit is purely capacitive
- B. the circuit is purely inductive
- C. all power is reactive power
- D. the circuit is purely resistive ✓

Q52

A 5 kg object is pushed with a constant horizontal force of 20 N across a rough surface with a coefficient of kinetic friction $\mu_k = 0.2$ for a distance of 10 m. What is the net work done on the object? (Given: acceleration due to gravity g = 10 m/s²)

- A. 160 J
- B. 120 J
- C. 100 J ✓
- D. 60 J

Q53

In an isosceles triangle, the vertex angle measures 132°. What is the measure of each of the base angles?

- A. 4° and 10°
- B. 24° and 24° ✓
- C. 27° and 21°
- D. 11° and 8°

Q54

If U = { 1, 2, 3, 4, 5, 6, 7, 8, 9 }, and B = { 2, 4, 6, 8 }, then the number of elements in the set B′ is:

- A. 4
- B. 5 ✓
- C. 8
- D. 9

Q55

Which of the following statements is correct for p-n junction diode?

- **A.** There is less barrier potential at higher junction temperature. ✓
- **B.** When diode is conducting, junction temperature is lower than ambient temperature.
- **C.** There is higher barrier potential at higher junction temperature.
- **D.** There is no relation between barrier potential and junction temperature.

Q56

When dividing 0.00456 by 0.12, how many significant figures should the result be reported with?

- **A.** 2 ✓
- **B.** 1
- **C.** 4
- **D.** 3

Q57

What should come in place of the question mark (?) in the given series?

901 903 ? 913 921 931

- **A.** 905
- **B.** 906
- **C.** 907 ✓
- **D.** 909

Q58

When multiplying 3.24 by 0.006, how many significant figures should the result have?

- **A.** 4
- **B.** 3
- **C.** 1 ✓
- **D.** 2

Q59

What is the purpose of the 'Sleep' option in the Windows OS?

- **A.** To delete temporary files
- **B.** To shut down the system
- **C.** To save all open documents and programs while reducing power consumption ✓
- **D.** To restart the system

Q60

Who has been honoured with the Goldman Environmental Prize 2024?

- **A.** Medha Patkar
- **B.** Alok Shukla ✓
- **C.** Maneka Gandhi
- **D.** Jadav Payeng

Q61

Six people P, Q, R, S, T and U live on six different floors of the same building. The bottom-most floor of the building is numbered as 1; the floor above it is numbered as 2 and so on. The topmost floor is numbered as 6.
P lives on an even-numbered floor but not on floor number 4. Only two people live between S and P. R lives immediately below T. U lives on an even-numbered floor. Q does not live on the bottom-most floor. How many people live between Q and S?

- **A.** One ✓
- **B.** Three
- **C.** Four
- **D.** Two

Q62

Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- **A.** KOVB
- **B.** EIRV ✓
- **C.** AELR
- **D.** XBIO

Q63

UDVA is related to CLDI in a certain way based on the English alphabetical order. In the same way, AJBG is related to IRJO. To which of the following options is YHZE related, following the same logic?

- **A.** GPHM ✓
- **B.** GHYT
- **C.** GBHY
- **D.** GTFY

Q64

What is the full form of PCB?

A. Picture Control Board

B. Picture Circuit Board

C. Printed Circuit Board ✓

D. Printed Control Board

Q65

Identify the correct order of steps to configure your web browser.

I. Enable cookies in your web browser
II. Enable scripts to disable or replace context menus (Mozilla Firefox only)
III. Enable file download on IE 11 running on Windows 2012
IV. Enable JavaScript for your web browser

A. III, II, IV, I

B. IV, I, III, II ✓

C. IV, III, II, I '

D. I, II, III, IV

Q66

Which of the following forces does NOT conserve mechanical energy?

A. Spring force

B. Frictional force ✓

C. Electrostatic force

D. Gravitational force

Q67

Match the word templates from group A with their types in group B.

Group A Group B
I. Planners and trackers A. Questionnaire
II. Marketing assets B. Flyers
III. Surveys C. Planning sheets

A. I-A, II-C, III-B

B. I-A, II-B, III-C

C. I-B, II-C, III-A

D. I-C, II-B, III-A ✓

Q68

Select the most appropriate option to fill in the blank.
For a given accelerating voltage Ea and for particular dimensions of CRT, the deflection of the electron beam is _____ to the deflecting voltage.

A. inversely proportional

B. independent

C. square proportional

D. directly proportional ✓

Q69

Which of the following statements about the accuracy or precision of electronic instruments is correct?

A. The accuracy of the measurement is getting the same value for respective measurements.

B. The precision is the degree to which the repeated measurement gives the same result. ✓

C. The precision is the degree to which the repeated measurement gives quoted value.

D. The accuracy and precision are the degree to which the measurement gives the same value.

Q70

The voltage range of resistance-voltage divider is limited to a few:

A. Milli Volts

B. Micro volts

C. Kilo Volts ✓

D. Volts

Q71

Read the given statement and conclusions carefully and decide which of the given conclusions follow(s) from the statement.
Statement:
Book-reading is a very healthy habit because it keeps our learning process alive even after our college or school education.
Conclusions:
I. Nowadays, e-books are gaining far more popularity than hardcovers.
II. Students gain a lot of knowledge and improve language by keeping the habit of book-reading alive.

A. Neither conclusion I nor II follows

B. Both the conclusions follow

C. Only conclusion II follows ✓

D. Only conclusion I follows

Q72

Which SI base unit is directly derived from the definition of ampere?

A. Ohm

B. Volt

C. Coulomb ✓

D. Watt

Q73

A statement is given followed by two arguments. Decide which of the arguments is/are strong with respect to the statement.
Statement:
The Government of State A is planning to shut down all markets by 7 pm.
Arguments:
I. Incidents of shoplifting and attempted robberies have increased especially during night time.
II. Many people get time to shop only after office hours.

A. I weakens while II strengthens the statement.

B. Both I and II strengthen the statement.

C. II weakens while I strengthens the statement. ✓

D. Both I and II weaken the statement.

Q74

M, S, A, F, J, H and D are seven family members living in the same apartment. M is S's husband. H is J's wife. S is the mother of J and daughter of A. D is the brother of H. F is the wife of A. How is D related to J?

A. Wife's brother ✓

B. Father

C. Brother

D. Husband

Q75

△ABC is such that AB = 5 cm, BC = 4 cm and CA = 4.5 cm. △XYZ is similar to △ABC. If YZ = 8 cm, then find the perimeter of △XYZ.

A. 28 cm

B. 27 cm ✓

C. 26 cm

D. 25 cm

Q76

Choose the correct statement related to government expenditure.

A. Revenue expenditure impacts assets liability of the government.

B. Revenue expenditure directly contributes to GDP growth.

C. Capital expenditure directly contributes to GDP growth. ✓

D. Revenue expenditure does not impact assets liability of the government.

Q77

Which Article of the Indian Constitution provides that the state shall take steps, to secure the participation of workers in the management of industry?

A. Article 45B

B. Article 42A

C. Article 44C

D. Article 43A ✓

Q78

What is the purpose of the 'Subject line' in an email?

A. To give a brief summary of the email's topic ✓

B. To provide a detailed explanation of the email content

C. To list the recipients of the email

D. To include attachments with the email

Q79

If the voltage across a conductor is doubled while keeping the resistance constant, what happens to the current through the conductor?

A. It doubles ✓

B. It halves

C. It increases four times

D. It remains constant

Q80

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

X : 16.2 :: 23 : Y

A. X=19, Y=21.2

B. X=17, Y=22.2 ✓

C. X=19, Y=22.2

D. X=17, Y=21.2

Q81

Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g., 13 – Operations on 13 such as adding/deleting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)
(5, 9, 52)
(11, 7, 90)

A. (9, 6, 65) ✓

B. (7, 13, 98)

C. (8, 11, 95)

D. (14, 4, 63)

Q82

Which option in the Print dialog box allows you to specify the range of pages to print in Microsoft Word 2010?

A. Orientation

B. Copies

C. Pages ✓

D. Printer

Q83

The distance of the point P(2, 3) from the x-axis is

A. 1

B. 5

C. 3 ✓

D. 2

Q84

If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', then what will come in place of the question mark (?) in the following equation?

18 A 6 B 11 C 8 D 6 = ?

A. 33

B. 35 ✓

C. 36

D. 34

Q85

The product of two consecutive positive integers is 277. If the smaller of these two integers is represented by x, which of the options below will correspond to the equation for finding out the value of x?

A. x2- x + 277 = 0

B. x2+ x + 277 = 0

C. x2- x - 277 = 0

D. x2+ x - 277 = 0 ✓

Q86

A voltmeter has a uniform scale with 100 divisions; the full-scale reading is 300 V and 1/10 of a scale division can be estimated with a fair degree of certainty. Determine the resolution of the instrument in volt.

A. 0.5 V

B. 0.2 V

C. 0.3 V ✓

D. 0.1 V

Q87

What is the form of the emf produced in thermocouple?
(where Δ t =difference in temperature between the hot thermocouple junction and the reference junction of the thermocouple and a, b are constants)

A. $E = \frac{a}{(\Delta t)^2}$

B. $E = a(\Delta t)$

C. $E = b\ e^{-a\Delta t}$

D. $E = a(\Delta t) + b(\Delta t)^2$ ✓

Q88

Evaluate: $\frac{1}{\left(\frac{5}{6}\right) + \left(\frac{2}{4}\right)} \div \frac{4}{29}$

A. $5\frac{9}{16}$

B. $5\frac{5}{16}$

C. $5\frac{7}{16}$ ✓

D. $5\frac{1}{2}$

Q89

An open water drum is in the form of a cylinder. The height of the drum is 79 m and its internal diameter is 78 m. Find the area (in m^2, rounded off to one decimal place) that needs to be painted if one wants to paint the inside of the drum. $Take\ \pi = \frac{22}{7}$

A. 24155.7

B. 24126.7

C. 24130.8

D. 24146.6 ✓

Q90

If the height of a tower is $\sqrt{3}$ times its shadow, then the angle of the elevation of the top of the tower is equal to:

A. 45°

B. 90°

C. 60° ✓

D. 30°

Q91

If $\frac{18\cos\theta + 5\sin\theta}{5\cos\theta + 4\sin\theta} = 2$, then find the value of $\cot\theta$.

A. $\frac{3}{8}$ ✓

B. $\frac{3}{5}$

C. $\frac{1}{3}$

D. $\frac{1}{7}$

Q92

The value of

$\sqrt{144} + \sqrt{0.04} - \sqrt{9} =$

A. 11.42

B. 8.82

C. 6.96

D. 9.2 ✓

Q93

If the heights of two cones are in the ratio 11 : 9 and their diameters are in the ratio 6 : 11, what is the ratio of their volumes?

A. 11 : 4

B. 11 : 3

C. 4 : 11 ✓

D. 3 : 11

Q94

Which of the following statements correctly describes the static characteristics of transistors in common emitter configuration?

A. There is a phase shift of $\frac{\pi}{2}$ between the input and output voltage.

B. There is no phase shift between the input and output voltage.

C. There is a phase shift of $\frac{3\pi}{2}$ between the input and output voltage.

D. There is a phase shift of π between the input and output voltage. ✓

Q95

Which of the following statements regarding the microprocessor 8085 is NOT correct?

A. It has a mechanism by which it is possible to increase its interrupt handling capacity.

B. It can be used to implement three chip microcomputers with supporting I/O devices like IC 8155 and IC 8355.

C. It has serial I/O control, which allows serial communication.

D. It does not provide control signal (IO/M, $\overline{RW}$, $\overline{WR}$) to control the bus cycles, hence external bus controller is required. ✓

Q96

The mean and the standard deviation of 25 observations were given as 42 and 5, respectively. Later it was found that one of the observations was incorrectly entered as 10, when its correct value was 210. What would have been the correct standard deviation?

A. $\sqrt{1047}$

B. $\sqrt{1049}$ ✓

C. $\sqrt{1050}$

D. $\sqrt{1048}$

Q97

The odds against an event is 7 : 4 and the odds in favour of another event is 8 : 5. If both the events are independent, then the probability that at least one of the event will happen is:

A. $\frac{35}{143}$

B. $\frac{88}{143}$

C. $\frac{76}{143}$

D. $\frac{108}{143}$ ✓

Q98

The HCF and the LCM of two numbers are 12 and 300, respectively. If one of the numbers is $\frac{4}{9}$ times of the other, what is the smaller number?

