



RRB JE Stage-1 Memory Based Mock

Q1. The value of
$$(\frac{32}{5}) \times$$
 92 + $(\frac{3}{5}) \times$ 2 is:

- (a) 401
- (b) 590
- (c) 812
- (d) 502

Q2. A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2, and so on, till the topmost floor is numbered 6. E lives on an odd-numbered floor but not on floor number 5. Only one person lives between E and C. D lives immediately above F. B lives on a lower floor than C. A does not live on the topmost floor. Who lives on the topmost floor?

- (a) B
- (b) A
- (c) D
- (d) C

Q3. The Vice-President of India is elected by the:

- (a) members of the houses of parliament and state legislative assemblies
- (b) members of the Rajya Sabha
- (c) members of the Lok Sabha
- (d) members of both houses of parliament

Q4. A novel based on the story of a family named 'Fasting, Feasting' was written by whom among the following?

- (a) Anita Desai
- (b) Arundhati Roy
- (c) Arvind Adiga
- (d) Kiran Desai

Q5. pH of milk of magnesia is _____.

- (a) 12
- (b) 8
- (c) 10
- (d) 14

Q6. In a certain code language, 'SATIN' is coded as '35247', 'SCARE' is coded as '26839', 'SOUT' is coded as '0341'. What can be the code for 'I' in that code language?

- (a) 3
- (b) 4
- (c) 2
- (d) 5





Q7.5 J A 8 K 6 G Y 0 C 1 6 5 9 N L E

U F

In the above series from left to right without changing the order the number of pairs of terms such that 1st is alphabet and 2nd is a number are:

- (a) 4
- (b) 1
- (c) 2
- (d) 3

Q8. Which of the following is a protein-splitting enzyme?

- (a) Ptyalin
- (b) Amylase
- (c) Lipase
- (d) Pepsin



Q9. Based on the position in the English alphabetical order, three of the following letter clusters are alike in some manner and one is different. Select the odd letter-cluster.

- (a) CEIO
- (b) VXBF
- (c) RTXD
- (d) UWAG

Q10. Solve the following.

3[35 + (45 + 10÷2×3÷2×3 - 50) + 5]
(a) 50
(b) 150
(c) 123
(d) 125

Q11. A train 180 m long is running at a speed of 90 km/h. How long will it take to pass a post?

- (a) 7 s (b) 7.8 s (c) 7.2 s
- (d) 5.5 s

Q12. Sunita is ranked 10th from the to and 18th from the bottom in her class. How many students are there in the class?

- (a) 30
- (b) 28
- (c) 29
- (d) 27





Q13. Match List - I with List - II and select the correct answer using the codes given below the lists: List-I

(Tributaries)	(Rivers)

List-II

- a. Betwa Chambal
- ii. Yamuna b. Kshipra
- c. Vainganga iii. Narmada

d. Tawa iv. Godavari

Codes:

	а	b	С	d
(a)	iii	iv	ii	i
(b)	ii	i	iv	iii
(c)	iii	iv	i	ii
(d)	i	iii	ii	iv
(a) a				
(b) b				
(c) c				

(d) d

Q14. As atomic number ____ and nuclear charge ____ the force of attraction between nucleus and valence electrons_____, hence, atomic radii__from Li to F.

- (a) increases, decreases, decreases, increases
- (b) increases, increases, increases, decreases
- (c) decreases, decreases, decreases, increases
- (d) increases, increases, decreases, decreases

Q15. Where is the respiratory pigment in human body present?

- (a) In red blood cells
- (b) In white blood cells
- (c) In blood plasma
- (d) In both plasma and white blood cells

Q16. An ice cream cone is to be made to have volume $\frac{128\pi}{3}$ and the height of the cone is double the radius of the cone. What is the slant height of the cone?

- (a) $\sqrt{40}$
- (b) √90
- (c) $\sqrt{60}$
- (d) √80





- Q17. Gandhi Sagar Dam is located on which river?
- (a) Chambal
- (b) Krishna
- (c) Tapti
- (d) Narmada

Q18. The given bar graph shows the number of students enrolled in Institutes A and B during 5 years (2018 to 2022).



What is the ratio of the total students enrolled in Institute B in 2019, 2020 and 2022 to that of the total students enrolled in Institute A in 2018, 2020 and 2021?

- (a) 37 : 28
- (b) 11 : 28
- (c) 28 : 11
- (d) 28 : 37

Q19. 'Mitra Yojana' is related to_____

- (a) Small Enterprise
- (b) Medium Enterprise
- (c) Large Enterprise
- (d) All of the above

Q20. In how many years will a sum of Rs. 10,000 become Rs. 13,310 at 10% compound interest per annum, compounded annually?

- (a) 5
- (b) 2
- (c) 4
- (d) 3





Q21. A train covers a certain distance in 20 hours. It travels half of the distance at a speed of 57 km/h and the other half at a speed of 95 km/h. Find the total distance covered by the train.

- (a) 1420 km
- (b) 1225 km
- (c) 1325
- (d) 1425 km

Q22. Find the value of (1-sinA) (1+sinA) (1+tan²A)

- (a) 1
- (b) sinA
- (c) 0
- (d) tanA

Q23. Which number will replace the question mark (?) in the following series ?

- 3, 7, 16, 35, ?, 153
- (a) 84
- (b) 74
- (c) 78
- (d) 63
- L1 Difficulty 2

Q24. In a row of 21 children facing North, Nitin is third to the right of Sita who is ninth from the right end of the row. What is Nitin's position from the left end?

- (a) 6th
- (b) 15th
- (c) 16th
- (d) 12th

Q25. Electric devices like laundry iron , electric toaster, electric oven, electric kettle and electric heater are based on which effect of electric current?

- (a) chemical effect
- (b) magnetic effect
- (c) physiological effect
- (d) heating effect

Q26. Which among the following is not a state election under the jurisdiction of the Election Commission of India?

- (a) Panchayat Elections
- (b) Presidential Elections
- (c) Assembly Elections
- (d) Elections for Legislative Councils





Q27. Current carriers in solid conductors are

- (a) Protons
- (b) Neutrons
- (c) Free Electrons
- (d) None of these

Q28. If a + b + c = 13 and ab + bc + ca = 45, find $a^2 + b^2 + c^2$.

- (a) 79
- (b) 65
- (c) 57
- (d) 85

Q29. Based on the position in the English alphabetical order, three of the following letter clusters are alike in some manner and one is different. Select the odd letter-cluster.

- (a) AZCX
- (b) FUHR
- (c) PKRI
- (d) MNOL

Q30. What is relative density of a substance?

- (a) Density of substance × density of water
- (b) Density of substance / density of water
- (c) Density of substance + density of water
- (d) Density of water / density of substance

Q31. Who won the 2023 Booker Prize for his novel 'Prophet Song'?

- (a) Paul Smith
- (b) John Thompson
- (c) Michael Johnson
- (d) Paul Lynch

Q32. Which disease is caused by the deficiency of protein in our body?

- (a) Kwashiorkor
- (b) Scurvy
- (c) Rickets
- (d) Beri Beri

Q33. In a group of seven friends Mysha, Myra, Heer, Tia, Yash, Sia and Aarav each has a different height. Sia is third tallest among her friends. Mysha is third shortest among the friends. Aarav is taller than Yash and Sia. Heer and Tia are shorter than Myra. Aarav is not the tallest in the group. Who is the tallest of them all?

- (a) Heer
- (b) Yash
- (c) Myra
- (d) Tia





Q34. A tank has three pipes: Pipe A can fill the tank in 27 hours Pipe B can fill the tank in 54 hours, and Pipe C can empty the tank in 54 hours. How much time will it take to fill the tank if all three pipes are opened together?

(a) 27 hours

- (b) 20 hours
- (c) 30 hours
- (d) 40 hours

Q35. The author of book 'The Guide' is

- (a) R.K. Laxman
- (b) R.K. Singh
- (c) R.K. Narayan
- (d) Raj Kapoor

Q36. The Committee which has recommended abolition of Tax Rebates under Section 88 of Income Tax Act of India, is :

- (a) Chelliah Committee
- (b) Kelkar Committee
- (c) Shome Committee
- (d) Rangarajan Committee

Q37. In a certain code language, 'VOCAL' is coded as '90327', 'WAVES' is coded as '31758', 'VOTED' is coded as '42631'. What is the code for 'E' in that code language?

- (a) 1
- (b) 5
- (c) 3
- (d) 7

Q38. Which scheme has the 'CM-KISAN Yojana' replaced in Odisha?

- (a) Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Yojana
- (b) Krushak Assistance for Livelihood and Income Augmentation (KALIA) scheme
- (c) Mukhyamantri Krishi Yojana
- (d) National Agriculture Market (eNAM)

Q39. A dealer allows 30% discount on the marked price of an item and still makes a profit of 10%. By how much percentage is the marked price more than the cost price (rounded off to two places of decimal)?

- (a) 57.14%
- (b) 26.67%
- (c) 33.33%
- (d) 45.45%





Q40. If a + b + c = 15 and ab + bc + ca = 22, then find the value of $a^2 + b^2 + c^2$.

- (a) 131
- (b) 141
- (c) 161
- (d) 181

Q41. Electron revolves around nucleus in orbits which have-

- (a) Infinite energy
- (b) Variable energy
- (c) Fixed energy
- (d) No energy

Q42. If 20 Coulombs of charge passes a point in a circuit in 1 second, what is the value of the current flowing?

- (a) 20 Ampere
- (b) 5 Ampere
- (c) 10 Ampere
- (d) 15 Ampere

Q43. If 25 people working 15 hours a day can complete 5 units of work in 8 days, how many days would be required by 12 persons to complete 10 units of work, working 20 hours a day?

- (a) 20 days
- (b) 25 days
- (c) 22 days
- (d) 24 days

Q44. In a certain code language, 'FEAR' is coded as 'JJEW'. What is the code for 'FLAT' in that code language?

- (a) JQEY
- (b) JQDY
- (c) JREZ
- (d) JQEZ

Q45. The present of which bacteria is an indicator of water pollution?

- (a) Mycobacterium tuberculosis
- (b) E. coil coliform
- (c) Salmonella typhi
- (d) Vibrio cholerae





Q46. AIDS virus destroys?

(a) Lymphocytes.

