RRB NTPC Graduate Level CBT-II Official Paper (Held On: 10 Jul, 2026) (Previous Year Paper)

RRB NTPC • 2026 • 120 questions • 90 minutes • Answer key and solutions

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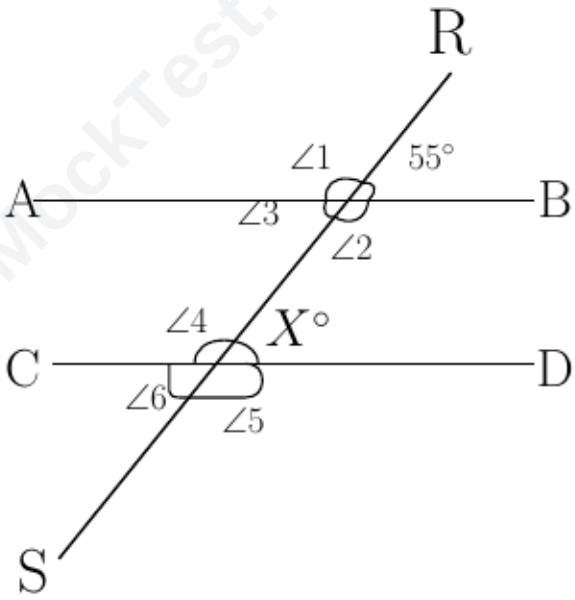
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FULL TEST

Q1. In the given figure, AB is parallel to CD and RS is a transversal. Find the value of X.



(a) 55
(b) 65
(c) 35
(d) 45

Q2. Which quantity describes the rate at which work is done over a period of time?

(a) Displacement
(b) Power
(c) Force
(d) Energy

Q3. Amit is standing on the ground and flying a kite using a 100 m long string at an angle of elevation of 30°. Nitin is standing on the roof of a building that is 10 m high and flying his kite at an angle of elevation of 45°. The two boys are standing on opposite sides of the point where the kites meet. Find the length (in m) of the string that Nitin must use so that both kites meet at the same point.

(a) 50 √3
(b) 40 √2
(c) 50 √2
(d) 40 √3

Q4. The base of a parallelogram is thrice its height. If the area of the parallelogram is 216 cm², then find its height.

(a) 6 √2 cm
(b) 7 √2 cm
(c) 8 √2 cm
(d) 5 √2 cm

Q5. A new pesticide reduces the insect population in an agricultural field. Predict the most likely impact on the field's food web, considering the roles of birds, plants, and decomposers.

(a) Decomposers will increase significantly due to more dead organic matter
(b) Plants population will decline dramatically due to lack of pollinators
(c) Bird populations may decline due to reduced insect prey, altering energy flow
(d) Energy flow will stop across all trophic levels within the ecosystem

Q6. Which of the following islands in Maharashtra is a UNESCO World Heritage site known for its ancient caves and 5^(th)-century sculptures?

(a) Elephanta Island
(b) Butcher Island
(c) Khanderi Island
(d) Salsette Island

Q7. Which of the following rivers forms the largest drainage basin in India in terms of catchment area?

(a) Narmada
(b) Krishna
(c) Ganga
(d) Godavari

Q8. What should come in place of '?' in the given series?

39 52 65 78 91 ?

(a) 117
(b) 99
(c) 110
(d) 104

Q9. A shopkeeper buys a laptop for Rs. 40,000. He first sells it at a 20% profit. Later, the buyer sells it to another person at a 10% loss. What is the final selling price of the laptop?

(a) Rs. 48,000
(b) Rs. 50,000
(c) Rs. 43,200
(d) Rs. 42,000

Q10. In a certain code language,

A+ B means 'A is the mother of B',
A – B means 'A is the brother of B',
A x B means 'A is the wife of B',
A % B means 'A is the father of B', and
A # B means 'A is the daughter of B'.
Which of the following means that Q is the sister of the wife of L?
V % Q # K + Z – T x L
V + Q # K % Z – T + L
V # K x Q % L + T # Z
V + Q # G – Z % T + L

(a) Both I and III
(b) Both II and IV

(c) Only I
(d) Only IV

Q11. Which organisation established a committee on invasive alien species in March 2026?
(a) National Biodiversity Authority
(b) Central Pollution Control Board
(c) Ministry of Environment
(d) Indian Council of Forestry Research

Q12. The inscriptions of Emperor Ashoka were predominantly composed in which of the following scripts?
(a) Kharosthi
(b) Devanagari
(c) Brahmi
(d) Gupta script

Q13. Five interior angles of a 10-sided figure are each 185 degrees. If the remaining five interior angles are equal, then each of the five angles (in degrees) is equal to:
(a) 105
(b) 103
(c) 107
(d) 101

Q14. Shivam borrowed a sum of Rs. 30,000 at a certain rate of simple interest for 3 years. If he paid an interest of Rs. 4,500 at the end of the period at x% per annum rate of interest, the value of x is:
(a) 6
(b) 5
(c) 7
(d) 4

Q15. A certain number of people are sitting in a row, facing north. E sits at the extreme left end of the row. Exactly seven people sit between E and F. A sits third to right of F. Exactly four people sit between C and B. C sits exactly in between E and F. Exactly four people sit between B and D. D sits at one of the extreme ends. What is the total number of people seated in the row?
(a) 12
(b) 15
(c) 13
(d) 14

Q16. Which player won the 2025 Ballon d'Or (Men's) at the ceremony held in Paris on 22 September 2025?
(a) Kylian Mbappé
(b) Jude Bellingham
(c) Erling Haaland
(d) Ousmane Dembélé

Q17. This question is based on the five, three-digit numbers given below.
(Left) 715 438 961 127 821 (Right)
(Example- 697 – First digit = 6, second digit = 9 and third digit = 7)
NOTE - All operations to be done from left to right.
What will be the resultant if third digit of the highest number is added to the second digit of lowest number?
(a) 10
(b) 6
(c) 3
(d) 9

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Q18. Which dance form was earlier known by the generic name Yakshagaana?

(a) Kuchipudi
(b) Mohiniyattam
(c) Bharatanatyam
(d) Kathak

Q19. Which application software allows users to immediately see the result of a change in data?

(a) Database software
(b) Spreadsheet
(c) Presentation tool
(d) Word processor

Q20. If the mean proportional between (x + 3) and (x − 3) is 4, what is the value of x; x>0?

(a) 4
(b) 6
(c) 3
(d) 5

Q21. Which of the options below is equivalent to $27x^3 + 343y^3 + 189x^2y + 441xy^2$?

(a) $(3x + 10y)^3$
(b) $(3x + 7y)^3$
(c) $(5x + 7y)^3$
(d) $(7x + 3y)^3$

Q22. L is the mother of M. M is the mother of O. O is the sister of H. H is the wife of P. P is the father of F. F is the mother of G. How is M related to F?

(a) Father’s sister
(b) Mother’s sister
(c) Mother’s mother
(d) Sister's daughter

Q23. In a linear race of 750 meters, X can beat Y by 10 meters. In a race of 444 meters, Y can beat Z by 6 meters. In a race of 150 meters, X will beat Z by how many meters?

(a) 2
(b) 6
(c) 4
(d) 3

Q24. Which soil type is traditionally regarded as the most suitable for cotton cultivation in India because of its high moisture-retention capacity?

(a) Black soil rich in clay and moisture
(b) Alluvial soil deposited by Himalayan rivers
(c) Laterite soil found in high rainfall areas
(d) Desert soil found in arid western regions

Q25. Choose the correct statements about quadrilaterals from the ones given below.

A. In an isosceles trapezium, the parallel sides are equal.
B. Kite is a type of parallelogram.
C. All squares are rhombus.
D. The quadrilateral formed by joining the mid-points of the sides of any quadrilateral is a trapezium.

(a) A, D
(b) Only C
(c) B, C
(d) A, B, D

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Q26. The ratio of Rahul's age to his son's age is 7 : 2. If Rahul is 49 years old, what is his son's age?

(a) 12 years
(b) 15 years
(c) 13 years
(d) 14 years

Q27. A sum of money triples itself at a certain rate of compound interest, compounded annually in 7 years. In how many years will it amount to 27 times of itself?

(a) 23 years
(b) 21 years
(c) 31 years
(d) 11 years

Q28. A student heats a compound and observes the emission of brown fumes. The compound was most likely:

(a) $CaCO_3$
(b) $Pb(NO_3)_2$
(c) AgCl
(d) NaCl

Q29. A, B, C, D, E, F, G and H are sitting around a square table facing the centre of the table. Some of them are sitting at the corners while some are sitting at the exact centre of the sides. B is seated second to the right of H. B is not seated at the centre of any side. F is the immediate neighbour of E and B. D is seated third to the left of H. G is seated in a corner. C is seated second to the right of A. How many people are seated between D and A when counted from the left of D?

(a) Five
(b) Three
(c) One
(d) Four

Q30. Sushant and Varun are running on a circular track of 400 metres. Sushant completes one round in 100 seconds, and Varun completes one round in 80 seconds. They start simultaneously from the same point and run in opposite directions. How many times do they meet before they both return together to the starting point again?

(a) 9
(b) 10
(c) 12
(d) 8

Q31. 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 is the one that 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) OSV
(b) JOR
(c) HMP
(d) DIL

Q32. Solve the following equation for x involving mixed recurring decimals and express the solution as vulgar fraction.

$3x + 2.3666... = 5.4666...$

(a) 31/26
(b) 31/20
(c) 29/31
(d) 31/30

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Q33. In this question, a group of number/symbol is coded using letter codes as per the codes given below and the conditions which follow. The correct combination of codes following the conditions is your answer. If none of the conditions follow, then codes for the respective Number/Symbol to be followed directly as given in the table.

Number/symbol	3	$	5	1	@	%	2	&	•	7	#	8	4	6
Code	W	I	D	M	O	H	Z	T	G	S	U	E	X	V

Conditions:

(i) If both first and last elements are symbols, the codes for these two (the first and the last elements) are to be interchanged.

(ii) If the first element is an odd number and the last an even number, the first and last elements are to be coded as ©.

(iii) If both second and third elements are perfect squares, the third element is to be coded as the code for the second element.

What is the code for the following number-symbol group?

3 % @ 1 4

(a) © M O H ©
(b) W H O M X
(c) W M O H ©
(d) © H O M ©

Q34. At the Coal India Inter-Company Powerlifting, Weightlifting, and Bodybuilding Championship 2025-26 held in Nagpur in October 2025, which team won the overall championship title?

(a) WCL
(b) SCCL
(c) MCL
(d) SECL

Q35. Each of A, B, C, M, N and O has scored different marks. Only two people have scored less than B. C has scored immediately more than M. Only two people have scored between M and O. A has scored more than N. No one has scored less than O. How many people have scored more than N?

(a) Three
(b) One
(c) Two
(d) Four

Q36. What is the primary advantage of converting an MS PowerPoint presentation to PDF format?

(a) Automatically applies document encryption and password protection
(b) Significantly reduces file size while maintaining visual quality
(c) Ensures universal viewing without requiring PowerPoint software
(d) Enables cross-platform editing with multiple software applications

Q37. An object is placed 10 cm in front of a lens, and the image is formed at 30 cm on the same side as the object. What is the magnification produced by the lens?

(a) 0.3
(b) 3
(c) -0.3
(d) -3

Q38. You have a large dataset and need to sort it frequently based on different columns. What is an efficient way to quickly access and apply different sorting criteria without repeatedly opening the “Sort” dialogue box?

(a) Add the “Sort” command to the Quick Access Toolbar and configure the sort settings each time.
(b) Create Slicers for each column you want to sort by.
(c) Manually select the desired column each time and use the quick sort buttons.

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(d) Record a macro for each commonly used sort order.

Q39. Carbon dioxide from the air or soil combines with water in a chemical weathering process known as which of the following?

(a) Carburation
(b) Carbolation
(c) Carboxylation
(d) Carbonation

Q40. Simplify:

$(2^4 \times 3^4 \times 5^4)/(2^2 \times 3^2 \times 5^2)$

(a) 910
(b) 909
(c) 905
(d) 900

Q41. Which of the following Boards will be established under the Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India Act, 2025?

(a) Atomic Energy Regulatory Board
(b) Nuclear Power Development Board
(c) Central Radiation Monitoring Board
(d) National Nuclear Safety Board

Q42. If $10\sin A + \cos A = \sqrt{6}\sin A$, find the value of $\tan A$.

(a) $(-10-\sqrt{6})/96$
(b) $(-10-\sqrt{6})/99$
(c) $(-11-\sqrt{6})/96$
(d) $(-10-\sqrt{6})/94$

Q43. A question is given, followed by two statements labelled I and II. Identify which of the statements is/are sufficient to answer the question.

Among H, I, J, K, and L, who is the tallest?

(I) J is taller than H and I but shorter than K.

(II) L is shorter than K but taller than J.

(a) Both 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) Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
(d) Data in Statement I alone is sufficient to answer the question while data in Statement II is not

Q44. The price of a shirt is increased by 20% and then decreased by 20%. What is the net percentage change in the price?

(a) 4% decrease
(b) 0.4% increase
(c) No change
(d) 8% decrease

Q45. CM24 is related to HR26 in a certain way based on the English alphabetical order. In the same way, AT15 is related to FY17. To which of the following is CR12 related, following the same logic?