A. 69

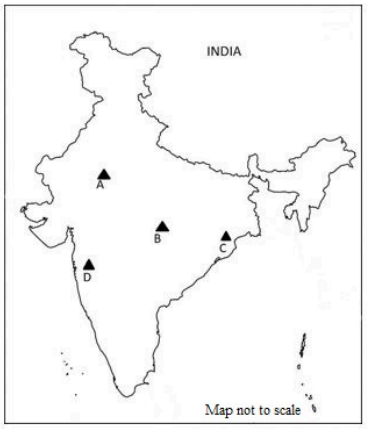
B. 40 ✓

C. 49

D. 88

Q99

In the given map, the location of the Simlipal National Park is shown at:



A. D

B. C ✓

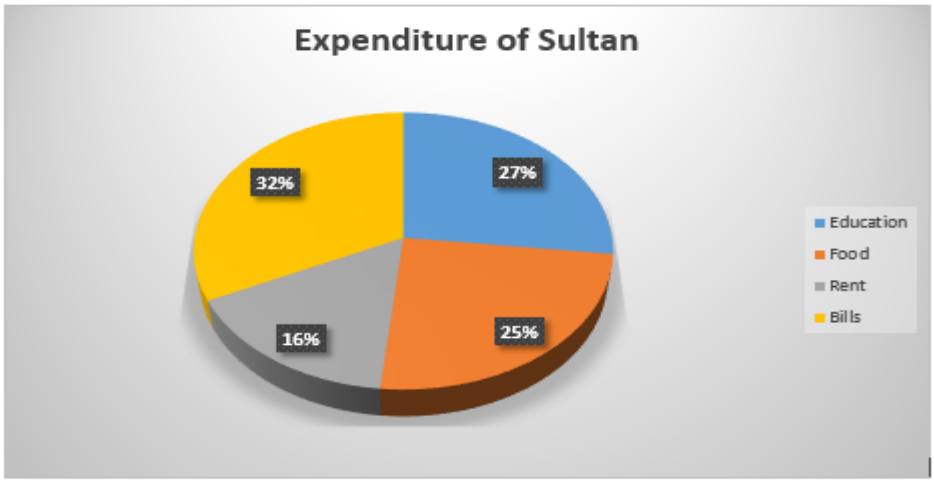
C. A

D. B

Q100

Study the given pie-chart and answer the question that follows.

Monthly percentage expenditure of a Sultan is given in the pie-chart.



What is the monthly expenditure on Food by the Sultan (in ₹) if the total monthly expenditure of the Sultan is ₹10,000?

A. 2000

B. 1700

C. 2500 ✓

D. 7700

Q1
Which of the following keyboard shortcuts is NOT used in MS Word 2019 to manipulate the formatting of selected text?

A. Ctrl + U
B. Ctrl + B
C. Ctrl + S ✓
D. Ctrl + I

Q2
Which view is primarily used to run a slide show in MS-PowerPoint?

A. Slide Show View ✓
B. Notes Page View
C. Slide Sorter View
D. Normal View

Q3
What is term used to refer the 'exports to foreigners' in the circular flow of income diagram?

A. injection ✓
B. expenditure
C. leakage
D. Investment

Q4
Which of the following is NOT an example of application software?

A. Windows Vista ✓
B. Google Chrome
C. WhatsApp
D. Adobe Photoshop

Q5
Three resistors have the following magnitudes.

R1 = 30 Ω ± 5%, R2 = 60Ω ± 5%, R3 = 50Ω ± 5%

Determine the magnitude of limiting resultant resistance when all three resistances are connected in series.

A. 140 ± 7Ω ✓
B. 27.27 ± 15Ω
C. 140 ± 15Ω
D. 27.27 ± 7Ω

Q6
In the interim budget of the union government, what budget has been allocated for Samagra Shiksha Abhiyan for the Financial Year 2024-25?

A. ₹37,500 crore ✓
B. ₹47,500 crore
C. ₹40,200 crore
D. ₹53,500 crore

Q7
Eddy currents are produced in a conductor when it is subjected to _____.

A. an electrostatic field
B. a changing magnetic field ✓
C. a uniform magnetic field
D. a constant magnetic field

Q8
Which of the following is the standard method to print a web page using most modern web browsers?

A. Pressing F12
B. Pressing Ctrl + S (Windows) or Cmd + S (Mac)
C. Pressing Ctrl + P (Windows) or Cmd + P (Mac) ✓
D. Right-clicking and selecting 'Save As'

Q9

Select the most appropriate options to fill in the blanks.
_____ are used in load cells and proving rings to measure _____ produced.

- **A.** Strain gauges; force by the strain ✓
- **B.** Linear Variable Differential Transformer (LVDT); strain by the force
- **C.** Piezoelectric transducers; strain by the force
- **D.** Capacitive transducers; force by the strain

Q10

Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair.)

- **A.** LE-KQ
- **B.** OH-MT ✓
- **C.** RK-QW
- **D.** SL-RX

Q11

Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. You have to decide which conclusion/s logically follow/s from the given statements.

Statements:
All parks are grounds.
Some grounds are museums.
No museum is a theatre.

Conclusions:
(I) All museums are parks.
(II) No ground is a theatre.

- **A.** Both conclusions I and II follow.
- **B.** Only conclusion II follows.
- **C.** Neither conclusion I nor II follows. ✓
- **D.** Only conclusion I follows.

Q12

In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.
Question: Five people V, W, X, Y and Z are sitting in a straight row, facing north. Who sits to the immediate left of Z?
Statement (I): Both V and X are immediate neighbours of Y. V sits at one of the extreme ends of the row.
Statement (II): Z sits to the immediate left of W. W sits at one of the extreme ends of the row.

- **A.** Data in statement I alone is sufficient to answer the question while data in statement II is not.
- **B.** Data in either statement I alone or statement II alone are sufficient to answer the question.
- **C.** Data in statement II alone is sufficient to answer the question while data in statement I is not.
- **D.** Data in statements I and II together are sufficient to answer the question. ✓

Q13

How can you quickly change the case of selected text in MS Word?

- **A.** Change it manually by typing the text again
- **B.** Use the keyboard shortcut 'Shift + F3' ✓
- **C.** Go to the 'Home' tab and click on 'Change Case'
- **D.** Right-click the selected text and choose 'Font'

Q14

Refer to the following letter, number and symbol series and answer the question that follows.

(Left) + 2 $ Q = Y L A S S X L / % 9 T \ = X H 6 ? (Right)

How many such numbers are there that are immediately preceded by a symbol and immediately followed by a letter?

- **A.** Three
- **B.** One ✓
- **C.** Two
- **D.** Four

Q15

Which type of virus attaches itself to executable files and spreads when the file is run?

- A. File Infector Virus ✓
- B. Polymorphic Virus
- C. Macro Virus
- D. Boot Sector Virus

Q16

Select the most appropriate options to fill in the blanks. L.V.D.T. shows ___ hysteresis and hence repeatability is ___ under all conditions.

- A. high; excellent
- B. low; excellent ✓
- C. high; bad
- D. low; bad

Q17

Which of the following factors does NOT affect the strength of the magnetic field inside a solenoid?

- A. Presence of a magnetic core
- B. Number of turns per unit length
- C. Length of the solenoid ✓
- D. Current flowing through the solenoid

Q18

In the equation $x = A\cos(\omega t+\phi)$, where x is displacement, ω is angular frequency, and ϕ is phase angle, the equation is dimensionally consistent if _____.

- A. A has dimensions of length and ϕ has dimensions of time
- B. A has dimensions of length and ωt is dimensionless ✓
- C. ωt has dimensions of length and ϕ is dimensionless
- D. A has dimensions of time and ωt has dimensions of frequency

Q19

Which of the following is a Dharmashastra?

- A. Arthashastra
- B. Bhagvad Gita ✓
- C. Shakuntala
- D. Meghadoota

Q20

In an isosceles triangle, the vertex angle measures 76°. What is the measure of each of the base angles?

- A. 43° and 62°
- B. 55° and 49°
- C. 32° and 49°
- D. 52° and 52° ✓

Q21

In which of the following devices are eddy currents utilised beneficially?

- A. Induction furnaces ✓
- B. Electric heaters
- C. Electric motors
- D. Transformer cores

Q22

What happens when you click the 'Font Color' button in the Home tab of MS-Word?

- A. It opens the Font dialog box.
- B. It opens a drop-down list of colors to choose from. ✓
- C. It changes the background color of the selected text.
- D. It changes the font color of the selected text to the default color.

Q23

Which of the following statements is true regarding the factors affecting the resistance of a conductor?

- A. Resistance is directly proportional to the cross-sectional area of the conductor.
- B. Resistance increases with an increase in the temperature for most metals. ✓
- C. Resistance is independent of the conductor's length.
- D. Resistance is inversely proportional to the resistivity of the material.

Q24

What does the 'IF' function do in MS-Excel?

- A. It sorts the data.
- B. It filters the data.
- C. It sums up the data.
- D. It checks a condition and returns one value if true and another if false. ✓

Q25

64 identical small spheres are cast from a sphere of radius 12 cm, with the total volume of the small spheres being equal to the volume of the larger sphere. The diameter (in cm) of each of the small spheres is:

A. 3
B. 5
C. 11
D. 6 ✓

Q26

The first and last terms of an A.P. are 20 and 55. If the sum of its terms is 600, then the number of terms will be?

A. 14
B. 16 ✓
C. 17
D. 15

Q27

What does the 'This PC' icon on a Windows desktop represent?

A. Access to drives, files and system properties ✓
B. A file that stores system updates
C. An application launcher
D. A shortcut to the Control Panel

Q28

Which of the following represents the applications used primarily for messaging and communication?

A. Telegram and Safari
B. Gmail and Firefox
C. WhatsApp and Telegram ✓
D. Safari and MS Word

Q29

The SI unit for measuring very large distances, such as astronomical distances, is _____.

A. astronomical unit
B. kilometre
C. light-year ✓
D. metre

Q30

How do you sort data in Microsoft (MS) Excel in ascending or descending order?

A. By selecting the data range, then choosing 'Sort' from the Data menu and specifying the sorting criteria and order ✓
B. By right-clicking on the data and selecting 'Sort' from the context menu
C. By selecting 'Sort' from the Format menu
D. By clicking on the 'Sort' button in the toolbar

Q31

Which of the following is NOT a disadvantage of LAN?

A. It restricts the size of the network.
B. It has a high initial setup cost.
C. It can face security issues if the central server is not properly secured.
D. It has high data transmission rates. ✓

Q32

In which year was Pitt's India Act passed by the British Parliament?

A. 1853
B. 1784 ✓
C. 1774
D. 1857

Q33

When a conductor moves through a magnetic field, an induced current is produced. The direction of the induced current is determined by _____.

A. Faraday's Law
B. Coulomb's Law
C. Lenz's Law ✓
D. Ampere's Law

Q34

K is the husband of S. B is the sister of T. Q is the daughter of E. T is the brother of E. S is the mother of B. How is T related to K?

A. Father
B. Daughter
C. Son ✓
D. Brother

Q35

Which of the following methods is used to create a custom series in MS-Excel?

- **A.** Using the Fill Handle and dragging ✓
- **B.** Using Sort & Filter
- **C.** Using Data Validation
- **D.** Using Conditional Formatting

Q36

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?
(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
X : 35 :: 8 : Y

- **A.** X = 3 , Y = 74
- **B.** X = 6 , Y = 68
- **C.** X = 10 , Y = 20
- **D.** X = 7 , Y = 48 ✓

Q37

What should come in place of the question mark (?) in the given series?

1023 1024 1027 1032 1039 ?

- **A.** 1045
- **B.** 1046
- **C.** 1048 ✓
- **D.** 1047

Q38

Which country hosted the 2023 Men's Hockey World Cup?

- **A.** China
- **B.** India ✓
- **C.** Pakistan
- **D.** Germany

Q39

Which of the following is true according to the work-energy theorem?