- (b) Monocytes.
- (c) Neutrophils.
- (d) Basophils.

Q47. If @ denotes \div , # denotes \times , \$ denotes + and % denotes -, then what will be the value of the following equation?

- **9 # 2 @ 2 \$ 9 % 9 =?** (a) 36 (b) 27 (c) 9 (d) 18
- Q48. Which Article of the Indian Constitution states that no citizen of India shall accept any title

from any foreign State?

- (a) Article 18 (3)
- (b) Article 18 (4)
- (c) Article 18 (2)
- (d) Article 18 (1)

Q49. Where was the 10,000th Jan Aushadhi Kendra inaugurated by Prime Minister Narendra Modi?

- (a) AIIMS, New Delhi
- (b) AIIMS, Bhopal
- (c) AIIMS, Jodhpur
- (d) AIIMS, Deoghar

Q50. A is the daughter-in-law of B. E is the brother of A. B has only one son, C. If D is the son of C, how is D related to A?

- (a) Son
- (b) Son's son
- (c) Brother
- (d) Son's wife

Q51. In a plant, the seed contains the embryo which develops into a seeding under appropriate conditions. the process is known as

- (a) pollination
- (b) germination
- (c) cross-pollination
- (d) transpiration





- **Q52.** A machine does 1000 J of work in 20 seconds. What is the power output of the machine? (a) 20 W
- (b) 50 W
- (c) 100 W
- (d) 200 W

Q53. The runs scored by 11 players in the cricket match are as follows.

7, 16, 121, 51, 101, 81, 1, 16, 9, 11, 16

Calculate the median of the data.

(a) 51

(b) 11

(c) 22

(d) 16

Q54. Six people Mia, Alexander, Sophia, Liam, Olivia, and Ethan are sitting on a circular table facing towards the centre. Mia sits to the immediate right of Ethan. Sophia sits opposite to Ethan. Alexander and Olivia sit opposite to each other and Alexander is not a neighbour of Liam. Who sits to the immediate right of Olivia?

- (a) Ethan
- (b) Alexander
- (c) Liam
- (d) Sophia

Q55. The male and female sex cells fuse to form a-

- (a) Gastrula
- (b) Zygote
- (c) Gamete
- (d) Blastula

Q56. The LCM of two numbers is 84. If the numbers are in the ratio2:3, then find the sum of the numbers.

- (a) 40
- (b) 70
- (c) 25
- (d) 60

Q57. Which one of the following is correct in respect of Article 41 (Right to work) under the Constitution of India?

(a) It is a Fundamental Duty

- (b) It is a Fundamental Right
- (c) It is a Directive Principle of State Policy
- (d) It was not in the original Constitution





Q58. Ten years ago, a mother was 3 times as old as her son. 5 years ago she was 5/2 times her son's age. What is her present age?

(a) 30 years

(b) 35 years

(c) 55 years

(d) 45 years

Q59. Which was the last country to join BRICS?

- (a) Russia
- (b) China
- (c) South Africa
- (d) India

Q60. Who was appointed as the Director General of Sashastra Seema Bal (SSB) in September 2024?

(a) Kuldee

Singh

(b) Amrit Mohan Prasad

- (c) Subodh Kumar Jaiswal
- (d) Rakesh Asthana

Q61. The average weight of a certain number of students in a grou

is 72 kg. If 10 students having an average weight of 74 kg leave and 4 students having an average weight of 76 kg join the group. the average weight of the students in the grou decreases by 0.2 kg. The number of students initially in the grou

is: (a) 26 (b) 23 (c) 25 (d) 24

Q62. The angles of a quadrilateral are in the ratio A :B :C : D = 1 : 2 : 3 : 4. Find the measure of angle D.

- (a) **124°**
- (b) **184°**
- (c) **144°**
- (d) **104°**

Q63. If θ =45°, then what will be the value of $\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta}$?

- (a) 1
- (b) ∞
- (c) -1
- (d) 0





Q64. Resistance (R) = Voltage(V)/____|

(a) Current (I)

(b) Power (P)

(c) Charge (Q)

(d) Work (J)

Q65. Which two signs should be interchanged to make the given equation correct? $98-49\div7+74\times55=3$

- (a) = and +
- (b) = and \div

(c) = and \times

(d) = and –

Q66. In **PQR**, QR is extended u

to S, so that RS = RP, If \square RPQ =55° and \square PRS =110°, then find the measure of \square PQS.

- (a) 55°
- (b) 65°
- (c) 15°
- (d) 75°

Q67. Which of the following DPS is categorised under Gandhian philosophy?

- (a) To secure opportunities for healthy development of children.
- (b) To protect and improve the environment and to safeguard forests and wild life.
- (c) Prohibition of slaughter of cows, calves and other milch and draught cattle and to improve their breeds.
- (d) To promote equal justice and to provide free legal aid to the poor.

Q68. The number of letters that are preceded by a symbol but not followed by a number in the given expression is_____.

\$M@A#N2B4O&3C5P+D2

- (a) 4
- (b) 3
- (c) 1
- (d) 2

Q69. In the reaction $2Mg + O_2 \rightarrow 2MgO$, which substance is reduced?

- (a) Mg
- (b) 0_2
- (c) MgO
- (d) None of the above





Q70. In an isosceles triangle, the length of the base is 56 cm, and each of the equal sides is 100 cm. Find the area of the triangle.

- (a) 2788 cm²
- (b) 2988 cm²
- (c) 2688 cm²
- (d) 2888 cm²





Find the difference between the number of computers sold for the year 2017 and 2021.

- (a) 25000
- (b) 20000
- (c) 10000
- (d) 15000





Q72. There are 1800 students in a college. The given pie-chart represents (in degrees) the number of students studying various subjects. Study the chart and answer the question below it.



Q73. What is the resistance of a wire?

- (a) The resistance of a wire is inversely proportional to its length.
- (b) The resistance of a wire is directly proportional to its length.
- (c) The resistance of a wire is inversely proportional to resistivity
- (d) The resistance of a wire is directly proportional to its cross-sectional area.

Q74. Select the correct combination of mathematical signs to sequentially replace the * signs and to balance the given equation.

98*49*7*74*55*3

- (a) ÷,-,+,×,= (b) -,÷,+,=,×
- (c) -,÷,+,×,=
- (d) ÷,-,×,+,=





Q75. Under whose presidency did the Indian National Congress declare Poorna Swaraj as its ultimate goal on December 19, 1929, at Lahore?

- (a) Subhash Chandra Bose
- (b) Jawahar Lal Nehru
- (c) Mahatma Gandhi
- (d) VD Savarkar

Q76. The total Surface area of a cylinder of radius 70 m and height 140 m, is :

- (a) 61,524 m²
- (b) 82,500 m²
- (c) 5124 m²
- (d) 92,400 m²

Q77. The equivalent fraction of 4.2222.... is:

- (a) 38/100
- (b) 38/9
- (c) 42/99
- (d) 422/99

Q78. Which of the following numbers will replace the question mark (?) in the given series? 6, 12, 24, 48, ?, 192

- (a) 72
- (b) 81
- (c) 64
- (d) 96

Q79. What is the power equivalent to 1 kW?

- (a) 1000 Watts
- (b) 100 Watts
- (c) 10000 Watts
- (d) 10 Watts

Q80. A fiscal deficit in the budget means

- (a) revenue deficit plus the net borrowings of the government.
- (b) The sum of budgetary deficit and a net increase in internal and external borrowing
- (c) capital deficit plus revenue deficit
- (d) primary deficit minus capital deficit





Q81. What will be the fourth next member of the homologous series of the compound propene?

- (a) C₇H₁₄
- (b) C_2H_4
- (c) C_6H_{12}
- (d) C_5H_8

Q82. Sodium carbonate is a basic salt, because it is a salt of-

- (a) Weak acid and strong base
- (b) Strong acid and strong base
- (c) Weak acid and weak base
- (d) Strong acid and weak base

Q83. Select the number from among the given options that can replace the question mark (?) in the following series.

- 2, 15, 41, 93, 197, (?)
- (a) 324
- (b) 405
- (c) 320
- (d) 534

Q84. Find the mode of the data 2, 2, 3, 5<mark>, 15, 15, 15, 20, 21, 2</mark>3, 25, 15, 23, 25

- (a) 21
- (b) 25
- (c) 23
- (d) 15
- Q85. In a certain code language, 'BED' is coded as '120', 'FAT' is coded as '360'. What is the code for 'DBY' in that code language?
- (a) 400
- (b) 500
- (c) 600
- (d) 450

Q86. The value of the gross investment in order to accommodate regular wear and tear of capital is called:

- (a) debt
- (b) deficit
- (c) new investment
- (d) depreciation





Q87. Moving Electric Charge produces -

- (a) Magnetic field
- (b) Sound waves
- (c) Light rays
- (d) Heat waves

Q88. If 0.75 : x :: 2.5 : 8, then the value of x will be equal to:

- (a) 1.5
- (b) 0.42
- (c) 0.50
- (d) 2.4

Q89. If the average of 6, 7, 12, (x - 1) and 10 is 10, then the value of x is:

- (a) 14
- (b) 12
- (c) 15
- (d) 16

Q90. Find the value of(a+b+c)²

(a) $a^{2} + b^{2} + c^{2} - 2ab + 2bc + 2ca$ (b) $a^{2} + b^{2} + c^{2} + 2ab + 2bc + 2ca$ (c) $a^{2} - b^{2} + c^{2} + 2ab + 2bc + 2ca$ (d) 0

Q91. According to Fleming's right-hand rule. the index finger and the central finger of the right hand represent directions of ______ and _____ respectively.

- (a) induced current, magnetic field
- (b) motion of the conductor, induced current
- (c) motion of the conductor, magnetic field
- (d) magnetic field, induced current

Q92. Silver chloride turns _____ in sunlight.

- (a) Orange
- (b) Grey
- (c) Red
- (d) White





Q93. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

Qorvsjlvyfn

N

M

- Qorvsjlvyfn (a)
- Qorlvyvsjfn _(d)
- (c) nłyvlizvroD
- ^(q) Qorvsjlvyfn

Q94. In the following question, select the related letter pair from the given alternatives.