(a) IV14
(b) HW14
(c) IW14
(d) HV14

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Q46. A scientist observes a plant cell containing many colorless plastids in the storage tissue of a potato tuber.

Which function is most likely associated with these plastids?

(a) Capturing sunlight to produce energy
(b) Producing amino acids for protein synthesis
(c) Storing starch produced through photosynthesis
(d) Synthesizing red and yellow pigments

Q47. In a Δ XYZ, XT is the bisector of angle X meeting side YZ at T. If XY = 5.6 cm, YZ = 6 cm, and YT = 3.2 cm, find XZ.

(a) 4.9 cm
(b) 4.2 cm
(c) 5.4 cm
(d) 6 cm

Q48. Each of A, B, C, D, S, T and U was born in a different month viz. January, February, April, May, June, September and December of the same year starting from January and ending in December. D was born in June. Only S is younger than B. C is elder than T but younger than A. U was born in February.

How many people were born between B and A?

(a) Three
(b) Two
(c) One
(d) Four

Q49. Which Article of the Constitution of India specifically provides for the constitution of Panchayats at the village, intermediate, and district levels?

(a) Article 243B
(b) Article 243A
(c) Article 243H
(d) Article 243D

Q50. Omaira starts from point F and walks 45 m towards south. She takes a left turn, walks 30 m and then takes a left turn, walks 20 m, reaches point C and stops. Anjan starts from point Q which is 15 m towards the north of point C. He walks 30 m towards east, takes a left turn, walks 10 m and stops at point U.

What is the shortest distance between point F and point U? (All turns are 90° turns only.)

(a) 75 m
(b) 60 m
(c) 35 m
(d) 25 m

Q51. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

LTP25 MUQ36 NVR47 OWS58 ?

(a) PXT69
(b) PXU68
(c) PXT68
(d) PXU69

Q52. Which of the following regions of the world has the highest population density due to fertile plains, industrialisation, and urban development?

(a) Sahara Desert
(b) Greenland
(c) South and East Asia
(d) Amazon Basin

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Q53. Who among the following is credited with founding the Indian National Congress in 1885?

(a) Allan Octavian Hume
(b) Lord Curzon
(c) Lord Dufferin
(d) Lord Ripon

Q54. How can you vertically center the text inside selected cells of a table in MS Word 2021?

(a) Right-click selection > Table Properties > Cell tab > Vertical alignment: Center
(b) Home tab > Paragraph group > Align Right
(c) Home tab > Paragraph group > Justify
(d) Home tab > Paragraph group > Align Left

Q55. A user wants to transfer a large file to a colleague over the internet. Which internet service is most suitable for this task?

(a) File Transfer Protocol (FTP)
(b) World Wide Web
(c) E-mail
(d) Instant Messaging

Q56. The largest four-digit number which when divided by 8, 7 and 11 leaves remainder 4 in each case is:

(a) 9956
(b) 9811
(c) 9860
(d) 9624

Q57. Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

CF – GI – KL

MP - QS – UV

(a) BF – EI – HL
(b) RM – QT – PR
(c) OR – SU – WX
(d) PL – RN – TP

Q58. An early 19^(th)-century tribal uprising was organised in 1812 by Kerala’s first agricultural tribe from the Wayanad region, resisting British agrarian exploitation.

This revolt is known as the:

(a) Kadar Tribal Revolt
(b) Koya Viplavam
(c) Kurichiya Revolt
(d) Kurumba Uprising

Q59. The International Day for Disaster Risk Reduction (IDDRR) 2025 is observed under which theme?

(a) Investing in Sustainable Futures
(b) Strengthening Early Warning Systems
(c) Fund Resilience, Not Disasters
(d) Rebuilding Communities Together

Q60. In a certain code,

'wishing everyone well' is coded as 'lh cv vd',

'wishing happy days' is coded as 'fv fz lh',

'days everyone enjoy' is coded as 'cv vm fz'.

(All the codes are two-letter codes only.)

What is the possible code for ‘happy everyone’?

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(a) cv fz
(b) vd fz
(c) fv cv
(d) fv lh

Q61. Refer to the following letter, number, symbol series and answer the question. Counting to be done from left to right only. (All numbers are single-digit numbers only.)

(Left) S R E S 2 U ^ $ + X B 7 N M 7 4 C Z 5 @ U 4 D / (Right)

How many such numbers are there, each of which is immediately preceded by a letter and also immediately followed by a symbol?

(a) One
(b) Two
(c) Three
(d) None

Q62. The symbol Z in atomic notation refers to:

(a) Charge
(b) Mass number
(c) Atomic number
(d) Neutron number

Q63. A metallic sheet is of the rectangular shape with length 56 cm and width 40 cm. From each corner, a square of 10 cm is cut-off. A closed box is made of the remaining sheet. How many match boxes of length 4.0 cm breadth 2.0 cm and height 1.5 cm it can accommodate?

(a) 550 boxes
(b) 620 boxes
(c) 610 boxes
(d) 600 boxes

Q64. The flow of electric current in acidic solutions is due to:

(a) Metals in the solution
(b) Neutral molecules only
(c) Gas bubbles formed
(d) Ions present in the solution

Q65. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '−', what will come in place of '?' in the following equation?

24 C 16 D 8 A 4 B 2 = ?

(a) 28
(b) 40
(c) 32
(d) 36

Q66. This question is based on the given words.

(Left) TON TAR DEV TAB (Right)

How many letters are there between the second letter of the second word from the right and the second letter of the first word from the left as per the English alphabetical order?

(a) 6
(b) 7
(c) 9
(d) 8

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Q67. A wholesaler offers a scheme discount of 2% on the total purchase if the customer buys more than 100 units of a product. If the price per unit is Rs. 20, what is the total amount payable if the customer buys 150 units?

(a) Rs. 3,000
(b) Rs. 3,020
(c) Rs. 2,980
(d) Rs. 2,940

Q68. Find the vertex C (x, y) of a ΔABC whose other vertices are A(1, 5) and B(4, 7), and the centroid is D(4, 5).

(a) C (6, 3)
(b) C (7, 4)
(c) C (7, 3)
(d) C (3, 6)

Q69. A rectangular field measures 68.5 m by 45.6 m. A path of uniform width 2.4 m is constructed around the outside of the field. Find the difference between the outer perimeter of the path and the perimeter of the original field.

(a) 17 m
(b) 20 m
(c) 19.2 m
(d) 18.5 m

Q70. What should come in place of '?' in the given series?

111, 223, 449, 903, 1813, ?

(a) 3036
(b) 3630
(c) 3635
(d) 3536

Q71. Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group.

Which is the one that does not belong to that group? (Note: The odd man out is not based on the number of consonants/vowels or their position in the letter cluster.)

(a) LMK
(b) ORM
(c) GJE
(d) RUP

Q72. Primary deficit is fiscal deficit minus:

(a) Interest payments
(b) Revenue deficit
(c) Borrowings
(d) Capital expenditure

Q73. A sum of Rs. 3059 is divided into three parts such that half of the first part, one-fourth of the second part, and one-eighth of the third part are equal. Find the value (in Rs.) of the third part.

(a) 1748
(b) 1948
(c) 1548
(d) 1848

Q74. If 40% of a number is added to 240, then the result is the same number. 50% of the same number is:

(a) 300
(b) 200
(c) 220
(d) 440

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Q75. P, Q, S, T, Y and Z each scored different marks.

Only two people have scored more than Y. Only S has scored less than P. T has scored more than Q but less than Z.

How many people have scored more than T?

(a) Three
(b) Two
(c) Four
(d) One

Q76. What will come in the place of the question mark (?) in the following equation if '+' and '−' are interchanged and '×' and '÷' are interchanged?

35 + 10 × 2 − 15 ÷ 3 = ?

(a) 77
(b) 74
(c) 75
(d) 76

Q77. Two concentric circles with a common centre 'O' have a chord AB on the outer circle, which intersects the inner circle at points C and D. If the distance of the chord from the centre is 3 cm, the outer radius is 13 cm and the inner radius is 7 cm, then the length (in cm) of AC is:

(a) $2\sqrt{10}$
(b) $5\sqrt{10}$
(c) $4\sqrt{10}$
(d) $3\sqrt{10}$

Q78. Refer to the following letter, number, symbol series and answer the question. Counting to be done from left to right only.

(Left) Y 7 H # 4 B Q $ 3 L 9 @ N 8 X Z * & T 2 R (Right)

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

(a) Two
(b) One
(c) None
(d) Three

Q79. Two tangents, PQ and QR, are drawn from an external point Q to a circle of centre O. If OQ=41 cm, angle PQR=60° and the radius of the circle is 9 cm, find the perimeter of triangle PRQ.

(a) 135 cm
(b) 120 cm
(c) 95 cm
(d) 80 cm

Q80. Which committee recommended the shift from administered interest rates to market-determined rates in India?

(a) Chelliah Committee (1991)
(b) Kelkar Committee (2002)
(c) Narasimham Committee I (1991)
(d) Rangarajan Committee (1997)

Q81. Two cubes, each of volume 216 cm^3, are joined end to end. Find the length of the diagonal of the resulting cuboid.

(a) $7\sqrt{3}$ cm
(b) $8\sqrt{7}$ cm
(c) $5\sqrt{2}$ cm
(d) $6\sqrt{6}$ cm

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Q82. What will come in the place of '?' in the following equation if '+' and '–' are interchanged and 'x' and '÷' are interchanged?

42 x 3 – 25 ÷ 5 + (56 x 8) ÷ 2 – 24 = ?

(a) 167
(b) 158
(c) 149
(d) 132

Q83. H, I, J, K, U, V, W and X are sitting around a square table facing the centre of the table. Four of them are sitting at the corners while four are sitting at the exact centre of the sides.

Only three people sit between J and W. J does not sit at any of the corners. I sits third to the left of W. H sits second to the left of J. V is an immediate neighbour of both W and H. U is an immediate neighbor of J. X sits second to the left of W.

How many people sit between K and H when counted from the left of K?

(a) One
(b) Three
(c) Four
(d) Two

Q84. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

KDW 25, NGZ 35, QJC 55, TMF 95, WPI 175, ?

(a) LSL 335
(b) ZSG 335
(c) ZML 335
(d) ZSL 335

Q85. The Industrial Policy Resolution (1956), adopted during the Second Five Year Plan, aimed at which of the following?

(a) Promoting only consumer goods industries
(b) Reducing public sector involvement
(c) Privatization of heavy industries
(d) Establishing a socialist pattern of society

Q86. Which of the following conservation sites in India is famous for the successful conservation of the one-horned rhinoceros?

(a) Silent Valley National Park
(b) Kaziranga National Park
(c) Periyar Wildlife Sanctuary
(d) Gir National Park

Q87. 9 is related to 117 following a certain logic. Following the same logic, 12 is related to 156. To which of the following is 17 related, following the same logic?

(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.)

(a) 221
(b) 197
(c) 201
(d) 186

Q88. Find the mean deviation about the mean for the data.

5, 10, 15, 20, 25.

(a) 5
(b) 8
(c) 6

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(d) 7

Q89. A and B complete a work in 35 days. If A alone can do it in 60 days, then B alone can do one-third of the same work in _____days.

(a) 42
(b) 36
(c) 84
(d) 28

Q90. Which of the following Fundamental Rights is available only to citizens and not to foreigners?

(a) Right to life and personal liberty
(b) Right to Equality before law
(c) Right against exploitation
(d) Right to freedom of speech and expression

Q91. A person travels from place P to place Q to buy an article that costs 15% less at Q than at P. He spends Rs. 150 on travel and still saves Rs. 150 compared to buying the article at P. What is his percentage saving with respect to the price at P?

(a) 9%
(b) 7.5%
(c) 4.5%
(d) 3.5%

Q92. The local self-government system under the Cholas is best reflected in the:

(a) Aihole Inscription
(b) Uttaramerur Inscription
(c) Allahabad Pillar Inscription
(d) Hathigumpha Inscription

Q93. Which feature best distinguishes meristematic tissue from other plant tissues in terms of cell division and function?

(a) Cells transport water and minerals throughout the plant
(b) Cells form a protective covering across plant surface
(c) Cells store vital nutrients and maintain reserves
(d) Cells divide actively and contribute to plant growth

Q94. Which of the following pairs of mineral resource projects and their locations in India is correctly matched?

(a) Neyveli Lignite Project – Punjab
(b) Korba Coalfield – Rajasthan
(c) Kudremukh Iron Ore Project – Karnataka
(d) Raniganj Coalfield – Gujarat

Q95. Each of V, U, T, O, N, M and L was born in a different month viz. January, March, May, June, July, September and December of the same year, starting from January and ending in December.

Only two people are elder than M. Only two people were born between L and M. Only U is elder than O. T is elder than N but younger than V.

How many people were born between T and U?

(a) Two
(b) Three
(c) One
(d) Four

Q96. Under Article 75(3) of the Constitution of India, which body is collectively responsible to the House of the People (Lok Sabha)?

(a) Rajya Sabha
(b) Council of Ministers

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(c) Supreme Court of India
(d) Finance Commission of India

Q97. Below are given two sets of numbers. In each set of numbers, a certain mathematical operation on first number results in the second number. Similarly, certain mathematical operation on second number results in the third number and so on. Which of the given options follows the same set of operations as that followed in the question?