- **A.** Work done on an object always increases its kinetic energy
- **B.** The work done on an object is always positive
- **C.** Kinetic energy is always conserved
- **D.** Work done on an object can either increase or decrease its kinetic energy ✓

Q40

The product of (x - 9) and (x + 8) is:

- **A.** x2+ 72
- **B.** x2+ 2x - 72
- **C.** x2- x - 72 ✓
- **D.** x2+ x + 72

Q41

Which type of virus is designed to attach itself to documents and spread through macros in programs like Microsoft Word or Excel?

- **A.** Resident Virus
- **B.** Polymorphic Virus
- **C.** Macro Virus ✓
- **D.** Network Virus

Q42

Dead time is the time required by an instrument to _____ to respond to change in _____ quantity.

- **A.** stop; input
- **B.** begin; output
- **C.** stop; output
- **D.** begin; input ✓

Q43

Select the most appropriate options to fill in the blanks. Microprocessor 8085 has _____ address line, hence it can access _____ of the memory.

- **A.** 16; 64 kilobytes ✓
- **B.** 8; 32 kilobytes
- **C.** 16; 32 kilobytes
- **D.** 8; 64 kilobytes

Q44

Which of the following statements is correct about a transistor?

A. Collector region is much thinner as compared to emitter and base.

B. All the three regions emitter, base and collector have the same size.

C. Base region is much thinner as compared to emitter and collector. ✓

D. Emitter region is much thinner as compared to base and collector.

Q45

In which of the following cases will there be NO induced EMF in a coil?

A. The coil is rotated in a magnetic field.

B. The coil is moved perpendicular to the magnetic field lines.

C. The coil is moved parallel to the magnetic field lines. ✓

D. The magnetic flux through the coil is changing.

Q46

Which element is typically found at the bottom left of the desktop in the Windows OS?

A. Notification Center

B. Start Menu ✓

C. Recycle Bin

D. Quick Access Toolbar

Q47

When printing a web page, what is the 'Margins' setting control?

A. The space between the content and the edges of the printed page ✓

B. The font size of the content

C. The number of pages the content will span

D. The color scheme of the web page

Q48

Two parallel current-carrying conductors attract each other with a force of 3 N when placed 2 cm apart. The currents in both conductors are initially the same, and the length of the conductors is constant. If the currents in both conductors are doubled and the distance between them is halved, what will be the new force?

A. 48 N

B. 24 N ✓

C. 12 N

D. 96 N

Q49

In the following triad, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one that follows the same logic.

LIVE - IVLE - EVIL
REST - ESRT - TSER

A. WEST - WSET - TSEW

B. YORK - OYRK - KORY

C. MUTE - UTME - ETUM ✓

D. WIND - INWD - INDW

Q50

A car manufacturing company is sponsoring a basketball match by painting its logo on the basketball at the rate of ₹3/ cm^2 . There are two identical basketballs of diameter 14 cm which are to be painted. What will be the total cost (in ₹) of painting the balls for the company?

A. 1848

B. 3696 ✓

C. 4928

D. 3586

Q51

Which of the following are copper deposits fields in India?

A. Pench and Kanhan

B. Jharia and Raniganj

C. Khetri and Kolihan ✓

D. Singareni and Singrauli

Q52

Which of the following Articles of the Indian Constitution states that it is the duty of the State to raise the level of nutrition and the standard of living of its people and to improve public health?

A. Article 44

B. Article 47 ✓

C. Article 51

D. Article 42

Q53

The band gap between conduction and valence band in metals is:

A. 1.1 eV

B. 0.7 eV

C. 0 eV ✓

D. 6.0 eV

Q54

D, E, F, G, H, I, and J, each has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.
E has the exam on Friday. Only one person has the exam between E and D. J has the exam on the day immediately after E. H has the exam on the day immediately after D.
Only two people have exams between H and G. F has the exam on the day immediately before D. I does not have the exam on Monday.
How many people have exams between J and F?

A. Three ✓

B. Five

C. Four

D. Two

Q55

Which of the following statements is FALSE with respect to Style Set in Outlook for writing an email?

A. You can change the colors or fonts that are used in a Style Set by clicking Change Styles in the Styles group, and then clicking Colors or Fonts.

B. You can see how a Quick Style set will look in a message by pointing to a Style Set without clicking it.

C. After you select a Style, you can see a list of the style sets available within the styles. In the Styles group, click the Styles Dialog Box Launcher . ✓

D. If you changed the styles in a message and the styles are not updating the way you expected, click the Styles Dialog Box Launcher, and then click the Style Inspector button (located at the bottom of the pane) to find out whether text was manually formatted instead of formatted by using styles.

Q56

Which of the following terms will replace the question mark (?) in the given series to make it logically complete?
LQ13 MR20 NS27 OT34 ?

A. PU41 ✓

B. PV42

C. PV41

D. PU42

Q57

A device operates with a current of 2 A and a voltage of 12 V. What is the energy consumed in 5 minutes?

A. 7200 J ✓

B. 1440 J

C. 720 J

D. 14400 J

Q58

Select the most appropriate option to fill in the blank.
Intel 8051 microcontroller has _____ internal RAM.

A. 16-byte

B. 32-byte

C. 128-byte ✓

D. 64-byte

Q59

Which property of the material of a conductor determines its resistivity?

A. Density

B. Electrical conductivity ✓

C. Melting point

D. Temperature coefficient

Q60

The induced potential difference in a conductor is directly proportional to ____.

A. the area of the conductor

B. the speed of the conductor's motion through the magnetic field ✓

C. the resistance of the conductor

D. the temperature of the conductor

Q61

You can save your MS-PowerPoint presentation in the newest format _____, or as an MS-PowerPoint 97-2003 Presentation _____.

A. (.ppt), (.pptx)

B. (.pptx), (.ppt) ✓

C. (.odp), (.ppt)

D. (.docx), (.doc)

Q62

The work done by non-conservative forces in a closed loop is _____.

A. negative

B. always zero

C. dependent on the path ✓

D. independent of the path

Q63

If 15th and 28th terms of an A.P. be 208 and 416 respectively, then its 49th term is:

A. 752 ✓

B. 755

C. 749

D. 751

Q64

In a survey of 350 students in a college, 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee?

A. 75 ✓

B. 55

C. 65

D. 85

Q65

What will come in the place of the question mark '(?)' in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

15 × 5 ÷ 7 − 8 + 9 = ?

A. 18

B. 17

C. 20 ✓

D. 19

Q66

A statement is given followed by two arguments. Decide which of the arguments is/are strong with respect to the statement.

Statement:

The Government of country B has urged its citizens to invest in rain water harvesting and avail subsidies in doing so.

Arguments:

I. Ground water resources have been continuously depleting in country B.

II. Country B experiences heavy rainfall during the monsoon season leading to flooding in many low-lying areas.

A. II weakens while I strengthens the statement.

B. Both I and II weaken the statement.

C. Both I and II strengthen the statement. ✓

D. I weakens while II strengthens the statement.

Q67

LCDs typically have response times in the range of _____ to _____, whereas LEDs are available with response times below _____.

A. 10 ms; 30 ms; 100 ns

B. 10 ms; 30 ms; 10 ns

C. 100 ms; 300 ms; 100 ns ✓

D. 100 ms; 300 ms; 1000 ns

Q68

Intel 8051 microcontroller is a/an:

A. 24-bit microcontroller

B. 16-bit microcontroller

C. 64-bit microcontroller

D. 8-bit microcontroller ✓

Q69

The direction of magnetic field lines inside a bar magnet is _____.

A. random

B. from North Pole to South Pole

C. from South Pole to North Pole ✓

D. perpendicular to the magnetic axis

Q70

The brightness of LED depends upon _____; when source voltage is much _____ than diode voltage, then the brightness of the LED is approximately constant.

- **A.** current; greater ✓
- **B.** current; smaller
- **C.** temperature; greater
- **D.** temperature; smaller

Q71

The full form of DDR SDRAM is _____.

- **A.** Dynamic Data Rate Systematic Dynamic Random Access Memory
- **B.** Double Data Rate Synchronous Dynamic Random Access Memory ✓
- **C.** Double Data Rate Systematic Dynamic Random Access Memory
- **D.** Data Dynamic Rate Synchronous Dynamic Random Access Memory

Q72

If the quadratic equation $x^2 - 4ax + (b + 1) = 0$, where a and b are real constants, has no real roots, then:

- **A.** $b < (a + 1)(a - 1)$
- **B.** $b > (2a + 1)(2a - 1)$ ✓
- **C.** $b > (a + 1)(a - 1)$
- **D.** $b < (2a + 1)(2a - 1)$

Q73

A thermometer consistently reads 2°C higher than the actual temperature. This thermometer is _____.

- **A.** precise but not accurate ✓
- **B.** accurate but not precise
- **C.** neither accurate nor precise
- **D.** both accurate and precise

Q74

A particle starts from rest and accelerates uniformly along a straight line with acceleration a. After a time t, its velocity is v. If the particle continues to accelerate for the next 2t, what will be the ratio of the distance travelled in the first t seconds to that in the next 2t seconds?

- **A.** 1 : 4
- **B.** 1 : 6
- **C.** 1 : 8 ✓
- **D.** 1 : 12

Q75

What will happen to the power consumed by a device if the current flowing through it is doubled while the resistance remains constant?

- **A.** Power will quadruple. ✓
- **B.** Power will decrease.
- **C.** Power will remain the same.
- **D.** Power will double.

Q76

Which of the following orders is correct for the doping level in transistors?

- **A.** Collector < base < emitter
- **B.** Emitter < base < collector
- **C.** Base < collector < emitter ✓
- **D.** Base < emitter < collector

Q77

Which of the following is true for resistors in parallel?

- **A.** They have the same voltage. ✓
- **B.** The equivalent resistance is greater than the smallest resistance.
- **C.** The equivalent resistance is the sum of all resistances.
- **D.** They have the same current.

Q78

What is India's average annual HDI growth for the period 1990-2019?

- **A.** 1.58
- **B.** 1.44
- **C.** 1.21
- **D.** 1.42 ✓

Q79

Read the given statement and conclusions carefully and decide which of the given conclusions follow(s) from the statement.
Statement:
'It's a bright sunny day today so let's have breakfast at the beach and then go the museum which you all so desperately wanted to visit' – a father told his children.
Conclusions:
(i) All family picnics must be planned only on bright sunny days.
(ii) Science museums are very educational as well as fun for children.

A. Only conclusion (i) follows
B. Only conclusion (ii) follows
C. Neither conclusion (i) nor (ii) follows ✓
D. Both the conclusions follow

Q80

Who inaugurated India's first off-grid Green Hydrogen Plant in the Stainless Steel Sector at Hisar in March 2024?

A. HD Kumaraswamy
B. Bhupathiraju Srinivasa Varma
C. Jyotiraditya M Scindia ✓
D. Amit Shah

Q81

Dimensional consistency of an equation implies that _____.

A. the units of measurement can be easily converted
B. the equation is correct in all circumstances
C. the equation respects the principles of homogeneity of dimensions ✓
D. the physical quantities involved are related correctly

Q82

If A = { 3, 5, 7, 9, 11 }, B = {7, 9, 11, 13}, C = {11, 13, 15}, find A ∩ (B ∪ C).

A. {3, 5, 7, 9, 11}
B. {3, 7, 9, 11}
C. {7, 9, 11} ✓
D. {5, 7, 9, 11}

Q83

There are two types of links supported in the NTFS file system, _____.

A. soft links and junctions
B. soft links and direct linking
C. hard links and direct linking
D. hard links and junctions ✓

Q84

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

X : 40 :: 60 : Y

A. X=30, Y=75
B. X=36, Y=68
C. X=32, Y=75 ✓
D. X=32, Y=70

Q85

If the points A(1, 2), B(4, 3), C(1, 0) and D(k, -1) are the vertices of a parallelogram then, the value of k is :

A. 2
B. -1
C. 1
D. -2 ✓

Q86

What is the name of the service unveiled by Reliance Jio Infocomm Limited, India's first satellite-based gigabit broadband service, in October 2023?

A. Jio Fiber Network
B. Digital Subscriber Lines
C. Mobile Broadband
D. Jio Space Fiber ✓

Q87

The mode and median of a data is 87.5 and 86, respectively. What is the mean of the data? (Use empirical formula.)