DHKL: CGJK :: ? (a) NUWX: RUCN (b) ZUZY: ABOD (c) FXYI: EWXH

(d) TXZW: RULM

Q95. Triangle represents batsman, square represents all rounders and circle represents bowlers, so find the alphabet that represents only bowlers and only batsman.



(a) A and C
(b) A and B
(c) B and C
(d) A,B and C all.

Q96. Shruti departs from her home and walks 47 m towards the west. She then turns right and walks 18 m. She turns left and walks 53 m. She takes a final left turn and walks 30 m. How far is she from a pole which is exactly 12 m to the south of her home?

(Assume that all the turns are 90° turns only.)

- (a) 100 m
- (b) 105 m
- (c) 90 m
- (d) 110 m





Q97. Identify the INCORRECT relation between power (P), Current(I), Resistance (R) and potential difference (V).

- (a) $P=IR^2$
- (b) $P = \frac{V^2}{R}$
- (c) $P = I^2 R$
- (U) = U
- (d) P=VI

Q98. Who has been appointed as the chairman of MasterCard India from September 2023?

- (a) Narendra Singh
- (b) S.A. Panse
- (c) Rajnish Kumar
- (d) Sanjiv Misra

Q99. Calculate the simple interest on a sum of ₹4000 at a rate of 5.25% per annum for the period from 12th February to 12th April.

- (a) Rs.30.52
- (b) Rs.24.52
- (c) Rs.34.52
- (d) Rs.44.52

Q100. What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and '×' and '÷' are interchanged? 5 - 4 ÷ 9 + 80 × 10 = ? (a) 33

- (b) 30
- (c) 35
- (d) 31

Solutions

S1. Ans.(b) Sol. Given:

The value of
$$(\frac{32}{5}) \times$$
 92 + $(\frac{3}{5}) \times$ 2 = ?





Solution:

$$\left(\frac{32}{5}\right) \times 92 + \left(\frac{3}{5}\right) \times 2$$
$$=> \frac{1}{5}(32 \times 92 + 3 \times 2)$$
$$=> \frac{1}{5} \times 2950$$
$$=> 590$$

Thus, the required answer is 590.

S2. Ans.(c)

Sol. The given information systematically: E lives on an odd-numbered floor but not on floor number 5. Only one person lives between E and C. D lives immediately above F.

B lives on a lower floor than C.

A does not live on the topmost floor.

From the above following arrangement will be-

6	D
5	F
4	Α
3	С
2	В
1	Ε

From the above D lives on the topmost floor. Correct answer is (c) D.

S3. Ans.(d)

Sol. The Vice-President of India is elected by the members of both houses of parliament, not by the state legislative assemblies.

The Vice-President is not directly elected by the public but is chosen by an electoral college consisting of the following members:

1. **Members of the Rajya Sabha (Council of States): The** elected and nominated members of the Rajya Sabha, which is the upper house of the Parliament of India, participate in the Vice-Presidential election.

2. **Members of the Lok Sabha (House of the People):** The elected members and nominated members of the Lok Sabha, which is the lower house of the Parliament of India, also participate in the Vice-Presidential election.

The Vice-President serves as the ex-officio Chairman of the Rajya Sabha and plays a crucial role in the functioning of the upper house of parliament.

The Vice-President shall hold office for a term of five years from the date on which he enters upon his office. As per the Constitution of India, the age for a candidate contesting elections for the post of Vice-President should be atleast 35 years of age





S4. Ans.(a)

Sol. Correct Answer: (a) Anita Desai

Explanation: 'Fasting, Feasting' is a critically acclaimed novel written by **Anita Desai**. The novel explores the cultural dichotomy between India and the West through the lives of an Indian family and an American family. It vividly depicts themes of family dynamics, societal norms, gender roles, and individual aspirations. Published in 1999, it was shortlisted for the Booker Prize in 1999 and is considered one of Desai's finest works.

Information Booster:

Anita Desai is a celebrated Indian author and has been shortlisted for the Booker Prize multiple times. 'Fasting, Feasting' captures the emotional struggles within traditional Indian families.

The novel contrasts the lives of two siblings, Uma and Arun, reflecting cultural and gender disparities. Anita Desai has also written other notable works such as 'Clear Light of Day' and 'In Custody.'

Arundhati Roy: Famous for her novel 'The God of Small Things,' which won the Booker Prize in 1997.

Arvind Adiga: Known for his debut novel 'The White Tiger,' which won the Booker Prize in 2008. **Kiran Desai**: Anita Desai's daughter, author of 'The Inheritance of Loss,' which won the Booker Prize in 2006.

S5. Ans.(c)

Sol. Magnesium hydroxide is a weak base and has a pH of 10.

• Milk of magnesia is a suspension of magnesium hydroxide in water.

• However, the pH of the milk of magnesia is slightly higher than the pH of magnesium hydroxide due to

the presence of other alkaline compounds in the suspension.

• It is used as an antiacid.

S6. Ans.(d)

Sol. Given:

1. 'SATIN' is coded as '35247' 2. 'SCARE' is coded as '26839' 3. 'SOUT' is coded as '0341' From 1 and 2 the code of S & A = 3 & 2 From 1 and 3 the code of T = 4 Thus, the code of I will be 5 or 7. From the given option 7 is not present.

Therefore, the correct answer is (d) 5.

S7. Ans.(a)

Sol. 4 such pairs are possible which are A8, K6 Y0 and C1.

S8. Ans.(d)

Sol. The correct option is D

Pepsin is a protein-digesting enzyme found in the stomach. It is secreted by the gastric glands in an inactive form called **pepsinogen**.

When exposed to hydrochloric acid (HCl) in the stomach, pepsinogen is converted into active pepsin.





Pepsin breaks down proteins into smaller peptides, which are further digested in the small intestine by other enzymes.

Other Options Analysis:

Ptyalin: Found in saliva, also known as **salivary amylase**, it breaks down carbohydrates into maltose, not proteins.

Amylase: Found in both saliva (ptyalin) and pancreatic juice, amylase breaks down starch into simple sugars like maltose and dextrin.

Lipase: An enzyme that breaks down fats (lipids) into glycerol and fatty acids. It does not act on proteins.

S9 .	Ans.(b)
Sol	_

1	2	3	4	5	6	7	8	9	10	11	12	13
A	В	С	D	Е	F	G	Н	I	J	К	L	М
z	Y	x	w	v	U	Т	S	R	Q	Р	0	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Concept:

+2, +4, +6 pattern follows

Explanation:

Except option B, all follow the same pattern.

С	+2	E	+4	Ι	+6	0
۷	+2	х	+4	В	+4	F
R	+2	Т	+4	Х	+6	D
U	+2	W	+4	А	+6	G

S10. Ans.(b) Sol. Given :

$$3\left[35 + \left(45 + \frac{10}{2} \times 3 - 50\right) + 5
ight]$$

Concept Used:

Operation preference wise	Symbol
Brackets	[],,()
Orders, of	$^{2}(\text{power}),\sqrt{(\text{root})},\text{of}$
Division	-
Multiplication	×
Addition	+
Subtraction	—



Solution:

$$3 \left[35 + \left(45 + \frac{10}{2} \times 3 - 50 \right) + 5 \right]$$

$$= 3 \left[35 + (10) + 5 \right]$$

$$= 3 \left[50 \right]$$

$$= 3 \times 50$$

$$= 150$$
Solution:
Speed of the train (distance) = 180 meters
Speed of the train = 90 km/h
Formula Used:
Time = $\frac{\text{Distance}}{\text{Speed}} = 25 \text{ m/s}$
Now:
Time = $\frac{\text{Distance}}{\text{Speed}} = \frac{180 \text{ m}}{25 \text{ m/s}} = 7.2 \text{ seconds}$
Level to the train 7.2 seconds to pass a post.

S12. Ans.(d)

Sol. Given: Sunita's rank from the to = 10th Sunita's rank from the bottom = 18th The formula to find the total number of students when a student's position from both the to and bottom is known is: Total number of students=(Rank from top+Rank from bottom)-1 **Calculation:** Total number of students=(10+18)-1=28-1=27Correct Answer: (d) 27









S13. Ans.(b)

501.	
Tributary	River
a. Betwa	ii. Yamuna
b.Kshipra	i. Chambal
c. Vainganga	iv. Godavari
d. Tawa	iii. Narmada

S14. Ans.(b)

Sol. As the **atomic number increases** and the **nuclear charge increases** across a period (from Li to F), the **force of attraction between the nucleus and the valence electrons becomes stronger.** This stronger attraction pulls the electrons closer to the nucleus, **thereby decreasing the atomic radii**. However, as the nuclear charge increases, it effectively reduces the size of the atom (atomic radii decreases) because the electrons are drawn more tightly to the nucleus, despite the number of electron shells remaining the same. This is why the atomic radii decreases from Li to F.

Important Key Points:

1. **Atomic number** increases across a period from left to right, which means more protons are present in the nucleus.

2. **Nuclear charge** increases with the increase in atomic number, resulting in a stronger attraction between the nucleus and electrons.

3. As the nuclear charge increases, the attraction between the nucleus and the valence electrons becomes stronger, causing the electrons to be pulled closer to the nucleus.

4. Despite an increase in electrons, the atomic size decreases because of the stronger effective nuclear charge (Z_eff).

5. The atomic radii trend is consistent across periods in the periodic table: atomic radii generally decrease as you move from left to right.

6. This effect is crucial for understanding other trends, such as ionization energy, electron affinity, and electronegativity.

Effective nuclear charge (Z_eff) is a key factor in determining atomic size. It increases across a period, leading to a stronger pull on electrons, which decreases atomic radii.

Trends in atomic radii are important for understanding periodic trends in chemistry, such as the reactivity and bonding characteristics of elements.

S15. Ans.(a)

Sol. Sol: The correct answer is (a) In red blood cells

Key Points:

Red blood cells:

The primary respiratory pigment in the human body is **hemoglobin**. Hemoglobin is a protein that is found in red blood cells (RBCs) and is responsible for transporting oxygen from the lungs to the rest of the body and returning carbon dioxide from the tissues back to the lungs.





In Red Blood Cells (RBCs): Hemoglobin is present in large quantities in red blood cells, giving them their characteristic red color. Each hemoglobin molecule can bind to four oxygen molecules, enabling efficient oxygen transport.