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constitute 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.)

5 – 5 – 25 - 125;

4 – 4 – 16 – 64

(a) 6 – 6 – 36 – 216
(b) 7 – 7 – 49 – 94
(c) 8 – 8 – 64 – 520
(d) 3 – 3 – 9 – 36

Q98. In June 2025, who among the following was appointed as the Secretary of the Research and Analysis Wing (RAW), India's external intelligence agency?

(a) Parag Jain
(b) Ravi Sinha
(c) Arvind Kumar
(d) Samant Goel

Q99. What will come in the place of '?' in the following equation if '+' and '–' are interchanged and 'x' and '÷' are interchanged?

81 x 9 – 14 ÷ 2 + (60 x 6) ÷ 3 – 49 + 15 = ?

(a) 32
(b) 64
(c) 41
(d) 56

Q100. The Economic Survey of India (2002–03) discusses the impact of globalisation after the 1991 reforms. Which strategy best reflects this influence when a district seeks to attract new industries?

(a) Expanding industrial licensing
(b) Enhancing agricultural subsidies
(c) Promoting domestic–foreign joint ventures
(d) Restricting foreign financial institutions

Q101. The given system of linear equations possesses infinitely many solutions.

3x + 7y = 15

ax + by = 30

What are the values of a and b?

(a) a = 7; b = 3
(b) a = 3; b = 7
(c) a = 6; b = 14
(d) a = 14; b = 6

Q102. A box initially at rest is pushed with a force of 30 N to the right while friction applies a force of 30 N to the left. What happens to the motion of the box?

(a) The box remains at rest.
(b) The box accelerates to the right.
(c) The box slows down and stops.
(d) The box moves in the opposite direction.

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Q103. At which level of the Panchayati Raj system do Mandal or Taluka Panchayats function?

(a) District level
(b) Metropolitan level
(c) Intermediate level
(d) Village level

Q104. Which Article of the Indian Constitution strives to promote the welfare of the people by securing and protecting them as effectively?

(a) Article 40
(b) Article 39
(c) Article 41
(d) Article 38

Q105. A can complete a work in 9 days and B can complete the same work in 22 days. If they work together for 2 days, what fraction of the work remains unfinished?

(a) 76/99
(b) 73/99
(c) 68/99
(d) 71/99

Q106. A wire of resistance 10 ohms is cut into two equal pieces. If these pieces are connected in parallel, what is the equivalent resistance?

(a) 2.5 ohms
(b) 10 ohms
(c) 20 ohms
(d) 5 ohms

Q107. Latitudes and longitudes are commonly referred to as what in geographical terminology?

(a) Planetary markers
(b) Geographical coordinates
(c) Geographical boundaries
(d) Global divisions

Q108. Secret Mountain is a metahuman digital band conceived by whom?

(a) A.R. Rahman
(b) Arijit Singh
(c) Shankar Mahadevan
(d) Shreya Ghoshal

Q109. If ‘P’ stands for ‘×’, ‘Q’ stands for ‘÷’, ‘R’ stands for ‘-’ and ‘S’ stands for ‘+’, what will come in place of the question mark ‘?’ in the following equation?

(42 Q 6) P 5 S 7 P 11 R (64 Q 8) P 2 R 5 P 6 = ?

(a) 42
(b) 62
(c) 66
(d) 54

Q110. 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.

Five, girls, Gauri, Ragini, Navya, Kajal and Lovely, are sitting around a circular table facing towards the centre. Who sits to the immediate left of Lovely?

(I) Gauri is sitting immediately to the right of Lovely. Ragini is sitting immediately to the left of Kajal.

(II) Navya is sitting second to the left of Kajal. Gauri is an immediate neighbour of both Navya and Lovely.

(a) Data in Statement I alone is sufficient to answer the question while data in statement II is not

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(b) Both statements I and II together are NOT 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) Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question

Q111. Select the option that is correct regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion (A): The Election Commission of India recognises parties as national, or state parties based on specified criteria.

Reason (R): Recognition of political parties depends on electoral performance and adherence to rules set by the Election Commission of India.

(a) A is true, R is false.
(b) Both A and R are true, and R is the correct explanation of A.
(c) A is false, R is true.
(d) Both A and R are true, but R is not the correct explanation of A.

Q112. In the following triads, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one which follows the same logic.

BARS - ARBS - SRAB

FLAM - LAFM - MALF

(a) KEAT - EAKT - TAEK
(b) WAST - WSAT - TSAW
(c) BALK - ABLK - KALB
(d) MIND - INMD - INDM

Q113. Find the median of the data: 4, 6, 8, 10, 12, 14.

(a) 11
(b) 9
(c) 10
(d) 8

Q114. Who built the Marble Palace in Kolkata, a grand mansion noted for its Renaissance art collection and neoclassical architecture?

(a) Dadabhai Naoroji
(b) Keshab Chandra Sen
(c) Raja Rajendra Mullick
(d) Bankim Chandra Chatterjee

Q115. If 12 workers can complete a wall in 18 days, in how many days will 8 workers complete it?

(a) 27 days
(b) 36 days
(c) 32 days
(d) 30 days

Q116. Who among the following was jointly awarded the 2025 Nobel Prize in Economic Sciences along with 2 other economists?

(a) Paul Krugman
(b) Thomas Piketty
(c) Joel Mokyr
(d) Daron Acemoglu

Q117. What will come in place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

$108 \times 4 - 13 + 4 \div 7 = ?$

(a) 16
(b) 10
(c) 14

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(d) 12

Q118. At which of the following Indus Valley Civilization sites was a dockyard discovered?

(a) Mohenjo-daro
(b) Kalibangan
(c) Harappa
(d) Lothal

Q119. The Extremist approach differed from the Moderate approach mainly because Extremists ____.

(a) Advocated exclusive constitutional negotiations with the government
(b) Opposed the use of national economic policies for public welfare
(c) Emphasised mass participation and direct political agitation
(d) Promoted administrative reforms as the sole path to Swaraj

Q120. The famous novel "The Guide" was written by which Indian author?

(a) Vikram Seth
(b) R.K. Narayan
(c) Raja Rao
(d) Khushwant Singh

ANSWER KEY

1	a	2	b	3	b	4	a	5	c	6	a	7	c	8	d	9	c	10	c
11	a	12	c	13	b	14	b	15	b	16	d	17	c	18	a	19	b	20	d
21	b	22	c	23	c	24	a	25	b	26	d	27	b	28	b	29	a	30	d
31	a	32	d	33	d	34	a	35	d	36	c	37	b	38	d	39	d	40	d
41	a	42	d	43	c	44	a	45	b	46	c	47	a	48	d	49	a	50	b
51	a	52	c	53	a	54	a	55	a	56	c	57	c	58	c	59	c	60	c
61	a	62	c	63	d	64	d	65	d	66	c	67	d	68	c	69	c	70	c
71	a	72	a	73	a	74	b	75	d	76	c	77	a	78	b	79	b	80	c
81	d	82	c	83	c	84	d	85	d	86	b	87	a	88	c	89	d	90	d
91	b	92	b	93	d	94	c	95	b	96	b	97	a	98	a	99	c	100	c
101	c	102	a	103	c	104	d	105	c	106	a	107	b	108	a	109	c	110	c
111	b	112	a	113	b	114	c	115	a	116	c	117	d	118	d	119	c	120	b

SOLUTIONS

Q1. Answer: (a) 55

Shortcut Trick
When two parallel lines are intersected by a transversal, the corresponding angles are always equal.
In the figure, X and the given angle 55° are corresponding angles.
Therefore X = 55.
Therefore The correct answer is 55.
Alternate Method
Given: AB || CD and RS is a transversal.
Formula Used: Property of Corresponding Angles in parallel lines.
Calculations:
=> Let the point of intersection of RS with AB be P and with CD be Q.
=> Since AB || CD, the angles at the same relative position at each intersection are corresponding angles.
=> angle BPS and angle DQS are corresponding angles.

=> Property: angle BPS = angle DQS

=> X = 55°

Therefore The correct answer is 55.

Additional Information

Alternate Interior Angles

When a transversal cuts parallel lines, the pairs of angles on opposite sides of the transversal and between the parallel lines are equal.

Consecutive Interior Angles

Also known as co-interior angles, these are on the same side of the transversal and their sum is always 180° for parallel lines.

Vertically Opposite Angles

Angles opposite each other at a vertex where two lines intersect are always equal, regardless of parallel lines.

Q2. Answer: (b) Power

The correct answer is

Power.

Key Points

• Power is defined as the rate at which work is done or the rate at which energy is transferred or transformed.

• It describes how fast a specific amount of work is completed over a given time interval.

• The mathematical expression for power is Power = Work ÷ Time.

• The SI unit of power is the Watt (W), which is equivalent to one Joule per second (J/s).

• Power is a scalar quantity, meaning it has only magnitude and no specific direction.

• The dimensional formula for power is [ML²T^(−3)].

Additional Information

• Energy is the total capacity to do work. While energy tells us how much work can be done, power tells us how quickly it is done.

• Force is a vector quantity that represents a push or pull upon an object, calculated as the product of mass and acceleration (F = m × a).

• Displacement refers to the change in position of an object in a specific direction; it is the shortest straight-line distance between the start and end points.

• Work is done when a force acts upon an object to cause a displacement (Work = Force × Displacement × cosθ).

• Common non-SI units of power include Horsepower (hp), where 1 hp ≈ 746 Watts.

Q3. Answer: (b) 40 √2

Shortcut Trick

Height of kite from ground (using Amit's data) = 100 × sin 30° = 100 × (1/2) = 50 m.

Vertical height of kite relative to Nitin's roof = 50 m − 10 m = 40 m.

Nitin's string length = Relative Height ÷ sin 45° = 40 ÷ (1/√2) = 40√2 m.

Therefore The correct answer is 40√2 m.

Alternate Method

Given:

Length of Amit's string = 100 m

Angle of elevation for Amit = 30°

Height of building (Nitin's position) = 10 m

Angle of elevation for Nitin = 45°

Calculations:

Let the kite be at point P and its vertical height from ground be H.

In the right-angled triangle for Amit:

=> sin 30° = H ÷ 100

=> 1/2 = H ÷ 100

=> H = 50 m

Now, Nitin is on a building of height 10 m. Let his string length be L.

Vertical distance from Nitin's level to the kite = 50 − 10 = 40 m

In the right-angled triangle for Nitin:

=> sin 45° = 40 ÷ L

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=> 1/√2 = 40 ÷ L

=> L = 40 × √2

=> L = 40√2 m

Therefore The correct answer is 40√2 m.

Additional Information

Trigonometric Ratios

For a right-angled triangle: sin θ = Perpendicular ÷ Hypotenuse; cos θ = Base ÷ Hypotenuse; tan θ = Perpendicular ÷ Base.

Standard Values

sin 30° = 1/2; sin 45° = 1/√2; sin 60° = √3/2.

Angle of Elevation

The angle formed by the line of sight with the horizontal when looking up at an object.

Q4. Answer: (a) 6 √2 cm

Shortcut Trick

Ratio of Height (h) to Base (b) is 1 : 3.

Let height = h, then base = 3h.

Area = Base × Height => 216 = 3h × h => 216 = 3h².

h² = 72 => h = √72 = √(36 × 2) = 6√2 cm.

Therefore The correct answer is 6√2 cm.

Alternate Method

Given:

Area of the parallelogram = 216 cm²

Relation: Base (b) = 3 × Height (h)

Formula Used:

Area of a parallelogram = Base × Height

Calculations:

=> Area = b × h

=> 216 = (3h) × h

=> 216 = 3h²

=> h² = 216 ÷ 3

=> h² = 72

=> h = √72

=> h = √(36 × 2)

=> h = 6√2 cm

Therefore The correct answer is 6√2 cm.

Additional Information

Area and Perimeter of Parallelogram

The Area is calculated as Base × Perpendicular Height. The Perimeter is 2 × (Sum of adjacent sides).

Properties of a Parallelogram

Opposite sides are equal and parallel. Diagonals of a parallelogram bisect each other, but they are not necessarily equal in length unless it is a rectangle.

Relationship with Triangles

A diagonal divides a parallelogram into two congruent triangles. Thus, Area of parallelogram = 2 × Area of triangle formed by the diagonal.

Q5. Answer: (c) Bird populations may decline due to reduced insect prey, altering energy flow

The correct answer is - Bird populations may decline due to reduced insect prey, altering energy flow

Key Points

• Disruption of Trophic Levels

• In a typical agricultural food web, insects often occupy the role of primary consumers (eating plants) or secondary consumers (predatory insects).

• Many bird species are insectivores, meaning they rely almost exclusively on insects as their primary food source.

• When a pesticide significantly reduces the insect population, it removes a critical energy source for these birds, leading to

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starvation, reduced reproductive success, and an eventual decline in bird populations.

• Energy Flow Alteration

• Energy flows from producers (plants) to primary consumers (insects) and then to secondary consumers (birds).

• A sharp decrease in the biomass of one trophic level (insects) creates a bottleneck, preventing energy from efficiently reaching the higher trophic levels (birds).

• This alteration can lead to a top-down or bottom-up effect that destabilizes the entire ecosystem structure.