A. 84.2

B. 85.2 ✓

C. 87.1

D. 85.4

Q88

The deflection sensitivity (s) of a CRT (cathode ray tube) is defined as:
(where D is deflection of the screen and E is defection voltage)

A. $s = \frac{D}{E}$ ✓

B. $s = \left(\frac{D}{E}\right)^2$

C. $s = D \times E$

D. $s = \sqrt{\frac{D}{E}}$

Q89

Find the value of the given expression.

$$\frac{\cos A}{1 - \tan A} + \frac{\sin^2 A}{\sin A - \cos A} + 2\sin A - \cos A$$

A. $\sin A$

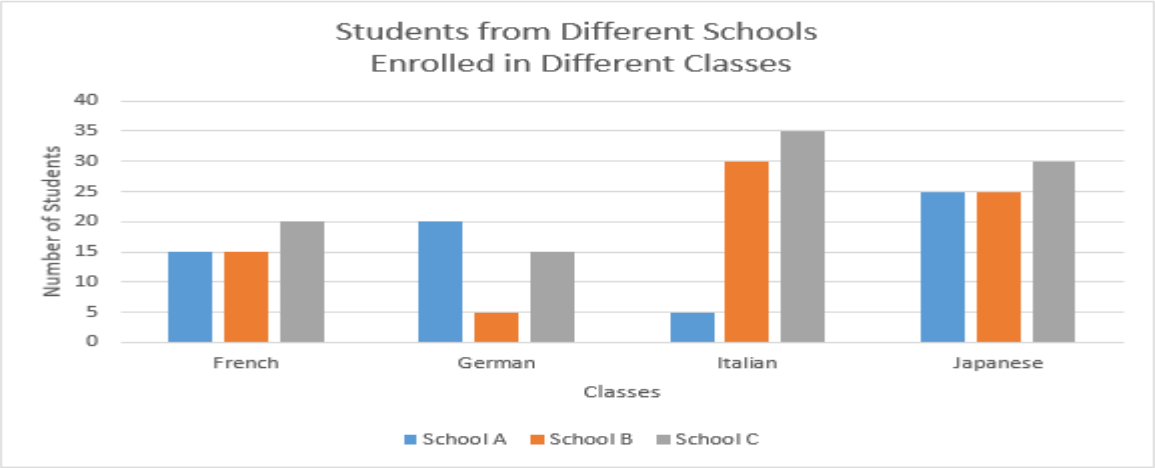
B. $\cos A$

C. $3\sin A$ ✓

D. $3\cos A$

Q90

Study the given bar graph and answer the question that follows.



The given bar graph shows the number of students from different schools enrolled in different classes. Which class has the maximum students from school C?

A. Japanese

B. German

C. Italian ✓

D. French

Q91

The value of $1^3 - 8^2 + \left(\frac{36}{4}\right)^2 - 0 + 2 \times 5 =$ _____

A. 38

B. 28 ✓

C. 37

D. 27

Q92

The work done by a variable force is given by which of the following?

A. W=F·d

B. W=F·cosθ

C. W=∫F dx ✓

D. $W = \frac{1}{2} mv^2$

Q93

The Deflection Factor (G) of a CRT (where s is the defection sensitivity) is defined as:

A. G = s2

B. $\frac{1}{s^2}$

C. $\frac{1}{s}$ ✓

D. G = s

Q94

The probability that a student passes a Mathematics test is $\frac{3}{4}$ and the probability that he passes both the Mathematics and a Physics test is $\frac{13}{36}$. The probability that he passes at least one test is $\frac{5}{6}$. What is the probability that he passes the Physics test?

A. $\frac{5}{36}$

B. $\frac{7}{9}$

C. $\frac{5}{9}$

D. $\frac{4}{9}$ ✓

Q95

The coordinates of the centroid of the triangle ABC whose vertices are A(-5, 7), B(-4, -5) and C(4, 5), is

A. $(-\frac{5}{3}, \frac{7}{3})$ ✓

B. $(-\frac{5}{3}, -\frac{7}{3})$

C. $(-\frac{7}{3}, \frac{5}{3})$

D. $(-\frac{4}{3}, \frac{7}{3})$

Q96

In ΔPQR, $3\angle P = 4\angle Q = 6\angle R$, then find the value of $\left(\frac{2\angle P - \angle Q + 3\angle R}{5}\right)$.

A. 72°

B. 65°

C. 30°

D. 44° ✓

Q97

Evaluate: $\frac{1}{\left(\frac{2}{3}\right) + \left(\frac{3}{5}\right)} \div \frac{8}{39}$

A. $3\frac{16}{19}$

B. $3\frac{28}{33}$ ✓

C. $3\frac{65}{76}$

D. $3\frac{17}{23}$

Q98

The value of $3^3 - 5^2 + \left(\frac{26}{13}\right)^2 - 8 + 0 \times 9 =$ _____

A. -5

B. -3

C. -2 ✓

D. -4

Q99

If an event has odds in favour 4 : 5, then the probability that the event will NOT occur is:

A. $\frac{1}{5}$

B. $\frac{4}{5}$

C. $\frac{5}{9}$ ✓

D. $\frac{4}{9}$

Q100

A tower stands vertically on the ground. From a point on the ground, 30 m away from the foot of the tower, the angle of elevation of the top of the tower is 30°. What is the height (in metres) of the tower?

A. $30\sqrt{3}$

B. $10\sqrt{3}$ ✓

C. $15\sqrt{3}$

D. $20\sqrt{3}$

Q1

When you first open a spreadsheet software, what is usually displayed?

- A. A blank spreadsheet with grids and cells ✓
- B. A blank document
- C. A blank page without any grids
- D. A presentation slide

Q2

The basic principle behind the working of an electric motor is the interaction between the _____.

- A. magnetic field and current-carrying conductors ✓
- B. magnetic field and heat energy
- C. electric potential and light energy
- D. electric field and gravitational field

Q3

The long form of DAC and MAC is:

- A. Direct Access Control and Multiple Access Control
- B. Discretionary Access Control and Mandatory Access Control ✓
- C. Discretionary Access Control and Multiple Access Control
- D. Direct Access Control and Mandatory Access Control

Q4

Select the correct option for the band gap energies of Ge, Si and GaAs.
Where E(Ge) = band gap energy of Ge, E(Si) = band gap energy of Si and E(GaAs) = band gap energy of GaAs

- A. E(GaAs) > E (Ge) > E (Si)
- B. E(GaAs) > E (Si) > E (Ge) ✓
- C. E(Ge) > E (GaAs) > E (Si)
- D. E(Ge) > E (Si) > E (GaAs)

Q5

Which of the following methods can be used to delete multiple columns simultaneously in Excel?

- A. Select the columns, then right-click and press "Delete" ✓
- B. Select the columns, then press the Delete key
- C. Use the "Clear" option from the Home tab
- D. Use the "Find and Replace" feature

Q6

The point (9, 0), (9, 6), (-9, 6) and (-9, 0) are the vertices of a _____.

- A. trepezium
- B. rectangle ✓
- C. rhombus
- D. square

Q7

In a certain code language, 'CARE' is coded as '6975' and 'RISK' is coded as '4386'. What is the code for 'R' in that language?

- A. 6 ✓
- B. 4
- C. 5
- D. 7

Q8

According to a National Crime Records Bureau (NCRB) report, which was the most corrupted state in India in December 2023?

- A. Uttar Pradesh
- B. Bihar
- C. Maharashtra ✓
- D. Rajasthan

Q9

Rearrange the following search engines according to the popularity of people using it.

I. Yahoo
II. Google
III. Bing
IV. Yandex

- A. II, III, I, IV . ✓
- B. II, I, IV, III
- C. IV, III, II, I
- D. I, II, III, IV

Q10

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

X : 32 :: 18 : Y

- A. X=13, Y=30
- B. X=13, Y=37 ✓
- C. X=14, Y=35
- D. X=15, Y=37

Q11

Which of the following is NOT an input device?

- A. Digitizer
- B. Speaker ✓
- C. Optical Character Reader (OCR)
- D. Mouse

Q12

How can a computer virus affect a system's functionality?

- A. By accelerating system boot time
- B. By optimizing system updates
- C. By improving hardware performance
- D. By causing software to malfunction or crash ✓

Q13

Quantisation error of an 8-bit A/D converter for an analog voltage in the range −1 to +1 volt is approximately equal to ___ mv.

- A. 0.1
- B. 0.3
- C. 0.4
- D. 2 ✓

Q14

Parallax error is an example of which type of error?

- A. Gross error
- B. Systematic error ✓
- C. Random error
- D. Instrumental error

Q15

Which of the following correctly expresses the relationship between power, force, time and distance?

- A. $P = F \times d/t$ ✓
- B. $P = F/d \times t$
- C. $P = F \times t/d$
- D. $P = F \times d \times t$

Q16

To select multiple slides, press and hold the _____ key, and then click each slide.

- A. Ctrl ✓
- B. Shift
- C. Alt
- D. Home

Q17

If a conductor moves through a uniform magnetic field, the induced potential difference is maximised when _____.

- A. the magnetic field is zero
- B. the conductor is parallel to the magnetic field lines
- C. the conductor is perpendicular to the magnetic field lines ✓
- D. the magnetic field is non-uniform

Q18

When was the second war between the British army and Burma started?

- **A.** 1852 ✓
- **B.** 1824
- **C.** 1826
- **D.** 1885

Q19

Six people A, B, C, D, E and F live on six different floors of the same building. The bottom-most floor of the building is numbered as 1; the floor above it is numbered as 2 and so on. The topmost floor is numbered as 6.
A lives on an even-numbered floor. Only three people live between A and B. F lives immediately above E. B does not live on floor number 2. Only two people live between F and D. F lives on an even-numbered floor. Who lives on floor number 3?

- **A.** D
- **B.** B
- **C.** C
- **D.** E ✓

Q20

What is the name of the new generation ballistic missile with a range of 1,000-2,000 km that was successfully flight tested at APJ Abdul Kalam Island in April 2024?

- **A.** Agni Prime ✓
- **B.** Surya
- **C.** Prahaar
- **D.** Akash

Q21

If a machine does 3000 J of work in 15 seconds, what is the power output of the machine?

- **A.** 450 W
- **B.** 5 W
- **C.** 200 W ✓
- **D.** 5 mW

Q22

The magnetic field at a point near a long, straight current-carrying conductor is directly proportional to _____.

- **A.** the inverse of the distance from the conductor
- **B.** the square of the current
- **C.** the square of the distance from the conductor
- **D.** the current through the conductor ✓

Q23

Select the most appropriate option to fill in the blanks.
Repeatability is defined as the ability of an instrument to give the ____ output (with limited variations) for repeated applications of ____ input value under same environmental conditions.

- **A.** same; same ✓
- **B.** different; different
- **C.** same; different
- **D.** different; same

Q24

What are the major branches of Buddhism?

- **A.** Anga and Upanga
- **B.** Pathachari and Paribrajaka
- **C.** Hinayana and Mahayana ✓
- **D.** Swetambara and Digambara

Q25

Two resistors, $R_1 = 10\,\Omega$ and $R_2 = 20\,\Omega$, are connected in series to a 12-V battery. What is the voltage across R_2?

- **A.** 12 V
- **B.** 8 V ✓
- **C.** 4 V
- **D.** 16 V

Q26

In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.
Question: Six people sit in two parallel rows. In Row 1- A, B and C sit facing towards north and in Row 2 - P, Q and R sit facing the south. Each person in a row faces a person in the other row. Who sits at the right extreme end of Row 1?
Statement (I): R sits to the immediate left of Q. Q faces A. B sits to the immediate left of A.
Statement (II): Only one person sits between B and C. B faces an immediate neighbour of Q.

A. Data in statements I and II together are NOT sufficient to answer the question.
B. Data in Statement II alone is sufficient to answer the question while data in statement I is not.
C. Data in Statement I alone is sufficient to answer the question while data in statement II is not. ✓
D. Data in statements I and II together are sufficient to answer the question.