Role of Hemoglobin:

o **Oxygen Transport**: Hemoglobin binds to oxygen in the lungs, forming oxyhemoglobin. This oxygenated form is transported via the bloodstream to various tissues, where it releases the oxygen for cellular respiration.

o **Carbon Dioxide Transport**: Hemoglobin also assists in transporting some of the carbon dioxide produced by tissues back to the lungs for exhalation.

Information booster:

white blood cells (WBCs):

White blood cells are involved in the immune response and do not contain hemoglobin or other respiratory pigments.

Blood plasma:

Blood plasma is the liquid component of blood and does not contain significant amounts of respiratory pigments. It primarily transports nutrients, hormones, and waste products.

In both plasma and white blood cells:

Neither blood plasma nor white blood cells contain hemoglobin.

S16. Ans.(d) Sol. Given: Volume of cone = $\frac{128\pi}{3}$ cm³ Height of cone =double its radius Formula Used: Slant height =l = $\sqrt{r^2 + h^2}$ Volume of cone= $\frac{1}{3} \times \pi \times r^2 \times h$ Solution: Volume of cone= $\frac{1}{3} \times \pi \times r^2 \times h = \frac{128\pi}{3}$ $\frac{1}{3} \times \pi \times r^2 \times 2r = \frac{128\pi}{3}$ $2r^3 = 128$ $r^3 = 64$ r = 4cmHeight = 2r = 8cm



Slant height = $l = \sqrt{r^2 + h^2}$



$$l = \sqrt{4^2 + 8^2}$$

 $l = \sqrt{80}$ cm

S17. Ans.(a)

Sol. The Gandhi Sagar Dam is located on the Chambal River, which is a tributary of the Yamuna River. The dam is situated in the Mandsaur district of Madhya Pradesh, India. So, the correct answer is (a) Chambal. The Gandhi Sagar Dam is one of the four major dams built on India's Chambal River. The other three are - Rana Prata

Sagar Dam, Jawahar Sagar Dam, and the Kota Barrage.

S18. Ans.(a)

Sol. Solution:

Total students enrolled in Institute B in 2019, 2020, and 2022 = 350 + 375 + 200 Total students enrolled in Institute B in 2019, 2020, and 2022 = 925 Total students enrolled in Institute A in 2018, 2020, and 2021 = 150 + 300 + 250 Total students enrolled in Institute A in 2018, 2020, and 2021 = 700

Ratio = $\frac{925}{700} = \frac{37}{28} = 37:28$

S19. Ans.(a)

Sol. 'Mitra Yojana' is a scheme specifically designed to support and develo small enterprises, providing them with financial and technical assistance.



Where, A = Amount, C.I = Compound Interest, = Principle, r = Rate of interest and n = Time. Calculation:

$$=> 13310 = 10000(1 + \frac{10}{100})^{n}$$
$$=> \frac{13310}{10000} = (\frac{11}{10})^{n}$$





$$=>(\frac{11}{10})^3=(\frac{11}{10})^n$$

=> n = 3 Hence, after **3 years** the sum of Rs. 10,000 become Rs. 13,310.

S21. Ans.(d) Sol. Solution: Let the total distance = 2x According to the question $\frac{x}{57} + \frac{x}{95} = 20$ $\frac{5x + 3x}{285} = 20$ hours

 $8 \mathrm{x} = 20 \times 285$

x = 712.5Total distance = 2x = 1425 km

S22. Ans.(a)

```
Sol. Solution:

(1 - \sin A)(1 + \sin A)(1 + \tan^2 A)

= (1 - \sin^2 A)(1 + \tan^2 A)

= \cos^2 A \cdot \sec^2 A

= \frac{\cos^2 A}{\cos^2 A}

= 1
```

S23. Ans.(b) Sol. $3 \times 2 + 1 = 7$ $7 \times 2 + 2 = 16$ $16 \times 2 + 3 = 35$ $35 \times 2 + 4 = 74$ $74 \times 2 + 5 = 153$





S24. Ans.(c)

Sol. Sita is ninth from the right end of the row of 21 children. Therefore, her position from the left end is 21–9+1=13 (since there are 21 children in total). Nitin's Position Relative to Sita: Nitin is third to the right of Sita. Since Sita is in the 13th position, Nitin's position from the left is: 13+3=16 So, Nitin's position from the left end is 16th. The correct option is (c) 16th.

S25. Ans.(d)

Sol. Correct Answer:D. Heating Effect Explanation:

Electric devices such as laundry irons, electric toasters, ovens, kettles, and heaters work on the **heating effect of electric current**. This effect occurs when an electric current passes through a conductor, causing it to resist the flow of electrons and produce heat.

Key Points:

Joule's Law of Heating: The heat (H) produced in a conductor is given by:

H=I²Rt

where:

o I = current

o R = resistance of the conductor

ot = time duration

Applications in Devices:

o **Electric iron and toaster:** Convert electrical energy into heat to perform tasks like ironing clothes and toasting bread.

o Electric oven and kettle: Use heating elements to cook food or boil water.

o Electric heater: Generates heat to warm spaces.

Other Options:

Chemical Effect: Observed in processes like electrolysis, not relevant to these devices.

Magnetic Effect: Involves the creation of a magnetic field around a current-carrying conductor, used in motors or transformers, not heating devices.

Physiological Effect: Relates to the effect of electric current on the human body, not applicable here.

S26. Ans.(a)

Sol. The correct answer is (a)

Panchayat Elections are conducted by the respective State Election Commissions in accordance with the provisions of the state laws. The Election Commission of India is not responsible for the superintendence, direction, and control of these elections.





S27. Ans.(c)

Sol. In solid conductors, the current carriers are free electrons. These electrons move through the lattice structure of the conductor, creating an electric current when a potential difference is applied. Important Key Points:

- 1. Free electrons in metals like copper and aluminum conduct electricity efficiently.
- 2. The flow of free electrons constitutes the electric current in a conductor.
- 3. The conductivity of a material depends on the number of free electrons available.
- 4. Insulators have very few free electrons, making them poor conductors. Information Booster:
- Protons: Positively charged particles found in the nucleus, do not move freely in conductors.
- Neutrons: Neutral particles in the nucleus, do not contribute to electrical conductivity.
- None of these: Not applicable as free electrons are the correct carriers.

S28. Ans.(a)

Sol.

 $(a + b + c)^{2} = a^{2} + b^{2} + c^{2} + 2ab + 2bc + 2ca$ (13)² = a² + b² + c² + 2(45) 169 - 90 = a² + b² + c² a² + b² + c² = 79

S29. Ans.(b)

Sol.

1	2	3	4	5	6	7	8	9	10	11	12	13	
A	В	С	D	E	F	G	н	I	J	К	L	М	
Z	Y	x	w	v	U	Т	s	R	Q	Р	0	N	
26	25	24	23	22	21	20	19	18	17	16	15	14	

Concept:

first and second letters are opposite letters. Third and fourth letters are opposite letters.

Explanation:

By option (a) AZCX A and Z are opposite letters. C and X are opposite letters. By option (b) FUHR F and U are opposite letters. H and R are not opposite letters. By option (c) PKRI





and K are opposite letters. R and I are opposite letters. By option (c) MNOL M and N are opposite letters. O and L are opposite letters. Thus, correct option is (b).

S30. Ans.(b)

Sol. The correct answer is (b) Density of substance / density of water.

Relative density of a substance is defined as the **ratio of the density of the substance to the density of water**. It is a dimensionless quantity, as it represents a comparison between two densities. Relative Density=

Information Booster:

Relative density is used to compare how dense a substance is relative to water.

If the relative density is greater than 1, the substance is denser than water; if it is less than 1, the substance is less dense than water.

S31. Ans.(d)

Sol. The answer is (d) Paul Lynch.

• Irish author Paul Lynch won the 2023 Booker Prize for his fifth novel, "Prophet Song." The novel is set in an imagined Ireland that is descending into tyranny.

• It tells the story of a family as they try to survive in this oppressive regime.

Some Additional Facts:

• Last year, Shehan Karunatilaka won the Booker prize for 'The Seven Moons of Maali Almeida,' whose story centres on Sri Lankan civil war.

• Lynch is the fifth Irish author to win the prize while the last Irish writer Anna Burns won the award in 2018. Booker Prize is awarded to the best novel of fiction written in English and published in UK and Ireland.

S32. Ans.(a)

Sol. The correct answer is (a) Kwashiorkor.

Kwashiorkor: A nutritional disorder that causes fluid retention and a swollen abdomen.

It's also known as "edematous malnutrition". People with kwashiorkor are often emaciated, except for their ankles, feet, and belly, which swell with fluid.

Information Booster:

Scurvy is a disease caused by a lack of vitamin C in the diet over a long period of time. Rickets is a bone disease th

t causes children to have soft and weak bones, which can lead to bone deformities.

Beriberi is a disease caused by a deficiency of thiamine, or vitamin B1, that can affect the heart and nervous system.





S33. Ans.(c)

Sol. Given: Seven friends Mysha, Myra, Heer, Tia, Yash, Sia, and Aarav are comparing their heights. To determine who is the tallest among the friends, let's analyze the given information step-by-ste and arrange their heights in order: No two friends are of the same height. 1) Sia is the third tallest among her friends. _>_> Sia >_>_>_ 2) Mysha is the third shortest among the friends. _> _> Sia > _> Mysha > _> _ 3) Aarav is taller than Yash and Sia. 4) Aarav is not the tallest in the group. Case 1: > Aarav > Sia > Yash > Mysha > > Case II: _ > Aarav > Sia > _ > Mysha > Yash > _ Case III: _ > Aarav > Sia > _ > Mysha > _ > Yash 5) Heer and Tia are shorter than Myra. Case I: Myra > Aarav > Sia > Yash > Mysha > Heer/Tiya > Tiya/Heer Case II: Myra > Aaray > Sia > Heer/Tiya > Mysha > Yash > Tiya/Heer Case III: Myra > Aarav > Sia > Heer/Tiya > Mysha > Tiya/Heer > Yash So, 'Myra' is the tallest person. Correct answer is (c) Myra S34. Ans.(a) Sol. Solution: Let the capacity of tank = 54 unit Then efficiency of $A = \frac{54}{27} = 2 \text{ unit/hours}$ efficiency of B = 54/54 = 1 unit/day efficiency of C = 54/54 = 1 unit /day They will together fill the tank = $\frac{54}{2+1-1} = 27$ hours

S35. Ans.(c)

Sol. • The Guide is a novel written by the Indian author, R. K. Narayan. It was published in 1958.