Additional Information

• Food Web Dynamics

• A food web consists of all the food chains in a single ecosystem. Each living thing in an ecosystem is part of multiple food chains.

• The removal of a single species or group (like insects) can have a cascading effect on organisms that are not directly targeted by the pesticide.

• Pesticide Impact

• While pesticides are intended to protect crops, they can lead to bioaccumulation and biomagnification, where toxic substances become more concentrated as they move up the food chain.

• Indirect effects, such as habitat loss or prey depletion, are often more damaging to biodiversity than the direct toxicity of the chemical itself.

• Role of Other Organisms

• Decomposers: While they break down dead matter, a sudden drop in living insect populations doesn't necessarily mean a long-term increase in decomposers, as the total organic matter input might eventually decrease.

• Plants: Although some plants rely on insects for pollination, many agricultural crops are wind-pollinated. Therefore, a decline in birds due to food shortage is a more direct and universal consequence of insect loss in this context.

Q6. Answer: (a) Elephanta Island

The correct answer is Elephanta Island.

Key Points

• Elephanta Island, locally known as Gharapuri, is located in the Mumbai Harbour approximately 10 kilometers east of Mumbai city.

• It is renowned for the Elephanta Caves, a collection of seven rock-cut caves carved between the 5th and 8th centuries, showcasing high-quality sculptural art.

• The site was designated as a UNESCO World Heritage Site in 1987 due to its cultural significance and the preservation of Shiva-centric iconography.

• The most iconic feature is the 7-meter-high Trimurti sculpture, which depicts Lord Shiva as the Creator (Vamadeva), Preserver (Tatpurusha), and Destroyer (Aghora).

• The architectural style reflects the Kalachuri dynasty influence, featuring massive pillars, spacious halls, and intricate panels depicting Hindu mythological narratives.

Additional Information

• Butcher Island

• Officially known as Jawahar Dweep, it serves as an essential oil terminal for the Mumbai Port Trust.

• It lacks historical monuments and is primarily used for industrial and logistical purposes related to crude oil storage.

• Khanderi Island

• Located south of Mumbai off the coast of Thal, it is famous for the Khanderi Fort built by Chhatrapati Shivaji Maharaj in 1679.

• The island, along with its twin Underi, played a strategic role in Maratha naval defense against the Siddhis and the British.

• Salsette Island

• It is the 14th most populous island in the world and contains the entire Mumbai Metropolitan Region, including Thane.

• While it houses the Kanheri Caves within Sanjay Gandhi National Park, it is generally referred to by its geographic name rather than as a specific heritage island site like Elephanta.

Q7. Answer: (c) Ganga

The correct answer is Ganga.

Key Points

• The Ganga River basin is the largest drainage basin in India, covering a vast catchment area of approximately 8,61,452 square kilometers.

• It accounts for nearly 26.3% of the total geographical area of the country, stretching across the states of Uttarakhand, Uttar Pradesh, Bihar, West Bengal, Haryana, Himachal Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh, and the Union Territory of

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Delhi.

• The basin is a part of the larger Ganges-Brahmaputra-Meghna (GBM) river system and is fed by both Himalayan snow-melt and Peninsular rainfall, ensuring it remains a perennial water source.

• The Ganga originates from the Gangotri Glacier near Gaumukh in the Uttarkashi district of Uttarakhand, where it is initially known as the Bhagirathi.

• The fertile Indo-Gangetic Plain formed by this basin is one of the most densely populated and agriculturally productive regions in the world due to the deposition of alluvial soil.

Additional Information

• Godavari:

• It is the second-largest river basin in India, often referred to as the Dakshina Ganga.

• The catchment area spans approximately 3,12,812 square kilometers, covering parts of Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, and Odisha.

• Krishna:

• This is the third-largest basin in India, with a total catchment area of about 2,58,948 square kilometers.

• It drains large parts of Maharashtra, Karnataka, Telangana, and Andhra Pradesh before entering the Bay of Bengal.

• Narmada:

• It is the largest west-flowing river of Peninsular India, originating from the Amarkantak plateau.

• Its basin is relatively smaller, covering about 98,796 square kilometers, primarily across Madhya Pradesh and Gujarat.

Q8. Answer: (d) 104

The logic follows here,

• 39 + 13 = 52

• 52 + 13 = 65

• 65 + 13 = 78

• 78 + 13 = 91

• 91 + 13 = 104

Thus, the missing term in the series is 104.

Hence, the correct answer is 'Option 4';

Q9. Answer: (c) Rs. 43,200

Shortcut Trick

Use the Successive Multiplier method to find the final price.

Final SP = Initial CP × (1 + Profit1/100) × (1 − Loss2/100)

Final SP = 40,000 × 1.20 × 0.90

Final SP = 40,000 × 1.08 = 43,200

Therefore The correct answer is Rs. 43,200.

Alternate Method

Given: Initial Cost Price (CP) = Rs. 40,000, First Profit = 20%, Second Loss = 10%

Step 1: Calculate the first selling price (SP1) after 20% profit.

=> SP1 = CP + (Profit % of CP)

=> SP1 = 40,000 + (20/100 × 40,000)

=> SP1 = 40,000 + 8,000 = Rs. 48,000

Step 2: This SP1 becomes the Cost Price for the second transaction.

=> CP2 = Rs. 48,000

Step 3: Calculate the final selling price (SP2) after 10% loss.

=> Final SP = CP2 − (Loss % of CP2)

=> Final SP = 48,000 − (10/100 × 48,000)

=> Final SP = 48,000 − 4,800 = Rs. 43,200

Therefore The correct answer is Rs. 43,200.

Additional Information

Successive Percentage Change

When a value is changed by a% and then by b%, the effective net change is given by [a + b + (a × b)/100] %.

Profit and Loss Multiplier

For a profit of P%, the selling price multiplier is (1 + P/100). For a loss of L%, the multiplier is (1 − L/100).

Effective Profit Percentage

In this case, net change = [20 − 10 + (20 × −10)/100] = [10 − 2] = 8% profit. Final SP = 40,000 × 1.08 = Rs. 43,200.

Q10. Answer: (c) Only I

Preparing the family tree diagram by using the following symbols:

Symbol	•	–	×	%	#
Meaning	Mother	Brother	Wife	Father	Daughter

Checking : V % Q # K + Z − T × L

Based on the tree for expression I, Q, Z, and T are siblings. Q and T are females. T is the wife of L. Therefore, Q is the sister of L's wife.

Hence, the correct answer is 'Option 3'.

Q11. Answer: (a) National Biodiversity Authority

The correct answer is National Biodiversity Authority.

Key Points

• The National Biodiversity Authority (NBA) is a statutory body established by the Government of India in 2003 to implement the provisions of the Biological Diversity Act, 2002.

• In March 2026, the NBA constituted a specialized committee dedicated to the management and mitigation of Invasive Alien Species (IAS), which pose a significant threat to India’s endemic flora and fauna.

• The primary objective of this committee is to develop a comprehensive national strategy for the early detection, rapid response, and systematic eradication of species that disrupt local ecosystems.

• This move is part of India’s commitment to the Kunming-Montreal Global Biodiversity Framework, which aims to reduce the introduction and establishment of known invasive alien species by at least 50% by 2030.

• The NBA, headquartered in Chennai, functions as a regulatory and advisory body to the Central Government on issues of conservation and the equitable sharing of benefits arising from biological resources.

Additional Information

• Central Pollution Control Board (CPCB):

• Established in September 1974 under the Water (Prevention and Control of Pollution) Act, 1974.

• It serves as a technical wing of the Ministry of Environment, Forest and Climate Change, focusing on monitoring air quality and water pollution levels across the country.

• Indian Council of Forestry Research and Education (ICFRE):

• An autonomous body headquartered in Dehradun, it oversees forestry research, education, and extension.

• It operates several regional institutes and centers to address location-specific forestry and silviculture challenges.

• Invasive Alien Species (IAS):

• These are non-native species, such as Lantana camara, Prosopis juliflora, and Water Hyacinth, that cause ecological or economic harm.

• In India, these species often outcompete native vegetation, leading to a loss of biodiversity and affecting the livelihoods of forest-dependent communities.

Q12. Answer: (c) Brahmi

The correct answer is Brahmi.

Key Points

• Emperor Ashoka, who ruled the Mauryan Empire from approximately 268 to 232 BCE, utilized inscriptions on rocks and pillars to disseminate his message of Dhamma (righteousness).

• While these edicts were written in regional languages like Prakrit, Greek, and Aramaic, the Brahmi script was the most widely used script for the majority of the inscriptions found across the Indian subcontinent.

• The Brahmi script is an ancient writing system written from left to right and is considered the mother of almost all modern Indian scripts, including Devanagari, Bengali, and Tamil.

• In 1837, James Prinsep, a British antiquarian and colonial administrator, successfully deciphered the Brahmi script, which provided the key to understanding Ashokan history and his royal titles like Devanampiya (Beloved of the Gods).

• The use of Brahmi was uniform across the central and southern parts of the empire, making it the predominant script of the Mauryan administrative and religious communications.

Additional Information

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• Kharosthi:

• This script was used primarily in the northwestern part of the Mauryan Empire (modern-day Pakistan and Afghanistan), such as in the Shahbazgarhi and Mansehra edicts.

• Unlike Brahmi, Kharosthi was written from right to left and was influenced by the Aramaic script.

• Devanagari:

• This is a much later script that evolved around the 7th century CE from the Gupta script.

• It is currently used for writing Sanskrit, Hindi, and Marathi, but it did not exist during Emperor Ashoka's reign.

• Gupta Script:

• It was used to write Sanskrit during the Gupta Empire (4th to 6th century CE).

• It represents a cursive evolution of Brahmi and served as a link between ancient and medieval Indian scripts.

Q13. Answer: (b) 103

Shortcut Trick

Total sum of interior angles of a 10-sided figure = (10 − 2) × 180 = 1440 degrees.

Sum of the five given angles = 5 × 185 = 925 degrees.

Sum of the remaining five equal angles = 1440 − 925 = 515 degrees.

Each remaining angle = 515 ÷ 5 = 103 degrees.

Therefore The correct answer is 103 degrees.

Alternate Method

Given: Number of sides (n) = 10; 5 angles = 185 degrees each; other 5 angles are equal.

Formula: Sum of interior angles of a polygon = (n − 2) × 180 degrees.

For a 10-sided figure (decagon):

=> Total sum of interior angles = (10 − 2) × 180°

=> Total sum = 8 × 180° = 1440°

Let each of the five equal remaining angles be x.

=> 5 × 185° + 5 × x = 1440°

=> 925° + 5x = 1440°

=> 5x = 1440° − 925°

=> 5x = 515°

=> x = 515° ÷ 5 = 103°

Therefore The correct answer is 103 degrees.

Additional Information

Sum of Interior Angles

For any n-sided simple polygon, the sum of all its interior angles is given by the formula (n − 2) × 180 degrees.

Sum of Exterior Angles

The sum of the exterior angles of any convex or concave polygon, taking one at each vertex, is always 360 degrees.

Concave Polygon

A polygon is concave if at least one of its interior angles is a reflex angle (greater than 180 degrees).

Regular Polygon Angle

Each interior angle of a regular polygon with n sides is calculated as [(n − 2) × 180] ÷ n.

Q14. Answer: (b) 5

Shortcut Trick

Interest for 3 years = Rs. 4,500

Interest for 1 year = 4500 ÷ 3 = Rs. 1,500

Rate (x) = (Interest for 1 year ÷ Principal) × 100

x = (1500 ÷ 30000) × 100 = 5

Therefore The correct answer is 5.

Alternate Method

Given:

Principal (P) = Rs. 30,000

Time (T) = 3 years

Simple Interest (SI) = Rs. 4,500

Rate (R) = x% per annum

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

Calculations:

=> 4500 = (30000 × x × 3) ÷ 100

=> 4500 = 300 × 3 × x

=> 4500 = 900 × x

=> x = 4500 ÷ 900

=> x = 5

Therefore The correct answer is 5.

Additional Information

Simple Interest Formula

Simple Interest is calculated only on the initial principal amount: SI = (P × R × T) ÷ 100.

Calculating Rate

The rate of interest per annum can be found using R = (SI × 100) ÷ (P × T).

Total Amount

The total amount (A) payable after the time period is the sum of Principal and Interest: A = P + SI.

Q15. Answer: (b) 15

Given:

• A certain number of people are sitting in a row, facing north.

• E sits at the extreme left end of the row.

• Exactly seven people sit between E and F.

• A sits third to right of F.

• Exactly four people sit between C and B.

• C sits exactly in between E and F.

• Exactly four people sit between B and D.

• D sits at one of the extreme ends

The Final Arrangement is,

The total number of people seated in the row corresponds to the position of the last person, D.

The total number of people is 15.

Hence, the correct answer is "Option 2"

Q16. Answer: (d) Ousmane Dembélé

The correct answer is Ousmane Dembélé.

Key Points

• The 2025 Ballon d'Or ceremony took place at the Théâtre du Châtelet in Paris on 22 September 2025, marking the 69th edition of the annual awards presented by France Football.

• Ousmane Dembélé, a star winger for Paris Saint-Germain (PSG) and the France national team, was honored as the world's best player for the 2024-25 season.

• The French international was recognized for his extraordinary playmaking abilities, explosive pace, and his pivotal role in guiding PSG to multiple domestic honors and a deep run in the UEFA Champions League.