Q27

The value of the discriminant of the quadratic equation $7x^2 - 18x - 11 = 0$ is:

A. 619
B. 616
C. 638
D. 632 ✓

Q28

The areas of three adjacent faces of a solid cuboid are 260 cm^2, 104 cm^2 and 10 cm^2. What is the volume (in cm^3) of the cuboid?

A. 520 ✓
B. 524
C. 782
D. 627

Q29

If X= { a, b, c, d } and Y = { f, b, d, g}, find X ∩ Y.

A. { a, c}
B. { b, d } ✓
C. { g, f }
D. { a, b, c, d, g, f }

Q30

A 60-W lightbulb operates on a 120-V source. What is the current flowing through the bulb?

A. 1.5 A
B. 1 A
C. 0.5 A ✓
D. 2 A

Q31

The shadow of an 8 m tall building is of length 6 m on the ground. Which of the following is the distance of the end point of the shadow from the top of the building?

A. 9 m
B. 10 m ✓
C. 6 m
D. 12 m

Q32

In the following triad, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one that follows the same logic.

SALT - LSAT - TLAS
MAID - IMAD - DIAM

A. MAIN - AMIN - NAIM
B. KITE - TKIE - ETIK ✓
C. LIFT - LFIT - TFIL
D. BEAR - ABER - EARB

Q33

What should come in place of the question mark (?) in the given series?

1230 1232 1236 1242 1250 ?

A. 1260 ✓
B. 1263
C. 1264
D. 1262

Q34

What is the range supported in MS-Word to change the size of the selected text?

- A. Between 0.5 and 2000, in multiples of .5 (such as 10.5 or 105.5)
- B. Between 0.5 and 1000, in multiples of .5 (such as 10.5 or 105.5)
- C. Between 1 and 1638, in multiples of .5 (such as 10.5 or 105.5) ✓
- D. Between 1 and 1500, in multiples of 1 (such as 10 or 105)

Q35

Which of the following platforms is primarily used for professional networking?

- A. Twitter
- B. Instagram
- C. Facebook
- D. LinkedIn ✓

Q36

Which of the following statements are true about GPU?

i. The full form of GPU is Graphical User Interface.
ii. GPUs are made for the acceleration and enhancement of computer graphics and processed images.
iii. The GPU exists as an electronic circuit that can be found on graphics card.
iv. The GPU exists as a special electronic circuit that can be used in PCs and game consoles.

- A. Only i, ii, and iii
- B. Only i, ii, and iv
- C. Only ii and iii ✓
- D. i, ii, iii and iv

Q37

Which view allows you to organise the sequence of slides in your presentation in MS PowerPoint?

- A. Slide Show
- B. Reading View
- C. Slide Sorter View ✓
- D. Normal View

Q38

Which HTTP method is typically used to download a web page?

- A. DELETE
- B. GET ✓
- C. PUT
- D. POST

Q39

Select the most appropriate options to fill in the blanks.
The output voltage of L.V.D.T. transducer is practically _____ for displacements up to ___.

- A. exponential; 5 mm
- B. linear; 50 mm
- C. exponential; 50 mm
- D. linear; 5 mm ✓

Q40

Evaluate: 38 - 9 ÷ 6 × 6

- A. 27
- B. 28
- C. 32
- D. 29 ✓

Q41

A particle is subjected to a variable force $F(x)=6x$ N, where x is in metres. What is the work done in moving the particle from $x=0$ m to $x=3$ m?

- A. 18 J
- B. 54 J
- C. 9 J
- D. 27 J ✓

Q42

Refer to the following letter, number and symbol series and answer the question that follows.

(Left) Q C 9 U @ 8 D & A D V 9 2 2 @ ^ L Y A / + K (Right)

How many such letters are there that are immediately preceded by a number and immediately followed by a symbol?

- A. Two ✓
- B. Three
- C. Four
- D. One

Q43

In which of the following countries does the industrial sector contribute less towards the GDP?

A. China
B. Japan
C. India
D. Pakistan ✓

Q44

Anurag starts from Point Y and drives 11 km towards North. He then takes a right turn, drives 25 km, turns right and drives 27 km. He then takes a right turn and drives 11 km. He takes a right turn, drives 41 km. He then turns left, drives 14 km and stops at Point Z. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90 degrees turns only unless specified)

A. 14 km towards North
B. 25 km towards South ✓
C. 36 km towards North
D. 30 km towards South

Q45

The first and last terms of an A.P. are 36 and 46. If the sum of its terms is 574, then the number of terms will be?

A. 16
B. 14 ✓
C. 15
D. 17

Q46

What action should be taken if an antivirus software detects a virus?

A. Follow the software's instructions to quarantine or remove the virus. ✓
B. Ignore the warning and continue using the computer.
C. Perform a system backup before taking any action.
D. Delete the infected files immediately.

Q47

A coin is thrown eight times. The probability of getting exactly five tails is:

A. 0.78
B. 0.28
C. 0.11
D. 0.22 ✓

Q48

If the resistance R is constant and the voltage V across a resistor is tripled, how does the power P change?

A. It increases by three times.
B. It increases by nine times. ✓
C. It decreases by three times.
D. It increases by one-third of its original.

Q49

If 8th and 12th terms of an A.P. be 82 and 478 respectively, then its 50th term is:

A. 4241
B. 4238
C. 4242
D. 4240 ✓

Q50

Which of the following shortcuts is used to Split the document window?

A. Ctrl + Alt + C
B. Ctrl + Alt + S ✓
C. Alt + Shift + C
D. Ctrl + Y

Q51

Which of the following behaviours aligns with netiquette guidelines?

A. Responding promptly to messages ✓
B. Sending respectful and constructive emails
C. Ignoring others' opinions in online discussions
D. Sharing properly cited information

Q52

What is the purpose of setting a print area in a spreadsheet?

A. To highlight the area with colours
B. To adjust the font size
C. To define the range of cells to be printed ✓
D. To freeze rows and columns

Q53

If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '−', then what will come in place of the question mark (?) in the following equation?

15 D 12 A 6 C 3 B 7 = ?

A. 31
B. 34 ✓
C. 32
D. 33

Q54

Which Article of the Indian Constitution provides for 'Right to work, to education and to public assistance in certain cases'?

A. Article 29
B. Article 41 ✓
C. Article 34
D. Article 50

Q55

Devendra Jhajharia is associated to which of the following games?

A. Wrestling
B. Boxing
C. Javelin throw ✓
D. Badminton

Q56

The direction of the magnetic field around an infinitely long straight current-carrying wire is:

A. tangential to the wire and depends on the direction of the current ✓
B. radial outward from the wire
C. radial inward toward the wire
D. perpendicular to the plane containing the wire and the point

Q57

Intel 8051 provides ____ interrupt structures and 8052 provides ____ interrupt structures.

A. 6; 7 ✓
B. 4; 5
C. 7; 8
D. 5; 6

Q58

Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:
All roofs are sheds.
No shed is a window.
No shed is an door.

Conclusions:
(I) No roof is a window.
(II) Some doors are windows.

A. Neither conclusion (I) nor (II) follows.
B. Only conclusion (I) follows. ✓
C. Only conclusion (II) follows.
D. Both conclusions (I) and (II) follow.

Q59

In a purely capacitive AC circuit, the power consumed over a complete cycle is _____.

A. equal to the apparent power
B. zero ✓
C. maximum
D. minimum but not zero

Q60

Select the most appropriate option to fill in the blank.
When the strain gauge-elastic member combination is used for weighing, it is called a _____.

A. Capacitive transducer
B. Load cell ✓
C. Piezoelectric transducer
D. Linear Variable Differential Transformer (L.V.D.T.)

Q61

An infinitely long straight wire carries a current of I. At what distance r from the wire is the magnetic field 5×10^{-6} T if I = 15 A?

A. 3 m
B. 0.6 m ✓
C. 0.3 m
D. 7.5 m

Q62

The SI unit of current, the Ampere, is defined based on _____.

A. the force between two charges

B. the force between two current-carrying conductors ✓

C. the electric potential difference

D. the magnetic flux through a loop

Q63

When performing the operation $(1.23456 \times 10^3) + (1.234 \times 10^2)$, how many significant figures should be reported in the result, assuming no rounding errors?

A. 2

B. 4

C. 3

D. 5 ✓

Q64

What is the estimated worth of the National Monetization Pipeline unveiled by the Government of India in September 2021?

A. ₹6 lakh crore ✓

B. ₹15 lakh crore

C. ₹3 lakh crore

D. ₹10 lakh crore

Q65

Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair.)

A. IB-PO ✓

B. ZS-JF

C. MF-WS

D. EX-OK

Q66

Which of the given options can replace the question mark (?) in the following series to make it logically complete?

FHI 21 IKL 18 LNO 15 OQR 12 ?

A. RTV 10

B. RTU 9 ✓

C. RST 9

D. RTU 10

Q67

In a class of 37 students, 25 like to play cricket and 16 like to play football. Also, each student likes to play at least one of the two games. How many students like to play both cricket and football ?

A. 3

B. 4 ✓

C. 6

D. 5

Q68

A statement is given followed by two arguments. Decide which of the arguments is/are strong with respect to the statement.
Statement:
For the fifth consecutive day, the government announced an increase in the price of petrol by ₹2.
Arguments:
I. The international market has reduced fuel production.
II.Taxes on petrol imports have increased.

A. I weakens while II strengthens the statement.

B. Both I and II strengthen the statement. ✓

C. II weakens while I strengthens the statement.

D. Both I and II weaken the statement.

Q69

According to Environment Performance Index (EPI) 2024, what was India's rank in greenhouse gas production in May 2024?

A. 3rd ✓

B. 7th

C. 2nd

D. 11th

Q70

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
X : 49 :: 17 : Y

- A. X = 23, Y = 37 ✓
- B. X = 21, Y = 37
- C. X = 31, Y = 34
- D. X = 25, Y = 39

Q71

In MS Word, what does the term 'font weight' refer to?

- A. The colour of the font
- B. The spacing between characters
- C. The style of the font
- D. The thickness of the font ✓

Q72

The area of the triangle ABC with the vertices A(-5, 7), B(-4, -5) and C(4, 5) is

- A. 35 sq. units
- B. 36 sq. units
- C. 53 sq. units ✓
- D. 63 sq. units

Q73

If the temperature of the surrounding medium increases, it will result in a/an _____ in the resistance of the thermistor and a/an _____ in the current.

- A. increase; increase
- B. increase; decrease
- C. decrease; decrease
- D. decrease; increase ✓

Q74

Which power-saving mode is most suitable for short breaks when you want to resume work quickly?

- A. Hibernate
- B. Restart
- C. Shutdown
- D. Sleep ✓

Q75

Which of the following is the correct shortcut key to bring up the task manager directly using keyboard only?

- A. Ctrl + Windows + Enter
- B. Ctrl + Shift + Escape ✓
- C. Ctrl + Alt + Delete
- D. Windows + R

Q76

The mode and median of a data is 19.5 and 85, respectively. What is the mean of the data? (Use empirical formula.)

- A. 118
- B. 117.8 ✓
- C. 119.1
- D. 118.6

Q77

What is the work done when a constant force of 20 N is applied at an angle of 30° to the direction of displacement of 13 m?

- A. 390 Joules
- B. 260 Joules
- C. 185 Joules
- D. 225 Joules ✓

Q78

A copper wire has resistance R. If its radius is reduced to half while keeping the length constant, what will be the new resistance?

- A. R
- B. 2R
- C. 4R ✓
- D. 16R

Q79

What is the equivalent of 1 bar in the SI unit of pressure?

- A. 104psi
- B. 105Pa ✓
- C. 10-5Pa
- D. 106N/m2

Q80

A 2 kg object is dropped from a height of 10 m. Assuming no air resistance, what will be the object's speed just before it hits the ground?

- A. 10 m/s
- B. 14 m/s ✓
- C. 20 m/s
- D. 25 m/s

Q81

Which part of the Linux OS controls a computer's boot up process?

- A. Daemons
- B. Kernel
- C. Init system
- D. Bootloader ✓

Q82

Reproducibility is defined as the ability of an instrument to reproduce (the) _____ output(s) for repeated applications of (the) _____ input value(s) under (the) _____ environment condition(s).

- A. same; same; different
- B. same; same; same ✓
- C. same; different; same
- D. different; same; different

Q83

Select the most appropriate option to fill in the blank.