- The novel focuses on the protagonist, a tour guide and his journey into becoming a spiritual guide.
- The novel won the Sahitya Akademi Award in 1960.

S36. Ans.(b)

Sol. The Task Force on Direct Taxes under the chairmanshi

of Dr. Vijay L. Kelkar made recommendation for elimination of tax incentives under Section 88, 80L and interest income under Section 10 of the Income Tax Act. This Task Force presented its final report in December, 2002.





S37. Ans.(a)

Sol. Given:
1. 'VOCAL' is coded as '90327'
2. 'WAVES' is coded as '31758'
3. 'VOTED' is coded as '42631'
From 1 and 2 alphabet a is common and in the code 3 is common. Similarly, in 2 and 3 E is common and in the code 1 common.
Thus, the correct answer is (a) 1.

S38. Ans.(b)

Sol. The correct answer is (b) **Krushak Assistance for Livelihood and Income Augmentation (KALIA) scheme**.

The Odisha government has replaced the KALIA scheme with the **CM-KISAN Yojana** to streamline financial support for small, marginal, and landless farmers. Under CM-KISAN, eligible farmers receive financial assistance of ₹4,000 annually in two installments, while landless farmers are provided ₹12,500 in three installments. This initiative aims to cover those not benefiting from the **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)** scheme, ensuring broader coverage across Odisha.

Information Booster:

KALIA Scheme: Launched in 2018, aimed at providing financial aid to farmers for cultivation and livelihood support.

CM-KISAN Yojana: Focuses on similar objectives but offers revised financial assistance amounts and covers new beneficiaries.

PM-KISAN: A central government scheme providing ₹6,000 annually to eligible farmers across India in three installments.

Landless Farmers: In CM-KISAN, they receive enhanced benefits compared to the earlier KALIA scheme.

S39. Ans.(a)

```
Sol. Given:

Discount on marked price = 30%

Profit = 10%

Formula Used:

Selling Price (SP) = M

- Discount

S

= C

+ Profit

the percentage difference between M

and CP:

= \frac{MP - CP}{CP} \cdot 100
```



Solution:

 $\texttt{Discount} = 30\% \, \mathrm{of} \, \mathrm{MP} = 0.3 \cdot \mathrm{MP}$

Profit = 10% of $CP = 0.1 \cdot CP$

Selling Price (SP) = MP - 0.3MP = 0.7MP

So,

 $0.7\,\mathrm{MP}\,=\mathrm{CP}\,+0.1\,\mathrm{CP}$

 $0.7 \,\mathrm{MP} = 1.1 \,\mathrm{CP}$

$$MP = \frac{1.1CP}{0.7} \\ = \left(\frac{1.1}{0.7} - 1\right) \cdot 100 \approx 57.14\%$$

Alternate Method:

 $\frac{\text{MP}}{\text{CP}} = \frac{100 + \text{profit\%}}{100 - \text{discount\%}}$ $\frac{\text{MP}}{\text{CP}} = \frac{100 + 10}{100 - 30}$ $\frac{\text{MP}}{\text{CP}} = \frac{110}{70}$

 $\frac{\mathrm{MP}}{\mathrm{CP}} = \frac{11}{7}$

Now, Percentage difference $=\frac{4}{7} \times 100 \approx 57.14\%74$

S40. Ans.(d)

Sol. $(a + b + c)^{2} = a^{2} + b^{2} + c^{2} + 2(ab + bc + ca)$ $15^{2} = a^{2} + b^{2} + c^{2} + 2(22)$ $a^{2} + b^{2} + c^{2} = 225 - 44 = 181$

S41. Ans.(c)

Sol. The correct answer is (c) Fixed energy.

Electrons revolve around the nucleus in **specific orbits or shells** that have **fixed energy levels**. This concept is based on **Bohr's model of the atom**, which states that electrons can only occupy certain energy levels, not in between them.









These fixed energy levels prevent the electrons from spiraling into the nucleus, as they maintain a stable orbit.

When an electron moves between orbits, it absorbs or releases energy equal to the difference between the two energy levels.

Information Booster:

Energy Levels or Shells: These are denoted as **K**, **L**, **M**, **N** shells, where K has the lowest energy and is closest to the nucleus.

Quantum Jump: When electrons move between energy levels, they **absorb or emit photons** corresponding to the energy gap.

Bohr's Postulate: This model of fixed energy orbits explains atomic stability and the emission spectrum.

Stationary States: These fixed orbits are also known as **stationary states** because electrons do not lose energy while in a stable orbit.

S42. Ans.(a)

Sol. The correct answer is (a) 20 Ampere.

Current (I) is defined as the rate of flow of electric charge and is calculated using the formula:

I=

where:

I is the current in **amperes (A)**,

Q is the charge in **coulombs (C)**, and

t is the time in **seconds (s)**.

In this case:

Q=20 Coulombs

t=1second

Applying the formula:

I==20A

Hence, the current flowing through the circuit is **20 Amperes**.

Information Booster:

Current (I): The flow of electric charge, measured in amperes (A).

Coulomb (C): The unit of electric charge.

Ampere (A): The unit of current, defined as one coulomb per second.

Formula: I=Qt, where Q is charge in coulombs and t is time in seconds.

Electric Charge Flow: Current is the movement of electric charges through a conductor, such as a wire.

S43. Ans.(b)

Sol. Given:

25 people working 15 hours a day can complete 5 units of work in 8 days

Formula Used:

$$\frac{M_1 \times D_1 \times H_1}{W_1} = \frac{M_2 \times D_2 \times H_2}{W_2}$$

where M, D, H, and W is the number of men, days, hours, and amount of work respectively.





Solution:

=> Let the number of days required to complete the task by 12 people, working 20 hours per day isD2D2

 $\frac{\frac{M_1 \times D_1 \times H_1}{W_1}}{\frac{25 \times 8 \times 15}{5}} = \frac{\frac{M_2 \times D_2 \times H_2}{W_2}}{\frac{12 \times D_2 \times 20}{10}}$ D₂ = 25 days

S44. Ans.(a)

Sol. Given:

'FEAR' is coded as 'JJEW'

1	2	3	4	5	6	7	8	9	10	11	12	13
Α	В	С	D	Е	F	G	Н	Ι	J	К	L	М
z	Y	x	w	v	U	Т	S	R	Q	Р	0	N
26	25	24	23	22	21	20	19	18	17	16	15	14

 $F \rightarrow J$ (Shift of +4)

 $E \rightarrow J$ (Shift of +5)

 $A \rightarrow E$ (Shift of +4)

 $R \rightarrow W$ (Shift of +5)

It appears that the letters alternate between a shift of +4 and +5.

let's apply it to each letter in "FLAT":

- $F \rightarrow J$ (Shift of +4)
- $L \rightarrow Q$ (Shift of +5)
- $A \rightarrow E$ (Shift of +4)
- $T \rightarrow Y$ (Shift of +5)

Thus, the code for "FLAT" is JQEY. Correct answer is (a) JQEY.

S45. Ans.(b) Sol. (b) E. coli coliform Explanation:

The presence of **E. coli (Escherichia coli)**, a type of coliform bacteria, is a strong indicator of water pollution, particularly contamination from fecal matter. E. coli is commonly found in the intestines of warm-blooded animals, including humans. Its presence in water suggests contamination from sewage or animal waste, which may also carry harmful pathogens.

Other bacteria like **Mycobacterium tuberculosis**, **Salmonella typhi**, and **Vibrio cholerae** are diseasecausing agents but are not specifically used as indicators of water pollution. These bacteria may be present in polluted water, but E. coli is the standard indicator due to its higher association with fecal contamination.





Important Key Points:

1. E. coli is a primary indicator of fecal contamination in water.

2. Its presence suggests possible pathogens like viruses, bacteria, and parasites in water.

3. Regular testing for E. coli helps monitor water quality and safety.

4. Salmonella and Vibrio cholerae cause diseases but are not standard indicators of water pollution.

5. **Coliform bacteria** are used as general indicators of water pollution.

6. Clean water standards require the absence of E. coli in drinking water.

Information Booster:

Mycobacterium tuberculosis: Causes tuberculosis, typically affecting the lungs.

Salmonella typhi: Causes typhoid fever, commonly spread through contaminated food or water.

Vibrio cholerae: Causes cholera, often contracted by drinking contaminated water.

S46. Ans.(a)

Sol. AIDS virus destroys the T. Lymphocytes belong to a grou

of white blood cells known as lymphocytes that play a central role in cell – mediated immunity.

S47. Ans.(c)

Sol. Given: @ denotes ÷, # denotes ×, \$ denotes + and % denotes –

Logic: interchange symbols by mathematical operators and solve as per BODMAS rule.

Operation preference wise	Symbol	
Brackets	[],,()	
Orders, of	(power), $\sqrt{(\text{root})}$, of	
Division		
Multiplication	×	
Addition	+	
Subtraction	_	
Given: 9 # 2 @ 2 \$ 9 % 9 After interchanging, =9 × 2 ÷ 2 + 9 – 9	dda	247

=9

Thus, option C is correct.

S48. Ans.(c)

Sol. Article 18 (2) of the Indian Constitution specifically states that **no citizen of India shall accept any title from any foreign State**.

This provision is part of the broader Article 18, which deals with the abolition of titles, reflecting India's commitment to equality and the rejection of practices that could promote social hierarchies. Additional Information

Article 18:

(1): Prohibits the state from conferring any titles except military or academic distinctions.

(2): Prohibits Indian citizens from accepting titles from foreign states.

(3): States that a foreigner holding an office of profit or trust under the state cannot accept a title without the President's consent.





(4): Prohibits persons holding office of profit or trust under the state from accepting gifts, emoluments, or titles from a foreign state without the President's consent.

Purpose: The abolition of titles under Article 18 ensures equality among citizens by eliminating symbols of privilege or hierarchy that titles might convey.

Other Options

Article 18 (3): Incorrect. This clause restricts foreigners serving under the Indian government from accepting titles without presidential consent.