• The voting was conducted by a select jury of international journalists from the top 100 FIFA-ranked nations, who assessed players based on individual talent, team trophies, and exemplary conduct.

• Winning this accolade cements Dembélé's legacy as one of the few French players to receive the Golden Ball, following in the footsteps of legends like Michel Platini and Zinedine Zidane.

Additional Information

• Kylian Mbappé:

• A world-renowned forward and France national team captain who joined Real Madrid in 2024; he remains a dominant force in La Liga and continues to be a perennial contender for the Ballon d'Or.

• Jude Bellingham:

• The English midfielder playing for Real Madrid who previously won the Kopa Trophy and has become a vital component of the

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England national team midfield.

• Erling Haaland:

• A Norwegian striker representing Manchester City, widely regarded as one of the best finishers in the world and a frequent recipient of the Gerd Müller Trophy for most goals.

• Ballon d'Or Evolution:

• Founded in 1956 by the magazine France Football, it was originally restricted to European players before expanding its eligibility globally in 2007.

• The award is distinct from FIFA's The Best awards, although the two were merged into the FIFA Ballon d'Or between 2010 and 2015.

Q17. Answer: (c) 3

Given: 715 438 961 127 821

• The third digit of the highest number is: 1 (961)

• The second digit of the lowest number is: 2 (127)

So, the addition of the third digit of the highest number and the second digit of the lowest number is: 1 + 2 = 3.

Hence, the correct answer is 'Option 3'.

Q18. Answer: (a) Kuchipudi

The correct answer is Kuchipudi.

Key Points

• Kuchipudi is a prominent Indian classical dance form that originated in the Krishna district of Andhra Pradesh, specifically in the village of Kuchelapuram.

• Historically, the dance-drama traditions of the Andhra region were generically called Yakshagaana. Over time, the specific style developed by the Brahmin troupes of this village became distinctively known as Kuchipudi.

• The tradition was significantly refined by Siddhendra Yogi during the 17th century, who is credited with formalizing the dance and composing the famous Bhama Kalapam.

• Originally, it was performed exclusively by men (known as Bhagavatulu), who enacted various roles from the Bhagavata Purana and other mythological texts in a theater-style presentation.

• Characteristic features of this dance include Tarangam (dancing on the rim of a brass plate) and a blend of Nritta (pure dance), Nritya (expressive dance), and Natya (drama).

Additional Information

• Mohiniyattam:

• A classical dance form from Kerala, performed by women as a solo recital.

• The term refers to the Dance of the Enchantress, based on the Mohini avatar of Lord Vishnu.

• Bharatanatyam:

• Originating in Tamil Nadu, it was anciently known as Sadir Attam or Dasi Attam.

• It was traditionally performed by Devadasis in South Indian temples as a form of worship.

• Kathak:

• Hailing from North India, its name is derived from the word Katha, meaning story.

• It was traditionally performed by nomadic storytellers known as Kathakars in temples and later in Mughal courts.

Q19. Answer: (b) Spreadsheet

The correct answer is Spreadsheet.

Key Points

• A Spreadsheet is an application software used for organizing, analyzing, and storing data in a tabular format consisting of rows and columns.

• The most distinctive feature of a spreadsheet is Automatic Recalculation, which ensures that when a user changes a value in a cell, the software instantly updates all results derived from that data through formulas.

• This capability allows for What-if Analysis, where users can modify variables (such as prices or interest rates) and observe the immediate impact on totals or financial projections without manual re-calculation.

• Spreadsheets use Cell Referencing (e.g., A1, B5) to link different data points, creating a dynamic environment where data flows logically throughout the Worksheet.

Additional Information

• Database software:

• Focuses on managing large, structured datasets and ensuring Data Integrity.

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• Common examples include MySQL, Oracle, and Microsoft Access.
• While it stores data, viewing changes often requires running specific Queries rather than providing an instant grid-based update.
• Presentation tool:
• Used to create Slide Shows for visual communication (e.g., Microsoft PowerPoint, Google Slides).
• It is designed for displaying information and lacks the mathematical engine required for real-time data modeling.
• Word processor:
• Specialized for Text Editing and document formatting (e.g., Microsoft Word).
• Although it can include tables, it does not possess the computational logic to automatically update mathematical results when a table value is changed.

Q20. Answer: (d) 5

Shortcut Trick
Apply the Mean Proportional formula: $b^2 = a \times c$.
Here, a = (x + 3), c = (x − 3), and b = 4.
$4^2 = (x + 3)(x - 3) \Rightarrow 16 = x^2 - 9$.
$x^2 = 25 \Rightarrow x = 5$ (since x > 0).
Therefore The correct answer is 5.
Alternate Method
Given:
First term (a) = (x + 3)
Second term (c) = (x − 3)
Mean proportional (b) = 4
Formula Used:
If 'b' is the mean proportional between 'a' and 'c', then $b = \sqrt{(a \times c)}$ or $b^2 = a \times c$.
Calculations:
$\Rightarrow 4^2 = (x + 3) \times (x - 3)$
$\Rightarrow 16 = x^2 - 3^2$ [Using identity $(a + b)(a - b) = a^2 - b^2$]
$\Rightarrow 16 = x^2 - 9$
$\Rightarrow x^2 = 16 + 9$
$\Rightarrow x^2 = 25$
$\Rightarrow x = \sqrt{25}$
$\Rightarrow x = 5$ (since it is given that x > 0)
Thus, the value of x is 5, which corresponds to Option (4).
Therefore The correct answer is 5.
Additional Information
Mean Proportional
The mean proportional between two numbers 'a' and 'c' is the square root of their product, given by $b = \sqrt{(ac)}$.
Third Proportional
If a : b = b : c, then 'c' is called the third proportional to 'a' and 'b', calculated as $c = b^2/a$.
Algebraic Identity
The identity $(a + b)(a - b) = a^2 - b^2$ is a fundamental tool for solving quadratic relations in proportions.

Q21. Answer: (b) $(3x + 7y)^3$

Shortcut Trick
Identify the cube roots of the cubic terms: $\sqrt[3]{(27x^3)} = 3x$ and $\sqrt[3]{(343y^3)} = 7y$.
Check if all terms in the expression are positive, which indicates the $(a + b)^3$ form.
Verify that the middle terms match $3a^2b$ and $3ab^2$ for a = 3x and b = 7y.
The resulting expression is simply $(3x + 7y)^3$.
Therefore The correct answer is $(3x + 7y)^3$.
Alternate Method
Given: $27x^3 + 343y^3 + 189x^2y + 441xy^2$
Formula Used: $(a + b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$

=> Let us rewrite the terms in the standard identity form:

=> $27x^3 = (3x)^3$

=> $343y^3 = (7y)^3$

=> $189x^2y = 3 \times (3x)^2 \times (7y) = 3 \times 9x^2 \times 7y = 189x^2y$

=> $441xy^2 = 3 \times (3x) \times (7y)^2 = 3 \times 3x \times 49y^2 = 441xy^2$

=> Expression = $(3x)^3 + (7y)^3 + 3(3x)^2(7y) + 3(3x)(7y)^2$

=> Expression = $(3x + 7y)^3$

Therefore The correct answer is $(3x + 7y)^3$.

Additional Information

Cubic Difference Identity

The expression for $(a - b)^3$ is expanded as $a^3 - b^3 - 3a^2b + 3ab^2$.

Sum of Two Cubes

The factorization of $a^3 + b^3$ is $(a + b)(a^2 - ab + b^2)$.

Difference of Two Cubes

The factorization of $a^3 - b^3$ is $(a - b)(a^2 + ab + b^2)$.

Q22. Answer: (c) Mother's mother

Preparing the family tree diagram by using the following symbols:

From the above breakdown, M is the mother of H, and H is the mother of F. This makes M the maternal grandmother of F.

Therefore, M is the Mother's mother of F.

Hence, the correct answer is 'Option 3'.

Q23. Answer: (c) 4

Shortcut Trick

Ratio of distances X : Y = 750 : 740 = 75 : 74

Ratio of distances Y : Z = 444 : 438 = 74 : 73

Combining the ratios, X : Y : Z = 75 : 74 : 73

In a 150 m race, X covers 75 × 2 = 150 m, so Z covers 73 × 2 = 146 m.

Winning distance = 150 − 146 = 4 m.

Therefore The correct answer is 4 m.

Alternate Method

Given:

Distance of Race 1 (X and Y) = 750 m | X beats Y by 10 m.

Distance of Race 2 (Y and Z) = 444 m | Y beats Z by 6 m.

Distance of Race 3 (X and Z) = 150 m.

Calculations:

When X covers 750 m, Y covers (750 − 10) = 740 m.

=> Ratio of speeds $V_x/V_y = 750/740 = 75/74$

When Y covers 444 m, Z covers (444 − 6) = 438 m.

=> Ratio of speeds $V_y/V_z = 444/438 = (444 \div 6) / (438 \div 6) = 74/73$

To find the relation between X and Z:

=> $V_x/V_z = (V_x/V_y) \times (V_y/V_z)$

=> $V_x/V_z = (75/74) \times (74/73) = 75/73$

In a race of 150 m, distance covered by X = 150 m.

=> If 75 units = 150 m, then 1 unit = 2 m.

=> Distance covered by Z = 73 × 2 = 146 m.

=> X beats Z by = 150 − 146 = 4 m.

Therefore The correct answer is 4 m.

Additional Information

Concepts of Races

In a race where A beats B by d meters, A covers the full distance L while B covers L − d in the same time. The ratio of their speeds is $V_a/V_b = L/(L - d)$.

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Successive Ratios

If A:B = x:y and B:C = y:z, then the combined ratio A:B:C = x:y:z. If the common term B is not the same, equate it by multiplying the ratios with suitable constants.

Beating by Time

If A beats B by t seconds, it means A reaches the finish line t seconds before B. Distance by which A beats B = Speed of B × Time t.

Q24. Answer: (a) Black soil rich in clay and moisture

The correct answer is Black soil rich in clay and moisture.

Key Points

• Black soil, also popularly known as Regur soil, is renowned for its high clay content, which allows it to retain moisture for an extended period, making it ideal for rain-fed cotton cultivation.

• This soil type is predominantly found in the Deccan Trap region, covering states like Maharashtra, Gujarat, and parts of Madhya Pradesh, formed from the weathering of basaltic lava rocks.

• The self-ploughing characteristic of this soil, where it develops deep cracks during the dry season, facilitates oxygenation and deep aeration of the soil layers.

• Chemically, black soil is rich in essential nutrients like calcium carbonate, magnesium, potash, and lime, which support the robust growth of the cotton plant.

Additional Information

• Alluvial Soil

• Deposited by the Indus, Ganga, and Brahmaputra river systems.

• Covers nearly 40 percent of India's total land area and is highly fertile for wheat, paddy, and sugarcane.

• Laterite Soil

• Formed due to intense leaching caused by heavy tropical rains in areas like the Western Ghats and Odisha.

• It is typically acidic in nature and is preferred for plantation crops like cashew nuts, tea, and coffee.

• Desert Soil

• Found in arid and semi-arid regions such as Western Rajasthan.

• Exhibits high salinity and low humus content, requiring intensive irrigation for agricultural productivity.

Q25. Answer: (b) Only C

Shortcut Trick

Check the validity of each statement based on quadrilateral properties:

A. Isosceles trapezium: Non-parallel sides are equal, not parallel sides. (False)

B. Kite: Pairs of adjacent sides are equal; Parallelogram: Opposite sides are equal. (False)

C. Square: Has 4 equal sides. Rhombus: Has 4 equal sides. Thus, all squares are rhombuses. (True)

D. Varignon’s Theorem: Joining mid-points of any quadrilateral always forms a parallelogram. (False)

Therefore The correct answer is Only C.

Alternate Method

Analyze each statement by geometric definitions:

Statement A: In an isosceles trapezium, the non-parallel sides (legs) are equal in length. If the parallel sides were equal, the shape would be a parallelogram, not a trapezium.

Statement B: A kite is a quadrilateral with two distinct pairs of equal adjacent sides. A parallelogram must have two pairs of parallel and equal opposite sides. Thus, a kite is not a type of parallelogram.

Statement C: A square is defined as a quadrilateral with four equal sides and four right angles. A rhombus is defined as a quadrilateral with four equal sides. Since every square meets the criteria of having four equal sides, it is always a rhombus.

Statement D: According to Varignon’s Theorem, the mid-points of the sides of any arbitrary quadrilateral, when joined in order, form a parallelogram, which is a more specific property than being a trapezium.

=> Statement A is incorrect.

=> Statement B is incorrect.

=> Statement C is correct (Square subset of Rhombus).

=> Statement D is incorrect.

Therefore The correct answer is Only C.

Additional Information

Varignon’s Theorem

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The quadrilateral formed by joining the mid-points of the sides of any quadrilateral is always a parallelogram, and its area is exactly half the area of the original quadrilateral.

Hierarchy of Quadrilaterals

Every square is a rhombus and a rectangle. Every rhombus and rectangle is a parallelogram. Every parallelogram is a trapezium (based on the inclusive definition).

Isosceles Trapezium Properties

Key features include equal non-parallel sides, equal base angles, and equal diagonals. It is also a cyclic quadrilateral.