_____ error occurs as the value of flux density is different for the same value of current when increasing and decreasing.

- A. Hysteresis ✓
- B. Friction
- C. Frequency
- D. Temperature

Q84

The radius of a right circular cone is 2.1 cm and its height is 2.8 cm. The total surface area of the cone is: (Take π = 22/7)

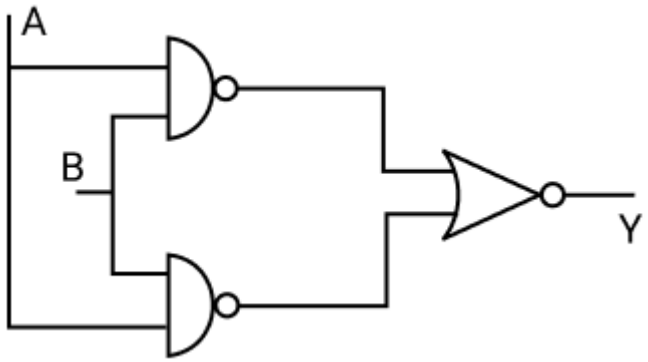
- A. 23.1 cm2
- B. 46.2 cm2
- C. 36.96 cm2 ✓
- D. 18.48 cm2

Q85

A wire loop is placed in a magnetic field that is increasing in magnitude but remains stationary. Using Fleming's Right-Hand Rule, what can be said about the induced current in the loop?

- A. There is no induced current since the loop is stationary ✓
- B. The direction of the current depends on the material of the loop
- C. The current is induced clockwise
- D. The current is induced counterclockwise

Q86



A. $\overline{A+B}$

B. $A+B$

C. $\overline{AB}$

D. AB ✓

Q87

If the sum and product of the roots of a quadratic equation are $\frac{11}{2}$ and $\frac{15}{2}$, respectively, then the equation whose roots are double the roots of the given equation is:

A. x2- 11x - 30 = 0

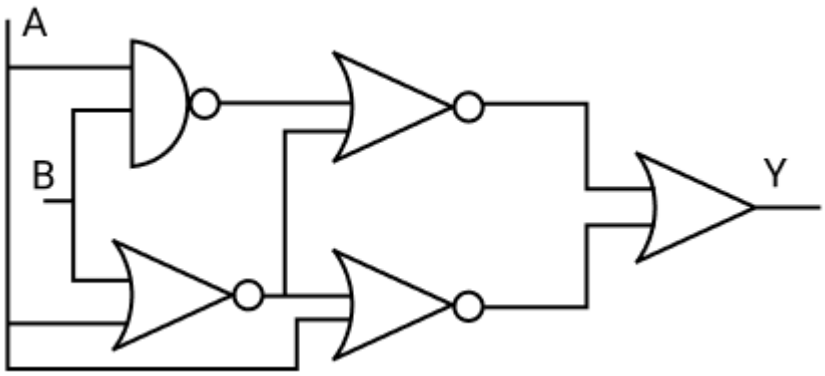
B. x2+ 11x - 30 = 0

C. x2- 11x + 30 = 0 ✓

D. x2+ 11x + 30 = 0

Q88

Find the Boolean expression for the output Y if inputs are A and B.



A. B ✓

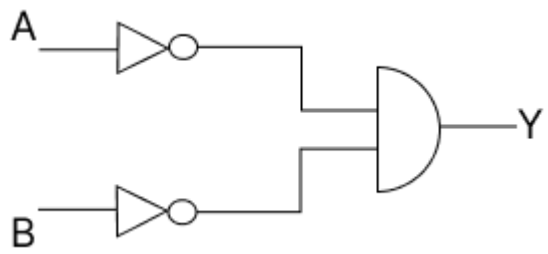
B. AB

C. A

D. A+B

Q89

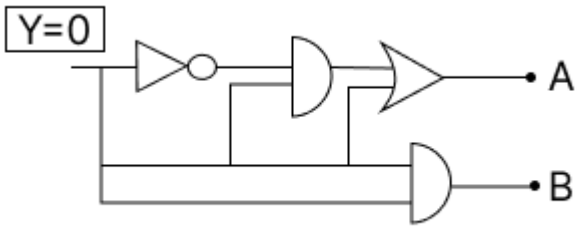
The given logic gate diagram is equivalent to ____.



- **A.** NOR GATE ✓
- **B.** AND GATE
- **C.** NAND GATE
- **D.** OR GATE

Q90

In the given logic circuit, if the initial input is 0, then what will be the output of A and B, respectively?



- **A.** 0, 0 ✓
- **B.** 1, 0
- **C.** 1, 1
- **D.** 0, 1

Q91

The distance between the points (0, 3) and (–3, 0) is :

- **A.** 6 units
- **B.** $2\sqrt{3}$ units
- **C.** $3\sqrt{2}$ units ✓
- **D.** 3 units

Q92

If the velocity v of a body is expressed as $v = at + bt^2$, where a and b are constants, the dimensions of b are _____.

- **A.** $[L]$
- **B.** $[LT^{-3}]$ ✓
- **C.** $[LT^{-2}]$
- **D.** $[LT^{-1}]$

Q93

Two dice (both numbered 1 to 6) are rolled, simultaneously. What is the probability of observing a sum of 8?

A. $\frac{7}{36}$

B. $\frac{1}{6}$

C. $\frac{5}{6}$

D. $\frac{5}{36}$ ✓

Q94

The ratio of the lengths of two corresponding sides of two similar triangles is 6 : 2. The ratio of the areas of these two triangles, in the order mentioned, is:

A. 6 : 2

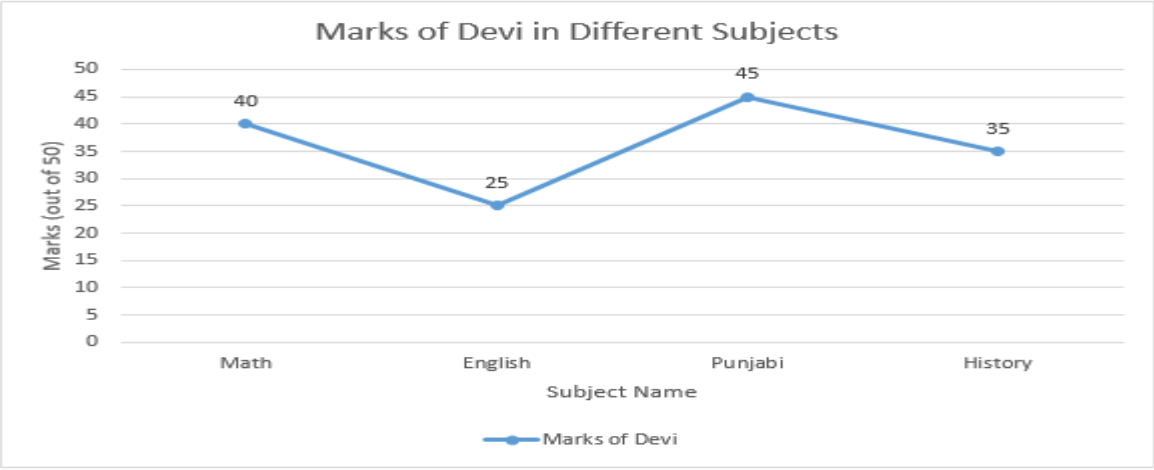
B. 36 : 4 ✓

C. 37 : 5

D. $6\sqrt{6} : 2$

Q95

Study the given graph and answer the question that follows.



The graph above depicts the marks of Devi in different subjects. What is her percentage of marks in Punjabi?

A. 85%

B. 80%

C. 95%

D. 90% ✓

Q96

If the period T of a simple pendulum depends on its length L, mass m and acceleration due to gravity g, then using dimensional analysis, the period T is proportional to _____.

A. $\frac{L}{g}$

B. $\frac{mL}{g}$

C. $\frac{L}{\sqrt{g}}$

D. $\sqrt{\frac{L}{g}}$ ✓

Q97

If the angle of elevation of the sun changes from 30° to 45°, the length of the shadow of a pillar decreases by 80 m. The height of the pillar is:

A. $20\left(\sqrt{3}+1\right)$ cm

B. $10\left(\sqrt{6}+1\right)$ cm

C. $30\left(\sqrt{3}+1\right)$ cm

D. $40\left(\sqrt{3}+1\right)$ cm ✓

Q98

In an isosceles ΔABC, $AC = BC$, if each of the two equal angles of ΔABC is 9 degrees less than two − fifth of the third angle. Find the value of $\left(\frac{2\angle C - 3\angle A + \angle B}{2}\right)$.

A. 45°

B. 75° ✓

C. 35°

D. 60°

Q99

Evaluate: $\dfrac{1}{\left(\frac{5}{6}\right)+\left(\frac{7}{9}\right)} \div \dfrac{5}{23}$

A. $2\dfrac{5}{6}$

B. $2\dfrac{53}{61}$

C. $2\dfrac{59}{69}$ ✓

D. $4\dfrac{1}{27}$

Q100

Match the following geographical features with their respective region:

A. Karewas	I. Eastern Ghats
B. Barchans	II. Kashmir region
C. Mahendragiri	III. Coastal plain along Bay of Bengal
D. Northern Circar	IV. Thar desert

A. A-II, B-IV, C-I, D-III ✓

B. A-I, B-III, C-II, D-IV

C. A-III, B-I, C-IV, D-II

D. A-IV, B-II, C-III, D-I

Q1

If
'A + B' means 'A is the brother of B'
'A – B' means 'A is the sister of B'
'A × B' means 'A is the wife of B'
'A ÷ B' means 'A is the father of B'
'A @ B' means 'A is the son of B'
If, K + M @ A ÷ F × P ÷ L – T, then how is K related to T?

A. Mother's sister
B. Mother's brother ✓
C. Mother's father
D. Sister's mother

Q2

In Faraday's experiment, if the magnetic flux through a loop increases linearly with time, the induced EMF is _____.

A. inversely proportional to time
B. zero
C. constant ✓
D. proportional to the square of time

Q3

What does PCB stand for?

A. Primary Circuit Board
B. Processor Control Board
C. Printed Circuit Board ✓
D. Power Control Board

Q4

A copper ring is dropped into a region with a constant magnetic field directed upwards. What happens to the ring according to Lenz's law?

A. It accelerates downwards faster than in free fall.
B. Its motion remains unaffected by the magnetic field.
C. It is pushed upwards by the magnetic field.
D. It slows down as it falls. ✓

Q5

Which of the following is an example of high precision but low accuracy?

A. Scoring randomly on different parts of the target
B. Hitting the same point far from the centre repeatedly ✓
C. Hitting different points on a target but near the centre
D. Hitting the centre of a target multiple times

Q6

At 25°C, the barrier potential for germanium is approximately equal to:

A. 0.3 V ✓
B. 0.7 V
C. 1.1 V
D. 0.1 V

Q7

P is the brother of Q. Q is the daughter of R. R is the husband of S. S is the sister of T. How is P related to T?

A. Brother
B. Son
C. Brother's son
D. Sister's son ✓

Q8

The first and last terms of an A.P. are 18 and 48. If the sum of its terms is 396, then the number of terms will be?

A. 12 ✓
B. 10
C. 9
D. 15

Q9

EMF of a thermocouple is approximately a ____ function of the temperature difference between the junctions.

A. linear ✓
B. exponential
C. parabolic
D. hyperbolic

Q10

The range of electrostatic voltmeter can be extended with the help of:

- A. Capacitor
- B. Resistance Potential Divider ✓
- C. Capacitance Potential Divider
- D. Register

Q11

Select the most appropriate option to fill in the blanks.
A thermistor can have region of _____ determined by the construction material or the temperature of the material. The change in
temperature can be due to internal effects such as current through the thermistor or due to external effects of ____.

- A. negative temperature coefficients; cooling only
- B. positive or negative temperature coefficients; heating only
- C. positive temperature coefficients; heating only
- D. positive or negative temperature coefficients; heating or cooling ✓

Q12

A car of mass m accelerates uniformly from rest under a constant force F. After traveling a distance d, what is the kinetic energy of the car?

- A. (F×d)/m
- B. 2×F×d
- C. (F×d)/2
- D. F×d ✓

Q13

The magnetic field inside a long straight solenoid carrying current is _____.