Article 18 (4): Incorrect. This clause relates to gifts or emoluments from foreign states, not titles for Indian citizens.

Article 18 (1): Incorrect. This clause prohibits the Indian state from conferring hereditary titles but does not address titles from foreign states.

S49. Ans.(d)

Sol. The answer is (d) AIIMS, Deoghar

• The 10,000th Jan Aushadhi Kendra was inaugurated by Prime Minister Narendra Modi at AIIMS, Deoghar. This inauguration marked a significant milestone in the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP), an initiative aimed at providing quality medicines at affordable prices to the masses through special kiosks known as Jan Aushadhi Kendras.

• These Kendras are set u

to sell generic drugs, which are available at lesser prices but are equivalent in quality and efficacy as expensive branded drugs

About Jan Aushadhi Kendra:

• Jan Aushadhi Kendra is a chain of pharmacies owned and operated by the Government of India under the Ministry of Chemicals and Fertilizers. These pharmacies offer generic medicines at significantly lower prices compared to branded drugs.

• The Jan Aushadhi Kendras were launched in 2014 under the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) scheme. The scheme aims to make essential medicines affordable and accessible to all citizens.

• The Jan Aushadhi Kendras offer a wide range of generic medicines, including those for common ailments such as fever, cough, cold, and pain. They also offer medicines for chronic diseases such as diabetes, hypertension, and heart disease.

• The prices of generic medicines at the Jan Aushadhi Kendras are u

to 80% lower than the prices of branded drugs. This makes them a more affordable option for people who are struggling to afford healthcare.

S50. Ans.(a)Sol. Given:A is the daughter-in-law of B.E is the brother of A.B has only one son C.From the given information following family diagram cab be drawn-







From the above diagram D is the son of A. correct answer is (a) Son.

S51. Ans.(b)

Sol. CORRCT OPTION - B

In a plant, the seed contains the embryo, which develops into a seedling under appropriate conditions. The process is known as germination. During germination, the seed absorbs water, swells, and breaks the seed coat. This triggers the growth of the embryo into a seedling, which eventually grows into a mature plant. **Pollination -** Pollination is the process by which pollen from the male part of a flower (anther) is transferred to the female part (stigma). This enables fertilization, leading to the production of seeds for plant reproduction

Cross-pollination-Cross-pollination occurs when pollen from the male part of one flower is transferred to the female part of a different flower, typically of the same species. This enhances genetic diversity and leads to the production of viable seeds.

Transpiration - Transpiration is the process by which plants lose water vapor through small pores called stomata on their leaves. It helps regulate water balance, cools the plant, and enables the uptake of nutrients from the soil.

S52. Ans.(b)

Sol. The correct option is (b) 50 W To calculate the power output of the machine, we can use the formula: Power = Work / Time **where:** Work = 1000 J (joules) Time = 20 seconds





Now, plug in the values:

Power = 1000 J / 20 s Power = 50 W (watts) The power output of the machine is 50 watts. So, the correct option is (b) 50 W.

S53. Ans.(d)

Sol.

Given:

Runs scored by 11 players: 7, 16, 121, 51, 101, 81, 1, 16, 9, 11, 16

Formula Used:

For odd number terms;

Median term = $\frac{n+1}{2}$

Where, n is the number of terms given,

Solution:

Arranging the data in ascending order:

1, 7, 9, 11, 16, 16, 16, 51, 81, 101, 121

The number of terms n = 11 (odd), so

Median term = $\frac{11+1}{2}$ = 6t

The 6th term in the ordered data is 16. Thus, The median of the data is 16.

S54. Ans.(a) Sol. Given:

Six people Mia, Alexander, Sophia, Liam, Olivia, and Ethan.

Alexander and Olivia sit opposite to each other and Alexander is not a neighbour of Liam. Mia sits to the immediate right of Ethan.

Sophia sits opposite to Ethan.

From the above information following seating arrangement will be -



From the above seating arrangement Ethan sits to the immediate right of Olivia. Correct answer is (a) Ethan.





S55. Ans.(b)

Sol. The correct answer is (b) Zygote.

When **male and female sex cells** (sperm and egg) fuse, they form a **zygote**.

This process, known as fertilization, marks the beginning of the development of a new organism.

Information Booster:

Gastrula: An early developmental stage that forms after the zygote undergoes several cell divisions and forms a blastula.

Gamete: Refers to the sex cells themselves (sperm and egg), not the fused cell.

Blastula: A later stage in embryonic development, formed from the zygote after multiple cell divisions.

S56. Ans.(b)

Sol. Given: LCM of two numbers is 84 Numbers are in the ratio 2:3 Formula used:

LCM (a, b) = $\frac{a \times b}{GCD(a, b)}$

Solution:

Let the two numbers be a and b. Since the numbers are in the ratio 2:3, we can express them as: a = 2k and b = 3k the

```
LCM is 84. So,

LCM(2k,3k) = 84

\frac{(2k) \times (3k)}{k} = 84
\frac{6k^2}{k} = 84
6k = 84
k = 14
substitute k = 14 into the expression for a and b

a = 2k = 2 \times 14 = 28
b = 3k = 3 × 14 = 42

The sum of the numbers a and b is

28 + 42=70

The sum of the numbers is 70.

Thus, correct option is (b)

aa BBBis:
```

\$57. Ans.(c)

Sol. The correct answer is option (c) It is a Directive Principle of State Policy.

Article 41 is part of the Directive Principles of State Policy (DPSP), which are guidelines for the state to ensure social and economic justice. These principles are not justiciable, meaning they cannot be enforced by courts, but they serve as important guiding principles for governance and policy-making.





Information Booster:-

Right to Work: Article 41 recognizes the right to work as essential for human dignity and economic independence. It obligates the state to create conditions that facilitate employment opportunities.

Right to Education: While education is also addressed under Article 21A as a fundamental right, Article 41 reinforces the state's duty to ensure access to quality education for all citizen

Public Assistance: The article mandates that the state provide assistance in cases of unemployment, old age, sickness, disablement, and other forms of undeserved want.

S58. Ans.(c)

Sol. Given:

Ten years ago, a mother was 3 times as old as her son. 5

Five years ago, she was $\frac{5}{2}$ times her son's age.

Solution:

Let M be the mother's current age Let S be the son's current age Ten years ago: Mother's age:M-10 Son's age:S-10 So, M - 10 = 3(S - 10).....(1)Five years ago:

Mother's age: M-5

```
Son's age: S-5
```

So,

$$M-5 = \frac{5}{2}(S-5)$$

M - 10 = 5S - 302(M - 5) = 5(S - 5)

From equation 1, we can express M in terms of S:

M = 3S - 20

Substituting this into equation 2:

$$2(3S - 20 - 5) = 5(S - 5)$$

6S - 50 = 5S - 25

S = 25

Now, substitute S = 25 into the equation for M: M = 3(25)-20=55Therefore, the mother's present age is **55 years old**.







S59. Ans.(c)

Sol. South Africa was the last country to join BRICS.

- BRICS is an acronym for Brazil, Russia, India, China, and South Africa.
- In 2006, Brazil, Russia, India and China created the "Bric" group. South Africa joined in 2010, making it "Brics".
- The first BRIC summit took place in the year 2009 in Yekaterinburg (Russia).
- BRICS(Brazil, Russia, India, China, South Africa) headquarter is located in Shanghai, China.

S60. Ans.(b)

Sol. Correct Answer: B. Amrit Mohan Prasad Explanation:

In September 2024, Amrit Mohan Prasad, a senior Indian Police Service (IPS) officer from the 1989 Odisha cadre, was appointed as the Director General (DG) of the Sashastra Seema Bal (SSB). Prior to this role, he served as the Special Director General of the Central Reserve Police Force (CRPF).

Key Points:

Tenure: His appointment is effective until his superannuation on August 31, 2025, or until further orders. **Predecessor:** He succeeded Daljit Singh Chaudhary, who was appointed as the Director General of the Border Security Force (BSF) on August 28, 2024.

SSB's Role: The SSB is responsible for guarding India's frontiers with Nepal and Bhutan, playing a crucial role in national security.

Additional Information:

Professional Background: Amrit Mohan Prasad has extensive experience in law enforcement and internal security, having held various significant positions throughout his career.

Accolades: He has been awarded the Police Medal for Meritorious Service and the President's Police Medal for Distinguished Service

S61. Ans.(a) Sol. Net change = $-10 \times 2 + 4 \times 4$ = -20 + 16= -4 $\Rightarrow \frac{-4}{N} = -0.2$ $\Rightarrow N = \frac{4}{0.2} = 20$ Initial People = 20 + 10 - 4= 30 - 4 = 26 Students

S62. Ans.(c)

Sol. Given: The angles of a quadrilateral are in the ratio 1:2:3:4. Solution: Let the angle A = 1x, B = 2x, C = 3x, D = 4x, Sum of the all angles $x + 2x + 3x + 4x = 10x = 360^{\circ}$ $x = 36^{\circ}$ Angle $D = 4x = 4 \times 36^{\circ} = 144^{\circ}$



S63. Ans.(b) Sol. Given: $\theta = 45^{\circ}$ Solution: $\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta}$ $=> \frac{(\sin 45^{\circ} + \cos 45^{\circ})}{(\sin 45^{\circ} - \cos 45^{\circ})}$ $=> \frac{\left(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}\right)}{\left(\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}}\right)}$ $=> \infty$

: The required answer is ∞

S64. Ans.(a)

Sol. The correct answer is (a) Current (I).

Ohm's Law states that **Resistance (R) = Voltage (V) / Current (I)**.

This law relates the resistance, voltage, and current in an electrical circuit, where resistance is measured in ohms (Ω).

Other Options:

Power (P): Power is related to voltage and current, but resistance is not directly calculated using power. **Charge (Q)**: Charge is related to current, but resistance is not calculated using charge. **Work (J)**: Work is a measure of energy, and it is not used to calculate resistance.