Q26. Answer: (d) 14 years

Shortcut Trick

Ratio of Rahul to Son = 7 : 2

Given Rahul's age (7 units) = 49 years

Value of 1 unit = 49 ÷ 7 = 7 years

Son's age (2 units) = 2 × 7 = 14 years

Therefore The correct answer is 14 years.

Alternate Method

Given:

Rahul's age = 49 years

Ratio of ages (Rahul : Son) = 7 : 2

Formula Used:

Total Value = Sum of parts × Unit value | Individual Value = Part × Common Factor (x)

Calculations:

=> Let the common ratio factor be x.

=> Rahul's age = 7x

=> Son's age = 2x

=> According to the question: 7x = 49

=> x = 49 ÷ 7 = 7

=> Son's age = 2 × 7

=> Son's age = 14 years

Therefore The correct answer is 14 years.

Additional Information

Ratio Definition

A ratio is a comparison of two quantities of the same unit, expressed as a : b or a/b.

Proportion Rule

If a : b = c : d, then the product of extremes equals the product of means (a × d = b × c).

Age Difference Consistency

The difference between the ages of two persons remains constant regardless of the number of years passed.

Q27. Answer: (b) 21 years

Shortcut Trick

In Compound Interest, if a sum becomes n times in T years, it becomes n^k times in (k × T) years.

Here, the sum triples (n = 3) in T = 7 years.

We want the sum to become 27 times.

=> $27 = 3^3$, so k = 3.

=> Required time = k × T = 3 × 7 = 21 years.

Therefore The correct answer is 21 years.

Alternate Method

Given:

Initial principal = P

Time (T1) = 7 years

Amount (A1) = 3P

Target Amount (A2) = 27P

Formula Used:

$A = P(1 + r/100)^n$

Calculations:

=> 3P = P(1 + r/100)^7

=> 3 = (1 + r/100)^7 ... (i)

Let the required time be 't' years for the sum to become 27 times.

=> 27P = P(1 + r/100)^t

=> 27 = (1 + r/100)^t

=> 3^3 = [(1 + r/100)^7]^(t/7)

Substituting the value from equation (i):

=> 3^3 = 3^(t/7)

Equating the powers:

=> 3 = t/7

=> t = 3 × 7 = 21 years.

Therefore The correct answer is 21 years.

Additional Information

Multiplicative Growth in CI

In compound interest, the amount grows by the same factor over equal intervals of time. If it doubles in 'x' years, it will quadruple in '2x' years.

Annual vs Half-Yearly Compounding

For half-yearly compounding, the rate is halved (r/2) and the time periods are doubled (2n) in the formula $A = P(1 + r/200)^{2n}$.

Rule of 72

A quick way to estimate the time required to double an investment: Time ≈ 72 ÷ Interest Rate.

Q28. Answer: (b) Pb(NO3)2

CONCEPT:

• Thermal Decomposition is a chemical process where a single compound breaks down into two or more simpler substances upon the application of heat.

• The observation of brown fumes during the heating of an inorganic salt is a classic diagnostic test for the presence of the nitrate (NO3^−) ion, specifically indicating the evolution of nitrogen dioxide (NO2) gas.

EXPLANATION:

• When Lead(II) nitrate crystals are heated in a dry test tube, they undergo a decomposition reaction.

• The balanced chemical equation for this thermal decomposition is:

2Pb(NO3)2(s) → (Heat) 2PbO(s) + 4NO2(g) + O2(g)

• In this reaction:

• Lead(II) oxide (PbO) is formed as a solid residue which is yellow when cold and reddish-brown when hot.

• Nitrogen dioxide (NO2) is evolved as a gas, which is visible as characteristic reddish-brown fumes.

• Oxygen (O2) is also evolved, which is a colorless and odorless gas.

• Analysis of other substances:

• Calcium carbonate (CaCO3) decomposes into calcium oxide and carbon dioxide (a colorless gas).

• Silver chloride (AgCl) typically decomposes into silver and chlorine gas (pale yellow-green) under the influence of light (photolytic decomposition).

• Sodium chloride (NaCl) is highly stable and does not decompose upon simple heating in a laboratory burner.

Therefore, the compound that emits brown fumes upon heating is Lead(II) nitrate, Pb(NO3)2.

Q29. Answer: (a) Five

Given: A, B, C, D, E, F, G and H are sitting around a square table facing the centre of the table. Some of them are sitting at the corners while some are sitting at the exact centre of the sides.

1. B is seated second to the right of H. B is not seated at the centre of any side.

2. F is the immediate neighbour of E and B.

3. D is seated third to the left of H.

4. G is seated in a corner.

5. C is seated second to the right of A

The Final Arrangement is,

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There are five people, E, F, B, C, and H seated between D and A.

Hence, the correct answer is "Option 1"

Q30. Answer: (d) 8

Shortcut Trick

Ratio of speeds of Sushant and Varun = (1/100) : (1/80) = 80 : 100 = 4 : 5.

In a circular track, if two people run in opposite directions with speeds in the ratio a : b, they meet at (a + b) distinct points.

Total meeting points = 4 + 5 = 9 points (including the starting point).

The question asks for the number of meetings before they return to the start together.

Number of meetings = 9 − 1 = 8 times.

Therefore The correct answer is 8.

Alternate Method

Given:

Length of the circular track = 400 m

Time taken by Sushant = 100 sec

Time taken by Varun = 80 sec

Formula Used:

1. Speed = Distance ÷ Time

2. Time to meet at starting point = LCM of individual times

3. Time for each meeting = Track length ÷ Relative Speed

Calculations:

=> Speed of Sushant (V_s) = 400 ÷ 100 = 4 m/s

=> Speed of Varun (V_v) = 400 ÷ 80 = 5 m/s

=> Total time after which they meet at the starting point = LCM(100, 80) = 400 sec

=> Since they run in opposite directions, Relative Speed = V_s + V_v = 4 + 5 = 9 m/s

=> Time for one meeting = Track Length ÷ Relative Speed = 400 / 9 sec

=> Total number of meetings in 400 seconds = 400 ÷ (400 / 9) = 9

=> The 9^(th) meeting occurs exactly at 400 seconds at the starting point.

=> Meetings before returning to the start = 9 − 1 = 8

Therefore The correct answer is 8.

Additional Information

Meeting Points in Opposite Direction

If two people run in opposite directions with speeds in the ratio a : b (simplified), they will meet at (a + b) distinct points on the track.

Meeting Points in Same Direction

If two people run in the same direction with speeds in the ratio a : b (simplified), they will meet at |a − b| distinct points on the track.

Time for First Meeting

The time for the first meeting anywhere on the track is Track Length ÷ Relative Speed.

LCM of Times

The LCM of the times taken by individuals to complete one round gives the time when they will all meet again at the starting point.

Q31. Answer: (a) OSV

The logic followed here is based on the positional values of the letters in the English alphabetical series.

Logic: (1st letter + 5 = 2nd letter) and (2nd letter + 3 = 3rd letter).

For OSV,

For JOR,

For HMP,

For DIL,

Therefore, the letter-cluster that is different from the others is OSV.

Hence, the correct answer is 'Option 1'.

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Q32. Answer: (d) 31/30

Shortcut Trick

Subtract the mixed recurring decimals by observing that the recurring parts (0.0666...) are identical.

3x = 5.4666... − 2.3666...

3x = 3.1

3x = 31/10

x = 31 / (10 × 3) = 31/30

Therefore The correct answer is 31/30.

Alternate Method

Given:

Linear equation: 3x + 2.3666... = 5.4666...

Formula Used:

To convert a mixed recurring decimal to a vulgar fraction: (Whole number without decimal − Non-recurring part) / (9 for each recurring digit followed by 0 for each non-recurring decimal digit).

Calculations:

=> Convert 2.3666... to fraction: (236 − 23) / 90 = 213/90

=> Convert 5.4666... to fraction: (546 − 54) / 90 = 492/90

=> Substitute in equation: 3x + 213/90 = 492/90

=> 3x = 492/90 − 213/90

=> 3x = (492 − 213) / 90

=> 3x = 279/90

=> 3x = 31/10 (simplifying by 9)

=> x = 31 / (10 × 3)

=> x = 31/30

Therefore The correct answer is 31/30.

Additional Information

Mixed Recurring Decimals

Decimals in which at least one digit after the decimal point is not recurring and some digits are recurring (e.g., 2.3666...).

Vulgar Fraction

A fraction where both the numerator and denominator are integers, expressed in the form a/b.

Conversion Rule

For a mixed recurring decimal like 0.ab c(bar), the fraction is (abc − ab) / 900. The number of 9s equals the number of recurring digits, and the number of 0s equals the number of non-recurring decimal digits.

Q33. Answer: (d) © H O M ©

The solution for the given number/symbol coding problem is as follows.

Number/symbol	**3**	**$**	**5**	**1**	**@**	**%**	**2**	**&**	**•**	**7**	**#**	**8**	**4**	**6**
Code	W	I	D	M	O	H	Z	T	G	S	U	E	X	V

According to the given condition:

Rule no.	**Condition**	**Result**
(i)	First element is a number and the last a symbol	Code for these two are to be interchanged
(ii)	First element is an odd number and the last an even number	First and last elements are to be coded as ©
(iii)	Both second and third elements are perfect squares	Third element is to be coded as the code for the second element

Given: 3 % @ 1 4

• 3 → coded as ©

• % → coded as H

• @→coded as O

• 1: → coded as M

• 4 → coded as ©

Thus, the code for the group 3 % @ 1 4 coded as © H O M ©.

Hence, the correct answer is 'Option 4'.

Q34. Answer: (a) WCL

The correct answer is WCL.

Key Points

• The Coal India Inter-Company Powerlifting, Weightlifting, and Bodybuilding Championship 2025-26 was organized under the auspices of Coal India Limited (CIL) to foster sportsmanship among its employees.

• The tournament was held in October 2025 at the Western Coalfields Limited (WCL) Headquarters and associated sports facilities in Nagpur, Maharashtra.

• Western Coalfields Limited (WCL) emerged as the Overall Champion by securing the maximum number of points across the three contested disciplines: Powerlifting, Weightlifting, and Bodybuilding.

• Athletes from various subsidiaries of Coal India, including SECL, MCL, NCL, ECL, BCCL, and CCL, participated in the high-intensity competition.

• The event highlighted the athletic prowess within the coal sector, with WCL maintaining its stronghold as the host team to clinch the top honors.

Additional Information

• Coal India Limited (CIL)

• It is a Maharatna Public Sector Undertaking under the Ministry of Coal, headquartered in Kolkata, West Bengal.

• It operates through several subsidiaries spread across different states to manage India's vast coal resources.

• Western Coalfields Limited (WCL)

• Headquartered in Nagpur, it manages coal mining operations in Maharashtra and parts of Madhya Pradesh.

• The company frequently hosts inter-company sporting events to promote the Fit India Movement within the industrial workforce.

• Other Participating Subsidiaries

• SECL (South Eastern Coalfields Limited): Headquartered in Bilaspur, Chhattisgarh; it is one of the largest coal-producing subsidiaries.

• MCL (Mahanadi Coalfields Limited): Based in Sambalpur, Odisha; it contributes significantly to India's total coal output.

• SCCL (Singareni Collieries Company Limited): While often involved in coal sector meets, it is a joint venture between the Government of Telangana and the Government of India.

Q35. Answer: (d) Four

Based on the given information, we can determine the rank of each person (A, B, C, M, N, and O) from highest to lowest marks:

• Only two people have scored less than B.No one has scored less than O

• C has scored immediately more than M.

• Only two people have scored between M and O.

• A has scored more than N

The Final Arrangement is,

To find how many people scored more than N, we look at those ranked above Position 5. These people are A, C, M, and B.

Total number of people who scored more than N = 4.

Hence, the correct answer is 'Option 4'.

Q36. Answer: (c) Ensures universal viewing without requiring PowerPoint software

The correct answer is Ensures universal viewing without requiring PowerPoint software.

Key Points

• The Portable Document Format (PDF) is a universal file type developed by Adobe that preserves the formatting, fonts, and layout of a document exactly as it was created, regardless of the software or hardware used to view it.

• The primary advantage of converting a PowerPoint (.pptx) presentation to PDF is that it allows anyone to open and read the content using a simple Web Browser or a free PDF Reader, eliminating the dependency on Microsoft Office licenses.

• By using PDF, users avoid the common issue of Font Substitution or Layout Shifting, which frequently occurs when a PowerPoint file is opened on a computer that lacks the specific fonts used by the original creator.

• This format is highly Cross-Platform compatible, meaning it functions identically across Windows, macOS, Linux, and mobile operating systems like Android and iOS.

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Additional Information

• File Size Reduction:

• While PDF conversion can involve Compression techniques to reduce file size for easier Email Sharing, this is not always guaranteed if the presentation contains high-resolution graphics.

• Security and Encryption:

• PDFs offer advanced security features like Digital Signatures and Password Encryption to restrict printing or editing, but these are secondary features compared to the core benefit of Portability.

• Editing Constraints:

• Unlike PowerPoint, which is an Authoring Tool, PDF is intended as a Final Distribution format. It is generally difficult to perform Cross-platform editing on a PDF without specialized software like Adobe Acrobat Pro.