- A. strongest at the ends
- B. non-uniform
- C. uniform ✓
- D. zero

Q14

From where was the concept of directive principles borrowed in the Constitution of India?

- A. Irish Constitution ✓
- B. Australian Constitution
- C. French Constitution
- D. US Constitution

Q15

Which of the following statements for Piezoelectric transducer is correct?

- A. Piezoelectric transducer can be used for the measurement of static displacement only.
- B. Piezoelectric transducer can be used for the measurement of dynamic displacement only. ✓
- C. Piezoelectric transducer can be used for the measurement of both static and dynamic displacement.
- D. Piezoelectric transducer cannot be used for the measurement of both static and dynamic displacement.

Q16

The INF file processing functions provide setup and installation functionality that includes which of the following actions?

1. Opening and closing an INF file
2. Retrieving information about an INF file
3. Retrieving information about source files and target directories for copy operations
4. Performing the installation actions specified in an INF file section

- A. 1, 2, 3, and 4 ✓
- B. 1, 2 and 3 only
- C. 1 and 2 only
- D. 3 and 4 only

Q17

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

X : 130 :: 34 : Y

A. X=24, Y=160

B. X=29, Y=185

C. X=26, Y=170 ✓

D. X=28, Y=190

Q18

Each of members , P, Q, R, S, T, U and V, of a certain department has to attend a seminar on different days of the same week starting from Monday to Sunday.
T has to attend the seminar immediately before P. Q has to attend the seminar on Tuesday. V has to attend the seminar on Sunday. Only U has to attend the seminar between P and R. S has to attend the seminar on one of the days before Q. Who has to attend the seminar on Monday?

A. P

B. S ✓

C. R

D. T

Q19

Which of the following is NOT the member of microcontroller Intel 8051 series?

A. 87C51

B. 80C51BH

C. 8044AH ✓

D. 80C31BH

Q20

Performance Grading Index, which is designed to catalyse transformational change in the field of school education, comprises of ___ indicators.

A. 100

B. 90

C. 50

D. 70 ✓

Q21

When p-n junction diode is biased, which of the following statements is correct?

A. Depletion layer gets narrower when it is reverse biased.

B. Depletion layer gets narrower only when diode is forward biased and remains constant when it is reverse biased.

C. Depletion layer gets wider only when diode is forward biased and remains constant when it is reverse biased.

D. Depletion layer gets wider when it is reverse biased. ✓

Q22

In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.
Question: Five people A, B, C, D and E are sitting in a straight row, facing north. Who sits second to the right of A?
Statement (I): The number of people sitting to the right of A is equal to the number of people sitting to the left of A. One person sits between A and B. D sits to the immediate left of B.
Statement (II): E sits at the extreme left end of the row. Only one person sits between E and A. B sits to the immediate right of D.

A. Data in statements I and II together are sufficient to answer the question.

B. Data in Statement I alone is sufficient to answer the question while data in statement II is not.

C. Data in Statement II alone is sufficient to answer the question while data in statement I is not.

D. Data in either statement I alone or statement II alone are sufficient to answer the question. ✓

Q23

Two resistors, R_1 and R_2, are connected in series across a voltage source. If the power dissipated by R_1 is 4 times the power dissipated by R_2, what is the ratio of their resistances $R_1 : R_2$?

A. 1 : 16

B. 1 : 4

C. 16 : 1

D. 4 : 1 ✓

Q24

Select the correct order of steps to add a textbox without using a mouse.

i) When you are finished typing and want to switch back to editing text in your document, press Esc.
ii) Press the arrow keys to select the text box that you want, and then press Enter.
iii) Press and release Alt, N, and then press X.
iv) Type the text that you want.

A. i, ii, iii, iv
B. iii, ii, iv, i ✓
C. ii, iii, i, iv
D. iv, iii, ii, i

Q25

Microprocessor 8085 operates on clock cycle with _____ duty cycle.

A. 25%
B. 50% ✓
C. 75%
D. 10%

Q26

Which tab would you use to add a new slide to your MS PowerPoint presentation?

A. Home ✓
B. Design
C. Transitions
D. Insert

Q27

Let C_1 and C_2 be two circles which do not externally touch and intersect each other and O_1, and O_2 be the centers of the circles, respectively. Let AB be the common transverse tangent to the circles such that P, Q are the points of tangency respectively to C_1, C_2. Let R be the point of intersection of O_1 O_2 and AB. If $\angle PO_1R = 60°$, find $\angle QO_2R$ and $\angle QRO_2$, respectively.

A. 45° and 45°
B. 60° and 30° ✓
C. 40° and 50°
D. 20° and 70°

Q28

If C = { 2, 4, 6, 8, 10, 12, 14, 16 }, and D = {5, 10, 15, 20 }, then the number of elements in the set D - C is:

A. 7
B. 3 ✓
C. 4
D. 8

Q29

When does the force acting on a current-carrying conductor placed in a magnetic field become the largest?

A. When the direction of the current is parallel to the magnetic field
B. When the direction of the current is at right angles to the magnetic field ✓
C. When the direction of the current is opposite to the magnetic field
D. When the conductor is not moving

Q30

Which type of network topology is commonly used in Wide Area Networks (WANs)?

A. Mesh ✓
B. Star
C. Bus
D. Ring

Q31

Refer to the following word series and answer the question that follows.

CAB BIT YET AFT

In each of the words, each vowel is changed to the second letter following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabetical order. In how many letter-clusters thus formed will NO vowel appear?

A. Three
B. Two
C. One ✓
D. Four

Q32

Write the correct order of steps to print a webpage from your android phone.

1. On your Android device, open the Chrome app
2. Tap Print
3. At the top right, tap More Share.
4. Open the page, image, or file you want to print.
5. Select Print .
6. To change any print settings, tap the Down arrow
7. At the top, select a printer.

A. 1, 2, 3, 4, 5, 6, 7

B. 1, 4, 3, 5, 7, 6, 2 ✓

C. 7, 6, 5, 4, 3, 2, 1

D. 2, 4, 6, 1, 3, 5, 7

Q33

A solid metallic sphere of radius 4 cm is melted and recast into 64 identical spheres. What is the ratio of the surface area of the original sphere to the total surface area of 5 smaller spheres so formed?

A. 32 : 3

B. 16 : 15

C. 16 : 5 ✓

D. 14 : 5

Q34

Which of the following is the correct equation for power (P) in terms of energy (E) and time (t)?

A. P = E/t ✓

B. P = E/t2

C. P = E + t

D. P = E × t

Q35

Which factor does NOT affect the resistivity of a material?

A. Atomic structure

B. Temperature

C. Length of the conductor ✓

D. Material type

Q36

Which of the following actions will NOT help in reducing random errors?

A. Calibrating the instrument ✓

B. Taking readings under controlled conditions

C. Increasing the number of observations

D. Averaging multiple readings

Q37

Convert decimal number 26.85 into binary equivalent.

A. 1001.111010

B. 11010.110110 ✓

C. 11010.101010

D. 11001.110110

Q38

A statement is given followed by two arguments. Decide which of the arguments is/are strong with respect to the statement.
Statement:
A minister of country X said, "Shifting to clean sources of energy has become an obvious choice in recent times."
Arguments:
I. Every year, country X has been witnessing more and more air pollution.
II. The prices for coal and natural gasses have increased significantly over the past years.

A. Both I and II strengthen the statement. ✓

B. I weakens while II strengthens the statement.

C. II weakens while I strengthens the statement.

D. Both I and II weaken the statement.

Q39

Who among the following won the Vigyan Shri Award 2024?

A. Rohit Srivastava ✓

B. Bappi Paul

C. Purabi Saikia

D. Vivek Polshettiwar

Q40

If a body falls freely under gravity from rest, what fraction of its initial potential energy has been converted into kinetic energy when it has fallen to half of its initial height?

A. 7/8

B. 1/2 ✓

C. 3/4

D. 1/4

Q41

The smallest natural number which is divisible by 24, 6, 36 and 13 is:

A. 1008

B. 936 ✓

C. 1011

D. 943

Q42

Which feature in MS PowerPoint allows you to apply visual effects to slides or objects?

A. Animations ✓

B. Transitions

C. Designs

D. Layouts

Q43

The coordinates of a point A, where AB is the diameter of a circle whose centre is (2, – 3) and B is (1, 4) is:

A. (3, -10) ✓

B. (-3, 10)

C. (2, -10)

D. (-2, 10)

Q44

If 23rd and 24th terms of an A.P. be 42 and 312 respectively, then its 37th term is:

A. 3823

B. 3821

C. 3822 ✓

D. 3820

Q45

If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', then what will come in place of the question mark (?) in the following equation?

45 C 30 A 10 D 7 B 2 = ?

A. 31

B. 34 ✓

C. 33

D. 32

Q46

Which factor does NOT affect the magnitude of motional EMF in a conductor?

A. The angle between the conductor's velocity and the magnetic field

B. The speed of the conductor

C. The length of the conductor

D. The resistance of the conductor ✓

Q47

Study the given table and answer the question that follows. The given table depicts the percentage of marks scored by Mary and Perul in History and Physics (out of 75 each).

Name	History	Physics
Mary	60	64
Perul	54	70

How many marks did Mary score in History?

A. 37

B. 45 ✓

C. 53

D. 47

Q48

Match the following social networking sites from Group A to the allowed characters in Group B.

Group A Group B
I. Facebook A. Allowed up to 255 characters in the 'About' or bio field
II. Instagram B. Allowed up to 150 characters in your bio field.
III. Linkedin C. Allowed up to 3,000 characters in your bio field.
IV. Twitter D. It has a 160-character limit for the bio field.

A. I-B, II-A, III-D, IV-C
B. I-D, II-C, III-B, IV-A
C. I-C, II-D, III-A, IV-B
D. I-A, II-B, III-C, IV-D ✓

Q49

What is the power factor for a purely inductive or purely capacitive AC circuit?

A. 0 ✓
B. 0.5
C. −1
D. 1

Q50

In a parallel circuit, if one of the resistors R1 is removed, the total resistance of the circuit will _____.

A. decrease
B. remain the same
C. be zero
D. increase ✓

Q51

Rishika accidently presses CTRL + H in MS Word, and a dialog box is displayed. Which dialog box is it?

A. The Bullets and Numbering dialog box
B. The Header and Footer dialog box
C. The Find and Replace dialog box ✓
D. The Language dialog box

Q52

A machine performs work W in time t, and its power output is P. If the machine's power output is doubled, how much time will it take to perform the same amount of work?

A. t
B. 2t
C. t/2 ✓
D. t/4

Q53

India's latitudinal extent is:

A. 4°8′ South to 63°7′ South latitudes
B. 8°4′ South to 37°6′ South latitudes
C. 4°8′ North to 63°7′ North latitudes
D. 8°4′ North to 37°6′ North latitudes ✓

Q54

The Gita is incorporated in the Mahabharata primarily to give an integrated view of _____.

A. universe
B. Dharma ✓
C. Moksha
D. happiness

Q55

From which tab of Task Manager can you end a non-responding application?

A. Details
B. Startup
C. Processes ✓
D. Services

Q56

If α and β are the roots of the equation $x^2 - 11x + 24 = 0$, then what is the value of $(\alpha^2 + \beta^2)$?

A. 73 ✓
B. 64
C. 80
D. 75

Q57

In August 2024, Indian Council of Medical Research (ICMR) and Panacea Biotec announced the initiation of the first-ever Phase 3 clinical trial for which of the following vaccines in India?

A. Hepatitis
B. Typhoid
C. Malaria
D. Dengue ✓

Q58

Which of the following combinations represents a derived unit?

A. Volt, Newton, Joule ✓
B. Kelvin, Mole, Ampere
C. Metre, Kilogram, Ampere
D. Metre, Second, Kilogram

Q59

Which of the following terms will replace the question mark (?) in the given series to make it logically complete?
IO19 KQ30 MS41 OU52 ?

A. QW64
B. QX64
C. QX63
D. QW63 ✓

Q60

In which year and city/cities India hosted the FIH Men's World Cup?