S65. Ans.(c) **Sol.** Given: $98-49 \div 7+74 \times 55=3$ **From Option A.) = and +** the modified equation becomes: $98-49 \div 7=74 \times 55+3$ $98-7=74 \times 55+3$

91=4070+3 $91 \neq 4073$ (**not** balances the equation) From Option B.) = and ÷ the modified equation becomes: $98-49=7+74\times55\div3$ $49=7+74\times18.33$ 49=7+1356.42 $49 \neq 1363.42$ (**not** balances the equation)









From Option C.) = and × the modified equation becomes: $98-49 \div 7+74=55 \times 3$ $98-7+74=55 \times 3$ 172-7=165**165=165 (Balances the equation)** From Option D.) = and – the modified equation becomes: $98=49 \div 7+74 \times 55-3$ $98=7+74 \times 55-3$ 98=7+4070-398=4077-3 $98 \neq 4074$ (not balances the equation) Thus, correct option is (c).

S66. Ans.(a)

Sol. Given: \triangle PQR, where QR is extended to S, and RS = RP \angle RPQ = 55° \angle PRS = 110°

Concept Used:

The external angle is equal to the sum of the two opposite interior angles. **Solution**:



From the property of the external angle triangle; $\angle PRS = \angle QPR + \angle PQR$

 $110^{\circ} = 55^{\circ} + \angle PQR$

 $\angle PQR = 110 - 55 = 55^{\circ}$ we know that, $\angle PQR = \angle PQS$ Thus, $\angle PQS = 55^{\circ}$





S67. Ans.(c)

Sol. Below are the DPSPs that are known as Gandhian principles:

Article 40: Organization of village Panchayats

Article 43: Promotion of cottage industries

Article 46: Promotion and protection of interests of educational and economic interests of SCs, STs, and other weaker sections of the society.

Article 47: Prohibition of consumption of intoxicating drinks and drugs which are injurious to health Article 48: Prohibition of slaughter of cows, calves and other milch and draught cattle and to improve their breeds.

S68. Ans.(d)

Sol. The number of letters that are preceded by a symbol but not followed by a number in the given expression are M and A.

S69. Ans.(b)

Sol. In the reaction Mg + O $_2 \rightarrow$ MgO, the oxidation number of oxygen changes from to -. This means that oxygen is reduced.

The oxidation number of magnesium changes from to +. This means that magnesium is oxidized.

The oxidation number of magnesium oxide is . This means that magnesium oxide is neither oxidized nor reduced.

Therefore, the substance that is reduced in the reaction Mg + $O_2 \rightarrow$ MgO is oxygen.



 $=\frac{1}{2}\times 56\times 96$

 $= 2688 \text{ cm}^2$





S71. Ans.(b)

Sol. Solution: Number of computers sold in 2017 = 60,000 Number of computers sold in 2021 = 40,000 So, the difference is: 60,000 - 40,000 = 20,000 Therefore, the difference between the number of computers sold in 2017 and 2021 is **20,000**.

S72. Ans.(c)

Sol. Given: Total number of students = 1800 Angle for Math Subject student = 60^{0} Solution: Number of students studying maths = $\frac{60}{360} \times 1800 = 300$

S73. Ans.(b)

Sol. The correct answer is (b) The resistance of a wire is directly proportional to its length.

- Resistance (R) of a wire is calculated using the formula $R =
 ho rac{L}{A}$, where:
 - ho is the resistivity of the material,
 - L is the length of the wire, and
 - A is the cross-sectional area of the wire.
- According to the formula, the resistance is **directly proportional to the length** of the wire. This means that as the length of the wire increases, the resistance increases.
- Resistance is inversely proportional to the cross-sectional area of the wire, meaning that as the cross-sectional area increases, the resistance decreases.
- **Resistivity** (*ρ*) is a material-specific property that does not change with the dimensions of the wire, but resistance is directly proportional to resistivity.

Hence, the correct answer is (b) The resistance of a wire is directly proportional to its length.

Information Booster:

- Resistivity (ρ): A fundamental property of the material that affects its resistance, typically measured in ohm-meters ($\Omega \cdot m$).
- **Cross-sectional area** (*A*): The area of the wire's cross-section, affecting how easily current flows through the wire.





- Length (*L*): The distance between the two ends of the wire, with longer wires having more resistance.
- Ohm's Law: States that V = IR, where V is voltage, I is current, and R is resistance.
- Conductors: Materials with low resistivity, like copper and aluminum, are used for making wires due to their low resistance.

S74. Ans.(b)

Sol. Given: 98*49*7*74*55*3

Replace the * sign in the given equation with the mathematical signs and then solve the equation using the BODMAS rule.

Operation preference wise	Symbol
Brackets	[],,()
Orders, of	$(power), \sqrt{(root)}, of$
Division	÷.
Multiplication	×
Addition	+
Subtraction	—

Option (a): \div , $-, +, \times, =$ $98 \div 49 - 7 + 74 \times 55 = 3$ $2 - 7 + 74 \times 55 = 3$ 2 - 7 + 4070 = 34072 - 7 = 34065 \neq 3 (This option **does not** satisfy the equation) Option (b): $-, \div, +, =, \times$ $98 - 49 \div 7 + 74 = 55 \times 3$ $98 - 7 + 74 = 55 \times 3$ 98 - 7 + 74 = 165 172 - 7 = 165165 = 165 (This option satisfies the equation) **Option (c):** $-, \div, +, \times, =$ $98 - 49 \div 7 + 74 \times 55 = 3$ $98 - 7 + 74 \times 55 = 3$ 98 - 7 + 4070 = 34168 - 7 = 34161 \neq 3 (This option **does not** satisfy the equation) **Option (d):** \div , -, \times , +, = $98 \div 49 - 7 \times 74 + 55 = 3$







 $2 - 7 \times 74 + 55 = 3$

2 - 518 + 55 = 3

57 - 518 = 3

 $-461\neq 2$ = 3 (This option **does not** satisfy the equation) Thus, only option (**b**) satisfies the equation.

S75. Ans.(b)

Sol. The correct answer is (b) Jawahar Lal Nehru.

The Indian National Congress declared Poorna Swaraj (complete independence) as its ultimate goal during its Lahore session held on December 19, 1929.

Jawahar Lal Nehru was the President of the Indian National Congress at that time.

This historic declaration led to the call for celebrating January 26, 1930, as Independence Day.

The Lahore session marked a significant shift in the Indian freedom struggle, emphasizing complete independence from British rule rather than dominion status.

Information Booster:

Subhash Chandra Bose: Although a prominent leader of the Congress and later the head of the Indian National Army. He was elected as the President of INC at its Haripura Session (1938) and Tripuri Session (1939) but resigned from Tripuri due to differences with Gandhiji. He founded the Forward Bloc (1939) at Calcutta.

Mahatma Gandhi: He was a central figure in the Indian independence movement. Gandhi was elected as the President of the Indian National Congress (INC) in the Annual Session held at Belgaum in 1924.

VD Savarkar: A freedom fighter and nationalist leader. He and his brother Ganesh Damodar founded the Abhinav Bharat Society (Young India Society) in 1904, which was an Indian Independence secret society.

S76. Ans.(d)

Sol. Given: Radius of a cylinder = 70 m height of the cylinder = 140 m, **Formula Used:** Total surface area of the cylinder = $2\pi r(h+r)$

Solution:

$$= 2 \times \frac{22}{7} \times 70(70 + 140)$$

 $= 44 \times 10 \times 210$ =92,400cm²

S77. Ans.(b) Sol. Given: Let Y = 4.2222....

Let Y = 4.2222....Solution: Y = 4 + 0.2222....Let x = 0.2222....10x = 2+0.2222.....10x = 2 + x





9x = 2x = 2/9 Then the value of Y = 4 + 0.2222....

 $=4+\frac{2}{9}$

 $=\frac{38}{9}$

The equivalent fraction of 4.2222....= $\frac{38}{9}$

S78. Ans.(d)

Sol. Given: 6, 12, 24, 48, ?, 192

Logic: Each term is multiplied by 2 to get the next term.

6×2=12 12×2=24 24×2=48 48×2=96 96×2=192. The missing term is 96 96. Correct answer: (d) 96.

S79. Ans.(a)

Sol. The correct answer is (a) 1000 Watts.

1 kilowatt (kW) is equivalent to 1000 watts (W).

The watt is the SI unit of power, and it measures the rate of energy transfer. One watt is defined as one joule per second.

Kilowatts are commonly used to express the power consumption or output in larger systems, such as electrical appliances, industrial machines, and power plants.

For example, a 1 kW heater consumes 1000 watts of power in one hour.

Information Booster:

Kilowatt (kW): Commonly used for household appliances like microwaves, air conditioners, and refrigerators.

Megawatt (MW): Equivalent to 1,000,000 watts, used for large-scale power plants.

Power Calculation: Power (P) can be calculated as the product of voltage (V) and current (I), i.e., $= V \times I$.

Energy Consumption: Power is crucial in determining energy consumption; for instance, 1 kW consumed for 1 hour equals 1 kilowatt-hour (kWh), which is the unit used by electricity companies to bill consumers.





S80. Ans.(b)

Sol. A fiscal deficit is explained as a difference between the total revenue and total expenditure of the government. A fiscal deficit indicates the total borrowing that a government requires. However, borrowings are not included when total revenue is calculated.

S81. Ans.(a)

Sol.

The correct answer is (a) $\mathrm{C}_{7}\mathrm{H}_{14}.$

Explanation:

A homologous series consists of compounds that differ by a CnH_2n .CH2 unit. The general formula

for alkenes (to which propene belongs) is

1. Propene: C_3H_6

2. Adding four CH_2 units to propene gives the formula: $C_3H_6 + 4(CH_2) = C_7H_{14}$

3. The resulting compound is C_7H_{14} , which is **heptene**, the fourth member in the homologous series after adding four CH₂ units.

Clarifications for Other Options:

 $\cdot \operatorname{C_2H_4:}$ Ethene, which comes before propene in the homologous series.

 $\cdot \mathrm{C}_{6}\mathrm{H}_{12}$:Hexene, the third member after propene.

 $\cdot \operatorname{C_5H_8:}$ Does not follow the general formula of alkenes (CnH2n).

S82. Ans.(a)

Sol. The correct answer is (a) Weak acid and strong base.

Sodium carbonate (Na₂CO₃) is classified as a **basic salt** because it is formed from the reaction of a **weak** acid (carbonic acid, H₂CO₃) and a strong base (sodium hydroxide, NaOH).

In this reaction, sodium hydroxide completely neutralizes carbonic acid, resulting in a salt that has basic properties.