• Loss of Dynamic Content:

• A notable disadvantage of the PDF format is that it does not support PowerPoint Animations, Slide Transitions, or Live Video Embeds, converting them into Static Images.

Q37. Answer: (b) 3

Concept:

• Magnification (m) produced by a lens is defined as the ratio of the height of the image to the height of the object. It is also given by the ratio of the image distance to the object distance.

• Since it is a ratio of two similar quantities, magnification is a dimensionless quantity and has no SI unit.

• Dimensional Formula of magnification: [M^0L^0T^0]

• Formula: m = v / u

• Object Distance (u) is the distance from the optical center of the lens to the object. According to the New Cartesian Sign Convention, the object distance is always taken as negative since the object is placed in front of the lens.

• SI Unit of distance: Meter (m)

• Dimensional Formula of distance: [M^0L¹T^0]

• Image Distance (v) is the distance from the optical center of the lens to the formed image. If the image is formed on the same side as the object, it is a virtual image and its distance is taken as negative according to the sign convention.

Calculation:

Given Data:

• Object distance, u = −10 cm

• Image distance, v = −30 cm

The formula for the magnification of a lens is:

m = v / u

Substituting the given values into the formula:

m = −30 / −10

=> m = 3

Hence, the magnification produced by the lens is 3.

Q38. Answer: (d) Record a macro for each commonly used sort order.

The correct answer is Record a macro for each commonly used sort order..

Key Points

• Macros are automated sequences of instructions in Microsoft Excel that use Visual Basic for Applications (VBA) to perform repetitive tasks instantly.

• By recording a macro, a user can capture the exact steps of a complex sorting operation, including multi-level sorts (sorting by multiple columns simultaneously) and specific custom lists.

• Once the macro is saved, it can be assigned to a Keyboard Shortcut or a Form Control Button, allowing the user to trigger the specific sort order with a single action without ever opening the Sort dialogue box.

• This method is the most efficient for large datasets because it ensures consistency, eliminates the time spent re-selecting columns, and prevents manual entry errors during frequent data analysis.

• To use macros effectively, the workbook must be saved in a macro-enabled format such as .xlsm or .xlsb to retain the automation scripts.

Additional Information

• Slicers:

• Originally introduced in Excel 2010, these are visual filtering tools mainly designed for PivotTables and Excel Tables. They are optimized for filtering (hiding/showing data) rather than reordering or sorting records.

• Quick Access Toolbar (QAT):

• The QAT is a customizable toolbar that sits above the Ribbon. While it can hold the Sort command icon to save a few clicks, it does not store the specific criteria (like which column to sort) and still requires manual configuration for each use.

• Quick Sort Buttons:

• These are the Sort A to Z and Sort Z to A commands found in the Data tab. They are useful for single-column sorting but cannot handle multi-criteria sorting efficiently without repetitive manual selection.

Q39. Answer: (d) Carbonation

CONCEPT:

• Chemical Weathering is the process by which rocks are broken down by chemical reactions that change their mineral composition.

• Carbonation is a specific type of chemical weathering involving the reaction between carbon dioxide, water, and carbonate minerals.

EXPLANATION:

• When rain falls through the atmosphere, it absorbs carbon dioxide (CO2) from the air. Similarly, as water moves through the soil, it picks up additional CO2 produced by decaying organic matter and root respiration.

• The dissolved carbon dioxide reacts with water (H2O) to form a weak acid known as carbonic acid (H2CO3):

H2O + CO2 → H2CO3

• This carbonic acid is highly effective at reacting with minerals like calcium carbonate (CaCO3), which is the primary constituent of limestone and marble.

• The acid converts the insoluble calcium carbonate into calcium bicarbonate [Ca(HCO3)2], which is soluble in water and can be easily washed away.

• The entire sequence of CO2 combining with water to act as a weathering agent on rocks is technically termed Carbonation.

• This process is responsible for creating unique karst landscapes, including features such as sinkholes, underground caves, and pillars.

Therefore, the process is known as Carbonation.

Q40. Answer: (d) 900

Given:

Expression = (2^4 × 3^4 × 5^4)/(2² × 3² × 5²)

Formula used:

According to the Law of Indices:

(a^m)/(aⁿ) = a^(m-n)

Calculations:

To simplify the given expression, we apply the formula for exponents:

=> ((2^4)/(2²)) × ((3^4)/(3²)) × ((5^4)/(5²))

=> 2^(4−2) × 3^(4−2) × 5^(4−2)

=> 2² × 3² × 5²

=> 4 × 9 × 25

=> 36 × 25

=> 900

Therefore The correct answer is option (4).

Q41. Answer: (a) Atomic Energy Regulatory Board

The correct answer is Atomic Energy Regulatory Board.

Key Points

• The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act, 2025, is a pivotal legislative framework aimed at modernizing India’s nuclear energy sector to achieve Net Zero emissions by 2070.

• Under the SHANTI Act, 2025, the Atomic Energy Regulatory Board (AERB) is identified as the central authority responsible for the safety and regulatory oversight of all nuclear power initiatives, including the integration of private sector players.

• The Act seeks to provide the Atomic Energy Regulatory Board with a more robust statutory foundation, ensuring its functional independence from the Department of Atomic Energy (DAE) to enhance public and international confidence.

• A primary function of the Board under this new Act is to develop safety protocols and licensing procedures for Small Modular Reactors (SMRs) and Bharat Small Reactors (BSRs), which are key to decentralized energy production.

• The legislation empowers the AERB to enforce rigorous radiation protection standards and oversee the decommissioning of

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older plants, aligning India with the guidelines of the International Atomic Energy Agency (IAEA).

• The SHANTI Act also mandates the Board to manage regulatory approvals for dual-use nuclear technology in medical and industrial applications, ensuring security and non-proliferation.

Additional Information

• Atomic Energy Regulatory Board (AERB):

• Established on November 15, 1983, by the President of India under the Atomic Energy Act, 1962.

• The Board is headquartered in Mumbai and consists of a full-time Chairman, an ex-officio Member, and three part-time Members.

• Its mission includes the development of safety codes and standards for nuclear installations such as those at Tarapur, Rawatbhata, and Kalpakkam.

• Department of Atomic Energy (DAE):

• Established in 1954, it operates directly under the Prime Minister of India.

• It is responsible for the research and development of nuclear power technology through institutions like the Bhabha Atomic Research Centre (BARC) and Indira Gandhi Centre for Atomic Research (IGCAR).

• National Nuclear Safety Board:

• This concept is often associated with the Nuclear Safety Regulatory Authority (NSRA) Bill, which was previously proposed to replace the AERB with a fully independent body.

Q42. Answer: (d) (-10-√6)/94

Shortcut Trick

Divide the given equation by cosA to directly obtain an equation in tanA.

10 tanA + 1 = √6 tanA

Rearranging gives tanA(√6 − 10) = 1, so tanA = 1 / (√6 − 10).

On rationalizing the denominator: tanA = (√6 + 10) / (6 − 100) = (−10 − √6) / 94.

Therefore The correct answer is (−10 − √6) / 94.

Alternate Method

Given: 10sinA + cosA = √6 sinA

Formula Used: tanA = sinA / cosA; Rationalization: 1 / (a − b) = (a + b) / (a^2 − b^2)

=> 10sinA + cosA = √6 sinA

=> cosA = √6 sinA − 10sinA

=> cosA = sinA(√6 − 10)

=> 1 = (sinA / cosA)(√6 − 10)

=> 1 = tanA(√6 − 10)

=> tanA = 1 / (√6 − 10)

=> Multiplying by conjugate (√6 + 10): tanA = (√6 + 10) / [(√6 − 10)(√6 + 10)]

=> tanA = (√6 + 10) / (6 − 100)

=> tanA = (√6 + 10) / (−94)

=> tanA = (−10 − √6) / 94

Therefore The correct answer is (−10 − √6) / 94.

Additional Information

Trigonometric Ratio tanA

The tangent of an angle in a right triangle is the ratio of the opposite side to the adjacent side, expressed as tanA = sinA / cosA.

Rationalization Process

To rationalize a denominator containing surds like (a − √b), multiply both numerator and denominator by its conjugate (a + √b).

Identity of Reciprocals

The cotangent ratio is the reciprocal of the tangent ratio: cotA = 1 / tanA = cosA / sinA.

Q43. Answer: (c) Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answe...

Logic followed here is the comparison of heights based on the conditions provided in the statements to identify the tallest person among H, I, J, K, and L.

From Statement I:

• J is taller than H and I but shorter than K.

• K > J > H and K > J > I

From Statement II:

• L is shorter than K but taller than J.

• K > L > J

After Combining Statement I and Statement II:

• From Statement I: K > J > (H, I)

• From Statement II: K > L > J

Combining these into a single sequence: K > L > J > H/I > I/H

• Therefore, K is definitively the tallest person among the five.

• Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question.

Hence. the correct answer is "Option 3"

Q44. Answer: (a) 4% decrease

Shortcut Trick

When a value is first increased by x% and then decreased by the same x%, the net result is always a decrease.

Shortcut Formula: Net Percentage Change = $(x^2 / 100)$% decrease.

Given x = 20, the net change = $(20^2 / 100)$% = 400 / 100 = 4%.

Since this formula always represents a loss, the change is a 4% decrease.

Therefore The correct answer is 4% decrease.

Alternate Method

Given: Percentage increase = 20%, Percentage decrease = 20%.

Formula Used: Net Change % = x + y + (x × y / 100), where x and y are the percentage changes.

=> Let the Initial Price be 100.

=> Price after 20% increase = 100 + (20% of 100) = 100 + 20 = 120.

=> Price after 20% decrease = 120 − (20% of 120) = 120 − 24 = 96.

=> Net change = Initial Price − Final Price = 100 − 96 = 4.

=> Percentage Change = (Net Change / Initial Price) × 100 = (4 / 100) × 100 = 4%.

Therefore The correct answer is 4% decrease.

Additional Information

Successive Percentage Change

If a value is changed by x% and then by y%, the net percentage change is given by (x + y + xy/100)%. Use positive values for increase and negative for decrease.

Multiplying Factor Method

For a 20% increase, the multiplying factor is 1.20 (1 + 20/100). For a 20% decrease, it is 0.80 (1 − 20/100). Net factor = 1.20 × 0.80 = 0.96, which indicates a 4% decrease.

Percentage Base Rule

A percentage increase followed by the same percentage decrease never results in the original value because the second change is calculated on a larger base.

Q45. Answer: (b) HW14

Given:

The logic followed here is:

First Letter: +5 position change in the English alphabetical series

Second Letter: +5 position change in the English alphabetical series

Number: +2 addition

For CM24 is related to HR26,

For AT15 is related to FY17,

Applying to the same logic CR12,

Hence, the correct answer is "Option 2"

Q46. Answer: (c) Storing starch produced through photosynthesis

The correct answer is - Storing starch produced through photosynthesis

Key Points

• Leucoplasts
• The colorless plastids observed in the potato tuber are a type of Leucoplast.
• Leucoplasts are non-pigmented organelles found in non-photosynthetic parts of plants, such as roots, bulbs, and tubers.
• Their primary function is the storage of nutrients like starch, lipids, and proteins.
• Amyloplasts
• In a potato tuber, the specific type of leucoplast present is the Amyloplast.
• Amyloplasts are responsible for the synthesis and storage of starch grains.
• The glucose produced during photosynthesis in the leaves is converted into sucrose, transported to the tuber, and then converted into starch for long-term energy storage within these plastids.
Additional Information
• Types of Plastids
• Chloroplasts: Contain green pigment (chlorophyll) and are responsible for photosynthesis.
• Chromoplasts: Contain carotenoid pigments (red, orange, yellow) and provide color to flowers and fruits to attract pollinators.
• Leucoplasts: Colorless plastids categorized based on what they store:
• Amyloplasts: Store starch.
• Elaioplasts: Store oils and fats.
• Aleuroplasts: Also known as proteinoplasts, they store proteins.
• Potato Tuber
• A potato is a modified underground stem used by the plant to survive the winter and provide energy for regrowth.
• The high concentration of amyloplasts in its tissue makes it a significant source of carbohydrates (starch) in the human diet.

Q47. Answer: (a) 4.9 cm

Shortcut Trick

In triangle XYZ, since XT is the angle bisector of angle X, the Angle Bisector Theorem applies.

The ratio of sides is equal to the ratio of segments of the opposite side: XY ÷ XZ = YT ÷ TZ.

Given YZ = 6 cm and YT = 3.2 cm, we find TZ = 6 − 3.2 = 2.8 cm.

Applying the ratio: 5.6 ÷ XZ = 3.2 ÷ 2.8.

=> XZ = (5.6 × 2.8) ÷ 3.2 = 4.9 cm.

Therefore The correct answer is 4.9 cm.

Alternate Method

Given: In ΔXYZ, XY = 5.6 cm, YZ = 6 cm, and YT = 3.2 cm. XT is the bisector of angle X.

Formula Used: According to the Angle Bisector Theorem, the internal bisector of an angle of a triangle divides the opposite side into two segments that are proportional to the other two sides of the triangle.

=> XY ÷ XZ = YT ÷ TZ

Calculations:

=> Total length of side YZ = 6 cm.

=> Segment YT = 3.2 cm.

=> Segment TZ = YZ − YT

=> TZ = 6 − 3.2 = 2.8 cm.