A. 2024 Mumbai
B. 2023 Bhubaneswar and Rourkela ✓
C. 2022 New Delhi
D. 2022 Lucknow

Q61

The area of a quadrilateral whose vertices are (3, 0), (4, 5), (-1, 4) and (-2,-1) taken in order, is:

A. 24 sq.units ✓
B. 48 sq.units
C. 30 sq.units
D. 12 sq.units

Q62

In a survey of 260 students in a school, 100 were listed as taking apple juice, 150 as taking orange juice and 75 were listed as taking both apple as well as orange juice. Find how many students were taking neither apple juice nor orange juice.

A. 75
B. 95
C. 65
D. 85 ✓

Q63

A mass of 0.005 kg is measured using a scale with an uncertainty of 0.0001 kg. If the mass is used in a calculation where the uncertainty in derived quantity needs to be calculated, what is the maximum possible percentage uncertainty in the derived quantity if the quantity is proportional to m^2?

A. 4% ✓
B. 2%
C. 0.1%
D. 10%

Q64

Which of the following file formats can be used while saving a workbook in MS Excel 2019 that is compatible with all other spreadsheet software programs?

A. Comma-separated values (.csv) ✓
B. Microsoft Excel Spreadsheet Beta (.xlsb)
C. Microsoft Excel Spreadsheet XML (.xlsx)
D. Portable Document Format (.pdf)

Q65

Which of the following is NOT a type of system software?

A. Firmware software
B. Utility software
C. Operating system
D. Microsoft Office ✓

Q66

Which of the following malware symptoms indicate that your computer may be infected?

I. Slow computer performance
II. Erratic computer behaviour
III. Unexplained data loss
IV. Frequent computer crashes

A. II, III and IV only
B. III and IV only
C. I, II, III, and IV ✓
D. I and II only

Q67

EDSP is related to NMBY in a certain way based on the English alphabetical order. In the same way, ONCZ is related to XWLI. To which of the following options is PODA related, following the same logic?

A. YUIJ
B. YUTR
C. YXMK
D. YXMJ ✓

Q68

In Microprocessor 8085 Address/Data buffer is a/an _____ buffer.

A. 8 bit and bi-directional ✓
B. 16 bit and bi-directional
C. 16 bit and unidirectional
D. 8 bit and unidirectional

Q69

Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

A. UXEK
B. QXEG ✓
C. CFMS
D. JMTZ

Q70

In an intrinsic semiconductor, fermi energy level ____.

A. in the middle of the conduction band
B. liesmid-way between the conduction band and valance band ✓
C. lies below the valance band
D. lies above the conduction band

Q71

In MS Word, which of the following is NOT an option provided in paragraph spacing of a document?

A. Compact
B. Open ✓
C. No paragraph space
D. Compatible Spacing

Q72

When did the British Navy take over Rangoon in British India?

A. February 1813
B. February 1826
C. May 1822
D. May 1824 ✓

Q73

What type of chart is used to compare parts of a whole in MS-Excel?

A. Histogram
B. Column Chart
C. Line Chart
D. Pie Chart ✓

Q74

Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g., 13 – Operations on 13 such as adding/deleting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)
(19, 6, 17)
(79, 11, 42)

- A. (14, 4, 2) ✓
- B. (2, 6, 5)
- C. (13, 49, 2)
- D. (15, 5, 6)

Q75

A disturbance from the equilibrium exchange rate gives rise to automatic forces that push the exchange rate back towards the equilibrium level is known as the:

- A. unstable foreign exchange market
- B. elastic foreign exchange market
- C. fixed foreign exchange market ✓
- D. stable foreign exchange market

Q76

Which of the following is the most widely used search engine globally?

- A. DuckDuckGo
- B. Bing
- C. Yahoo
- D. Google ✓

Q77

Which of the following statements correctly describes the energy band diagram for conductors, semiconductors, and insulators?

- A. Conductors have a wide forbidden gap, semiconductors have no forbidden gap, and insulators have a narrow-forbidden gap.
- B. Conductors have a narrow-forbidden gap, semiconductors have no forbidden gap, and insulators have a wide forbidden gap.
- C. Conductors have no forbidden gap, semiconductors have a narrow-forbidden gap, and insulators have a wide forbidden gap. ✓
- D. Conductors have a wide forbidden gap, semiconductors have a narrow-forbidden gap, and insulators have no forbidden gap.

Q78

Which of the following statements is true regarding Lenz's Law?

- A. The induced current always opposes the change in magnetic flux that produced it. ✓
- B. The direction of the induced current depends on the amount of magnetic flux.
- C. Lenz's Law does not relate to electromagnetic induction.
- D. The induced current always assists the change in magnetic flux that produced it.

Q79

What does real-time protection in antivirus software do?

- A. Creates a backup of important files
- B. Scans files only when manually initiated
- C. Provides updates for new antivirus versions
- D. Continuously monitors and scans files for malware ✓

Q80

What happens if you enter a date that MS-Excel does NOT recognise?

- A. MS-Excel displays an error message.
- B. MS-Excel deletes the content.
- C. MS-Excel automatically corrects the format.
- D. MS-Excel treats it as a text. ✓

Q81

Uday starts from Point Y and drives 16 km towards the North. He then takes a right turn, drives 28 km, turns right and drives 31 km. He then takes a right turn and drives 13 km. He takes a right turn and drives 41 km. He then turns left, drives 15 km, turns right and drives 8 km to stop at Point Z. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90 degrees turns only unless specified)

- A. 49 km towards East
- B. 34 km towards South ✓
- C. 25 km towards South
- D. 47 km towards North

Q82

What should come in place of the question mark (?) in the given series?

708 718 729 741 754 ?

A. 767

B. 768 ✓

C. 766

D. 765

Q83

Which state of India is at bottom according to Sustainable Development Goals (SDG) India Index, published by NITI Aayog in July 2024?

A. Bihar ✓

B. Haryana

C. Kerala

D. Tamil Nadu

Q84

_____ is the latest version of Windows Operating System.

A. Windows 11 ✓

B. Windows Vista

C. Windows 10

D. Windows 12

Q85

What can be inferred about the magnetic field lines within a solenoid?

A. They are in random directions

B. They are in the form of parallel straight lines ✓

C. They are diverging

D. They are circular

Q86

The mode and median of a data is 26.7 and 71, respectively. What is the mean of the data? (Use empirical formula.)

A. 94.6

B. 94.3

C. 93.2 ✓

D. 95.1

Q87

Which of the following materials are generally used for electrical transmission lines due to their low resistivity?

A. Copper and aluminium ✓

B. Tungsten and iron

C. Gold and silver

D. Lead and tin

Q88

By default, if you're in a business environment, everyone within your organisation can edit the linked file. To change these permissions, click on the arrow at the right of the attachment name to display a drop-down menu with a variety of permission options. Which of the following is NOT a permission option?

A. Can Delete

B. Can ReView ✓

C. Can Edit

D. Can View

Q89

A particle of mass m starts from rest and moves with a constant acceleration a along a straight line. What is the relationship between the distance travelled x and the kinetic energy K of the particle?

A. $K \propto \sqrt{x}$

B. $K \propto x^3$

C. $K \propto x$ ✓

D. $K \propto x^2$

Q90

If $\tan\theta = \frac{8}{15}$, then the value of $\frac{\sqrt{1-\sin\theta}}{\sqrt{1+\sin\theta}}$ is:

A. $\frac{5}{7}$

B. $\frac{3}{4}$

C. $\frac{3}{7}$

D. $\frac{3}{5}$ ✓

Q91

The area of the four walls of a room is 780 m^2 and its length is twice its breadth. If the height of the room is 13m, then the area of its floor is equal to:

A. 200 m^2 ✓

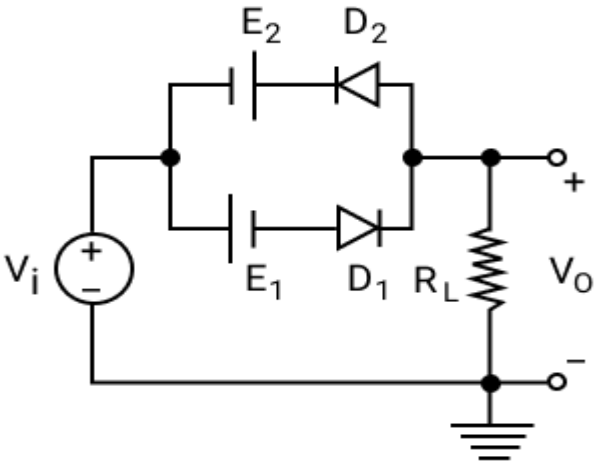
B. 315 m^2

C. 295 m^2

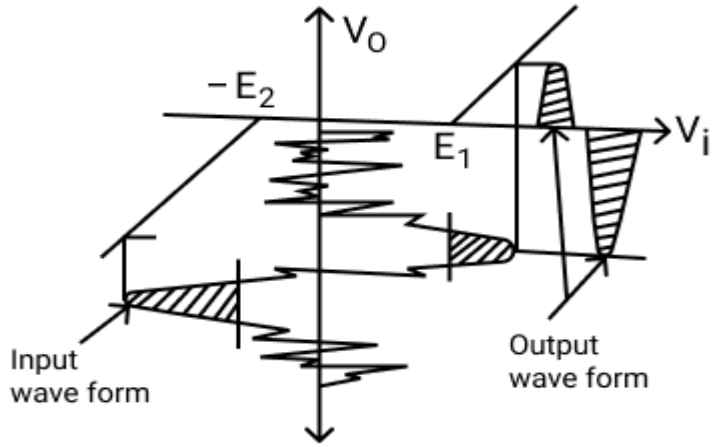
D. 150 m^2

Q92

In the given circuit, if the input voltage lies between $+E_1$ and $-E_2$, then output is zero.



Input and output characteristics are shown below.



The region between $+E_1$ and $-E_2$ is known as ____.

A. dead zone ✓

B. cut off zone

C. saturation zone

D. active zone

Q93

Simplify $\left(\frac{1}{\sin^2 A} - 1\right)$, where $0 < A \leq 90°$.

A. $\tan^2 A$ ✓

B. $\sec^2 A$

C. $\cot^2 A$

D. $\cos^2 A$

Q94

A bag contains balls numbered from 1 to 42. One ball is drawn at random from these balls. The probability that its number is a multiple of 7 or 8 is:

A. $\frac{11}{42}$ ✓

B. $\frac{11}{22}$

C. $\frac{22}{42}$

D. $\frac{13}{22}$

Q95

Two similar triangles are ΔABC and ΔLMN. If the area of $\Delta ABC = 25\ cm^2$, area of $\Delta LMN = 36\ cm^2$ and $BC = 2.5$ cm, then the measure of MN (in cm) is:

A. 2

B. 1

C. 4

D. 3 ✓

Q96

Evaluate: $\frac{1}{\left(\frac{3}{4}\right)+\left(\frac{4}{6}\right)} \div \frac{2}{15}$

A. $5\frac{2}{17}$

B. $5\frac{5}{17}$ ✓

C. $5\frac{4}{17}$

D. $5\frac{6}{17}$

Q97

The minimum value of $8x + 14 + 3x^2$ is:

A. $-\frac{28}{3}$

B. $8\frac{2}{3}$ ✓

C. $-8\frac{2}{3}$

D. $\frac{28}{3}$

Q98

If three cards are drawn one by one randomly from a pack of 52 cards, then what is the probability that three of them are jack?

A. $\frac{1}{5525}$ ✓

B. $\frac{3}{552}$

C. $\frac{3}{5525}$

D. $\frac{4}{555}$

Q99

Calculate the maximum velocity of the beam of electrons in a CRT having a cathode anode voltage of 182 V. Assume that the electrons to leave the cathode with zero velocity.
(Charge of electron = 1.6×10^{-19} C and mass of electron = 9.1×10^{-31} kg)

A. $1 \times 10^6\ \mathrm{m/s}$

B. $8 \times 10^6\ \mathrm{m/s}$ ✓

C. $2 \times 10^6\ \mathrm{m/s}$

D. $4 \times 10^6\ \mathrm{m/s}$

Q100

The value of

$$\sqrt{144} + \sqrt{0.0324} - \sqrt{6.76} =$$

A. 8.53

B. 9.58 ✓

C. 14.76

D. 2.7