When sodium carbonate dissolves in water, it undergoes hydrolysis, producing hydroxide ions (OH⁻), which makes the solution basic.

Sodium carbonate is also known as **washing soda** and is used in various household and industrial applications.

Additional Knowledge:

Strong acid and strong base: A salt from a strong acid and a strong base is typically neutral (e.g., sodium chloride, NaCl).

Weak acid and weak base: A salt from both a weak acid and a weak base can vary in pH and does not exhibit strong basic or acidic properties.

Strong acid and weak base: A salt formed from a strong acid and a weak base, such as ammonium chloride (NH₄Cl), is acidic in nature.

S83. Ans.(b)

Sol. Given: 2, 15, 41, 93, 197, (?)

Logic: Multiply the difference between the two previous terms by 2 to get the difference between the next two terms.





Explanation:

2 + 13 = 15 $15 + (13 \times 2) = 15 + 26 = 41$ $41 + (26 \times 2) = 41 + 52 = 93$ 93 + (52×× 2) = 93 + 104 = 197 Similarly, $197 + (104 \times 2) = 197 + 208 = 405$ So, the missing term is **405**. Thus, the correct answer is (b).

S84. Ans.(d)

Sol. Given:

The data set is: 2, 2, 3, 5, 15, 15, 15, 20, 21, 23, 25, 15, 23, 25.

Concept Used:

The mode of a data set is the value that appears most frequently. If multiple values have the same highest frequency, the data is multimodal, and all such values are modes.

Solution:

Ste 1: Count the frequency of each number: 2 appears 2 times 3 appears 1 time 5 appears 1 time 15 appears 4 times 20 appears 1 time 21 appears 1 time 23 appears 2 times 25 appears 2 times. Identify the number(s) with the highest frequency. The number 15 appears 4 times, which is the highest frequency. Thus, the mode of the data is 15. **S85.** Ans.(c)

Sol. Given Information 'BED' is coded as '120'. 'FAT' is coded as '360'. Logic: Code=(Product of the place value of the alphabets)×3 Ste 1: Find the Code for 'BED' $2 \times 5 \times 4 = 40$ Apply the logic: 40×3=120 Ste 2: Find the Code for 'FAT' 6×1×20=120 Apply the logic: 120×3=360





Ste3: Find the Code for 'DBY'

4×2×25=200 Apply the logic: 200×3=600 The code for 'DBY' is 600. Correct answer is (c) 600.

S86. Ans.(d)

Sol. CORRECT OPTION - D

Depreciation - Depreciation is the process by which the value of an asset decreases over time due to factors such as wear and tear, obsolescence, or age. It is an accounting method used to allocate the cost of a tangible asset over its useful life, reflecting its decreasing value and helping businesses spread the expense of an asset over several years.

Debt -Debt refers to an amount of money that is borrowed by an individual, organization, or government, which is expected to be paid back with interest over time. It can take various forms, such as loans, bonds, or credit, and is typically used to finance operations, investments, or expenditures.

Deficit - Deficit refers to the shortfall or excess of expenses over income, indicating that a person, organization, or government is spending more than it is earning or receiving. It is commonly used in the context of government budgets (budget deficit) or trade balances (trade deficit), where the expenditure exceeds the revenue or imports exceed exports

New investment - New investment refers to the allocation of funds or capital into new assets, projects, or ventures aimed at increasing production capacity, expanding business operations, or generating future returns. This can include purchasing new machinery, developing infrastructure, or investing in research and development to drive growth.

S87. Ans.(a)

Sol. A charged particle moving without acceleration produces an electric as well as a magnetic field.

S88. Ans.(d) **Sol.** Given: 0.75 : x :: 2.5 : 8 **Formula used:** In the case of a proportion, the product of the extreme terms is equal to the product of the middle terms. **Solution:** 0.75 : x :: 2.5 : 8 $=> 2.5x = 0.75 \times 8$ => x = 2.4Thus, the required value of x is 2.4.

S89. Ans.(d) Sol. Given: Given numbers are 6,7,12,(x-1) and 10 Average = 10





Formula Used:

Average = $\frac{\text{Sum of observations}}{\text{Number of observations}}$

Solution:

Total sum of numbers = 6 + 7 + 12 + (x-1) + 10 = 34 + x Average = $\frac{34 + x}{5} = 10$ 34 + x = 50 x = 50 - 34 = 16

S90. Ans.(b)

Sol. Solution: $(a^2 + b^2 + c^2) = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

S91. Ans.(d)

Sol. Sol: The correct answer is (d) magnetic field, induced current

Key Points:

Index Finger: Represents the direction of the magnetic field.

Middle Finger: Represents the direction of the **induced current**.

Information booster:

Fleming's Right-Hand Rule

Definition: Fleming's right-hand rule is used to determine the direction of induced current when a conductor moves through a magnetic field.

Orientation:

o **Thumb:** Direction of motion of the conductor (or applied force). o **Index Finger:** Direction of the magnetic field. o **Middle Finger:** Direction of the induced current.

S92. Ans.(b)

Sol. The correct answer is (b) Grey.

Silver chloride (AgCl) turns **grey** in sunlight due to a **photochemical decomposition reaction**. When exposed to sunlight, silver chloride breaks down into silver metal and chlorine gas:

 $2AgCl \xrightarrow{\text{Sunlight}} 2Ag + Cl_2$

The silver metal appears as a **grey precipitate**.

Explanation of Other Options:

Orange : No orange coloration occurs during the decomposition of silver chloride.

Red : Red is not related to this reaction.

White : Silver chloride is originally white in color before exposure to sunlight.

Key Fact: This reaction demonstrates the **photo-sensitivity** of silver chloride and is the principle behind its use in old photographic films and plates.





S93. Ans.(a)

Sol.

Letters	Mirror Images	Letters	Mirror Images	Letters	Mirror Images	Letters	Mirror Images
a	a h	h	h	0	0	v	v
c	3	i	i	q	р	x	x
d	Ь	Ŕ	Ŕ	r	r	у	У
e	9	1	1	s	s	z	z
f g	1 9	m n	m	u	u		
8	0						

A A H H O	0	V	v
			V 1
BBIIIIP	Р	W	W
C D D J J L Q D	9	X	х
D 0 K X R	я	Y	Y
E I L I S I	S	Z	Z
F 7 M M T	Т		
G Ə N U	U		

Numbers	Mirror Images	Numbers	Mirror Images	Numbers	Mirror Images	
1	1	4	4	7	7	
2	2	5	5	8	8	
3	3	6	9	9	6	

M

Qorvsjlvyfn ntvvljevroD



So, the correct answer is option (a).

S94. Ans.(c)

Sol. Compare each letter in DHKL to CGJK:

1	2	3	4	5	6	7	8	9	10	11	12	13
Α	В	С	D	Е	F	G	Н	Ι	J	К	L	М
z	Y	x	w	v	U	Т	s	R	Q	Р	0	N
26	25	24	23	22	21	20	19	18	17	16	15	14

 $D \rightarrow C$: Shifted by -1

 $H \rightarrow G$: Shifted by -1

 $K \rightarrow J$: Shifted by -1





 $L \rightarrow K$: Shifted by -1 Thus, each letter in DHKL is shifted -1 to get CGJK. Apply the same pattern to find the correct answer among the options. **Option (a) NUWX: RUCN** $N \rightarrow R: +4$ $U \rightarrow U: 0$ $W \rightarrow C: +6$ $X \rightarrow N: -10$ This does not follow the -1 pattern. (b) ZUZY: ABOD $Z \rightarrow A: +1$ $U \rightarrow B: +7$ $Z \rightarrow 0: +15$ $Y \rightarrow D: +5$ This does not follow the -1 pattern. **Option (c) FXYI: EWXH** $F \rightarrow E: -1$ $X \rightarrow W: -1$ $Y \rightarrow X: -1$ $I \rightarrow H: -1$ This option also matches the pattern. Thus, the correct answer is (c) FXYI: EWXH.

S95. Ans.(a) Sol. Given



Triangle represents batsman, only batsman = A circle represents bowlers, only bowlers = C answer is A and C

S96. Ans.(a)

Sol. As per the question following path diagram can be drawn-







From the above diagram-Total distance between Shruti and Pole = 47 + 53 = 100 m. Correct answer is (a) 100 m.

S97. Ans.(a)

Sol. Formula for Power can be expressed as :

P = VI (basic definition of power)

 $P = I^2 R$ (derived from V = IR)

 $P \ = \frac{V^{\,2}}{R} \quad ({\rm derived \ from \ } I = \frac{V}{R})$

 $P = IR^2$ (incorrect, does not follow from known relationships)

S98. Ans.(c)

Sol. The correct answer is (c) Rajnish Kumar.

Rajnish Kumar, the former chairman of the State Bank of India (SBI), has been appointed as the Chairman of MasterCard India from September 2023.

He brings vast experience in banking and financial services, which is expected to strengthen MasterCard's operations and growth in India.

Information Booster:

Narendra Singh: Not related to this appointment. S.A. Panse: Not linked to MasterCard.

Sanjiv Misra: Chairman of Axis Bank, not MasterCard India.

S99. Ans.(c)

Sol. Given:

Principal (₹P): 4000 Rate of Interest (R): 5.25% per annum Time (T): From 12th February to 12th April Calculate the time period The time period from 12th February to 12th April includes: 17 days in February (as February has 29 days in a lea year, subtracting 12 days already passed). 31 days in March. 12 days in April. Total time = 17 + 31 + 12 = 60 days. Solution: Simple interest = $\frac{P \times R \times T}{100}$ = $\frac{4000 \times 5.25 \times 60}{365 \times 100}$ = 34.52 Simple interest = Rs.34.52







S100. Ans.(a)

Sol. Given:

'+' and '-' are interchanged and '×' and '÷' are interchanged. **Logic:** interchange mathematical operators and solve as per BODMAS rule.

Operation preference wise	Symbol
Brackets	[],,()
Orders, of	(power), $\sqrt{(\text{root})}$, of
Division	*
Multiplication	×
Addition	+
Subtraction	_



Given:

 $5 - 4 \div 9 + 80 \times 10$ After interchanging, $5 + 4 \times 9 - 80 \div 10$ =5+36-8=33Thus, option A is correct.

rect. Adda 247