=> From the theorem, XY ÷ XZ = YT ÷ TZ

=> 5.6 ÷ XZ = 3.2 ÷ 2.8

=> XZ = (5.6 × 2.8) ÷ 3.2

=> XZ = 15.68 ÷ 3.2

=> XZ = 4.9 cm.

Therefore The correct answer is 4.9 cm.

Additional Information

Internal Angle Bisector Theorem

The angle bisector of an interior angle of a triangle divides the opposite side into segments proportional to the sides adjacent to the angle.

Length of Angle Bisector

The length of the internal bisector XT can be calculated using the formula: $XT^2 = (XY \times XZ) - (YT \times TZ)$.

External Angle Bisector Theorem

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The bisector of an exterior angle of a triangle divides the opposite side externally in the ratio of the sides containing the angle.

Q48. Answer: (d) Four

Given:Seven people A, B, C, D, S, T and U were born in different months: January, February, April, May, June, September, and December.starting from January and ending in December

1) D was born in June.

2) U was born in February.

3) Only S is younger than B.

4) C is elder than T but younger than A.

The Final Arrangement is,

Month	Person
January	A
February	U
April	C
May	T
June	D
September	B
December	S

• Total number of people born between B and A is 4.

• Thus, there are Four people born between B and A.

Hence, the correct answer is 'Option 4'.

Q49. Answer: (a) Article 243B

The correct answer is Article 243B.

Key Points

• Article 243B of the Constitution of India specifically provides for the mandatory constitution of Panchayats at three levels: the village, intermediate, and district levels.

• This provision was incorporated through the 73rd Constitutional Amendment Act, 1992, which came into effect on April 24, 1993, granting constitutional status to Panchayati Raj Institutions (PRIs).

• The Article establishes a uniform three-tier system across the country to ensure decentralized governance and direct participation of rural populations in development.

• According to Clause (2) of this Article, the intermediate level (often known as the Block or Mandal level) may not be constituted in a State that has a population not exceeding twenty lakhs.

• The primary objective of Article 243B is to strengthen grassroots democracy by ensuring that local bodies are structured consistently across different administrative layers.

Additional Information

• Other relevant Articles under Part IX of the Constitution include:

• Article 243A: This Article defines the Gram Sabha, which consists of persons registered in the electoral rolls relating to a village comprised within the area of Panchayat at the village level.

• Article 243D: Focuses on the reservation of seats for Scheduled Castes and Scheduled Tribes in proportion to their population, and mandates that at least one-third of the total seats must be reserved for women.

• Article 243H: Empowers the State Legislature to authorize Panchayats to levy, collect, and appropriate specific taxes, duties, tolls, and fees, and provides for the creation of Funds for the Panchayats.

• Article 243G: Outlines the powers, authority, and responsibilities of Panchayats, enabling them to function as institutions of self-government regarding economic development and social justice.

Q50. Answer: (b) 60 m

Given:

• Omaira starts from point F and walks 45 m towards south.

• She takes a left turn, walks 30 m and then takes a left turn, walks 20 m, reaches point C and stops.

• Anjan starts from point Q which is 15 m towards the north of point C.

• He walks 30 m towards east, takes a left turn, walks 10 m and stops at point U.

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The Final Arrangement is,

Shortest distance between F and U = 60 m

Hence, the correct answer is "option 2"

Q51. Answer: (a) PXT69

The logic follows here,

The cluster that completes the series is PXT69.

Hence, the correct answer is "option 1".

Q52. Answer: (c) South and East Asia

The correct answer is South and East Asia.

Key Points

• South and East Asia represent the most densely populated regions globally, housing over half of the world's total population due to favorable geographical and economic factors.

• The presence of extensive fertile plains, such as the Indo-Gangetic Plain in India and the North China Plain, provides the foundation for intensive alluvial agriculture and paddy cultivation, which can support high caloric demands.

• Perennial river systems including the Ganges, Brahmaputra, Yangtze, and Yellow River ensure a consistent water supply for both irrigation and large-scale industrial processes.

• Rapid industrialization in countries like China, India, and Vietnam has transformed these regions into 'the world's factory,' creating massive labor markets that drive high population concentration.

• Unprecedented urban development has led to the rise of megacities such as Tokyo, Delhi, Mumbai, and Shanghai, where population densities often exceed several thousand people per square kilometer.

• The monsoon climate facilitates multiple cropping seasons per year, unlike the seasonal limitations found in higher latitudes or arid zones.

Additional Information

• Other regions mentioned have low population densities due to environmental constraints:

• Sahara Desert: Characterized by extreme aridity and hyper-arid conditions, making it unsuitable for large-scale permanent settlements or agriculture.

• Greenland: Dominated by a massive ice sheet and a polar climate; it has the lowest population density of any territory in the world.

• Amazon Basin: While possessing vast freshwater resources, the dense tropical rainforest and leached soils limit industrial expansion and high-density urban clustering compared to Asian river valleys.

Q53. Answer: (a) Allan Octavian Hume

The correct answer is Allan Octavian Hume.

Key Points

• Allan Octavian Hume, commonly known as A.O. Hume, was a retired British officer of the Indian Civil Service who is credited as the primary founder of the Indian National Congress (INC).

• The first official session of the Indian National Congress was held from December 28 to December 31, 1885, at Gokuldas Tejpal Sanskrit College in Bombay (now Mumbai).

• Hume served as the General Secretary of the organization for its first twenty-two years, helping to stabilize and expand its reach across the Indian subcontinent.

• The assembly was attended by 72 delegates representing various provinces of India, where Womesh Chandra Bonnerjee was elected as the first President of the Congress.

• Hume's initiative is often associated with the Safety Valve Theory, which suggests that the British aimed to create a platform for educated Indians to voice their grievances peacefully to prevent a violent uprising like the Revolt of 1857.

Additional Information

• Lord Curzon:

• Served as the Viceroy of India from 1899 to 1905.

• He is most notably remembered for the Partition of Bengal in 1905, which triggered the Swadeshi Movement.

• Lord Dufferin:

• He was the Viceroy of India from 1884 to 1888, during the actual foundation of the INC in 1885.

• He famously dismissed the Congress as representing only a microscopic minority of the Indian population.

• Lord Ripon:

• Viceroy from 1880 to 1884, often hailed as the Father of Local Self-Government in India.

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• He is known for the Ilbert Bill controversy and for repealing the Vernacular Press Act in 1882.

Q54. Answer: (a) Right-click selection > Table Properties > Cell tab > Vertical alignment: Center

The correct answer is Right-click selection > Table Properties > Cell tab > Vertical alignment: Center.

Key Points

• In MS Word 2021, table cell alignment is distinct from standard paragraph alignment as it involves two dimensions: Horizontal and Vertical.

• The Table Properties dialog box is the primary administrative interface for managing table-specific dimensions, borders, and cell behaviors. By right-clicking a selection, users access this context-sensitive menu.

• The Cell tab within Table Properties specifically controls how content interacts with the cell boundaries. The Vertical alignment setting offers three options: Top, Center, and Bottom, which determine the text position relative to the upper and lower cell borders.

• Unlike horizontal alignment, which shifts text between the left and right margins, Vertical alignment: Center ensures that the white space above and below the text inside the cell is equal.

Additional Information

• Home tab > Paragraph group:

• This group contains Align Left, Align Right, Center, and Justify. These commands only modify the Horizontal alignment of the text.

• Using these options inside a table will move the text toward the side walls of the cell but will not change its vertical position relative to the top or bottom borders.

• Table Layout Ribbon Tab:

• When a table is selected, a contextual Layout tab appears in the ribbon. It contains an Alignment group with nine grid-based icons.

• These icons allow for one-click alignment combinations, such as Align Top Left, Align Center (which centers both horizontally and vertically), and Align Bottom Right.

• Cell Margins:

• Inside Table Properties > Options, users can also adjust Cell Margins to fine-tune the internal padding, which further affects the perceived centering of text.

Q55. Answer: (a) File Transfer Protocol (FTP)

The correct answer is File Transfer Protocol (FTP).

Key Points

• File Transfer Protocol (FTP) is a standard communication protocol used specifically for the transfer of computer files from a server to a client on a computer network.

• It is built on a client-server model architecture and uses separate control and data connections between the client and the server.

• FTP is the most suitable service for large files because it is designed to handle bulk data transfers efficiently, offering better reliability and speed than standard web-based downloads for massive datasets.

• The protocol allows for bi-directional transfer, meaning users can both upload files to a server and download files from it using dedicated software known as FTP clients (e.g., FileZilla).

• A key feature of FTP is its ability to resume interrupted transfers, ensuring that large files do not need to be restarted from the beginning if the connection drops.

• It typically functions using Port 21 for sending commands and Port 20 for the actual movement of data.

Additional Information

• World Wide Web (WWW):

• An information system where documents and other web resources are identified by Uniform Resource Locators (URLs).

• While it supports file downloads via HTTP/HTTPS, it is primarily designed for viewing hypertext documents rather than specialized high-volume file management.

• E-mail (Electronic Mail):

• A method of exchanging messages between people using electronic devices via protocols like SMTP, POP3, and IMAP.

• Most E-mail providers impose strict attachment size limits (usually between 10 MB and 25 MB), making it unsuitable for very large files.

• Instant Messaging (IM):

• A type of online chat that offers real-time text transmission over the internet.

• While modern IM apps support file sharing, they are often optimized for short-form communication and small media files rather than large-scale data archiving or transfer.

Q56. Answer: (c) 9860

Shortcut Trick

Find the LCM of 8, 7, and 11: 8 × 7 × 11 = 616.

Largest 4-digit number is 9999. Dividing 9999 by 616 gives a remainder of 143.

Largest multiple of 616 below 9999 = 9999 − 143 = 9856.

Required number = Multiple + Remainder = 9856 + 4 = 9860.

Therefore The correct answer is 9860.

Alternate Method

Given: Divisors = 8, 7, 11 and common remainder = 4.

Formula Used: Required Number = [LCM(divisors) × k] + Remainder, where k is an integer.

=> LCM(8, 7, 11) = 8 × 7 × 11 = 616

=> The general form of the number is 616k + 4.

=> To find the largest 4-digit number, we divide 9999 by 616.

=> 9999 ÷ 616 ≈ 16.23

=> Taking the integer value, k = 16.

=> Largest multiple = 616 × 16 = 9856.

=> Required number = 9856 + 4 = 9860.

Therefore The correct answer is 9860.

Additional Information

LCM of Co-prime Numbers

When numbers have no common factors other than 1, their LCM is simply the product of those numbers (e.g., 7, 8, and 11).

Common Remainder Rule

If a number N divided by a, b, and c leaves the same remainder r, then N = LCM(a, b, c) × k + r.

Division Algorithm

Any number can be expressed as Dividend = Divisor × Quotient + Remainder. Here, 9860 = 616 × 16 + 4.

Divisibility by 11

A number is divisible by 11 if the difference between the sum of digits at odd positions and even positions is 0 or a multiple of 11.

Q57. Answer: (c) OR – SU – WX

The logic followed here ,

For CF - GI - KL:

For MP - QS - UV:

Applying for the same logic, for the triad OR - SU - WX:

Hence, the correct answer is "Option 3"

Q58. Answer: (c) Kurichiya Revolt

The correct answer is Kurichiya Revolt.

Key Points

• The Kurichiya Revolt was a significant tribal uprising that took place in 1812 in the Wayanad region of Kerala against the British East India Company.

• The Kurichiyas are traditionally known as the first agricultural tribe of Kerala, and they were the primary force behind this movement, along with the Kurumbas.

• The rebellion was fundamentally triggered by the British agrarian exploitation, specifically the insistence on collecting land revenue in the form of cash rather than the traditional system of paying in kind (agricultural produce).

• The economic distress caused by high taxation and the failure of the British to acknowledge the tribal social structure led the Kurichiyas to declare a total war against the colonial administration.

• The movement was led by prominent tribal leaders such as Rama Nambi, who organized the tribesmen into a formidable force that used guerilla warfare and traditional weapons like bows and arrows.

• The British authorities, led by Thomas Harvey Baber, eventually suppressed the revolt by June 1812 through brutal military intervention and the execution of key rebel leaders.

Additional Information

• Kadar Tribal Revolt:

• The Kadars are a small tribal community inhabiting the Anamalai and Parambikulam ranges in the Western Ghats.

• They were primarily hunter-gatherers and did not lead a major organized agricultural revolt in 1812 like the Kurichiyas.

• Koya Viplavam:

• This refers to the Koya tribal uprisings, most notably the Rampa Rebellion, which occurred in the Godavari region of Andhra Pradesh.

• These revolts were typically directed against forest laws and the exploitation by mansabdars during the late 19th century.

• Kurumba Uprising:

• While the Kurumba tribe participated alongside the Kurichiyas in the Wayanad struggle of 1812, historical records predominantly identify the event as the Kurichiya Revolt due to the leadership and majority involvement of the Kurichiya tribe.

Q59. Answer: (c) Fund Resilience, Not Disasters

The correct answer is Fund Resilience, Not Disasters.

Key Points

• The International Day for Disaster Risk Reduction (IDDRR) is observed globally every year on October 13 to promote a culture of risk awareness and disaster reduction.

• The 2025 theme, Fund Resilience, Not Disasters, highlights the urgent need to shift financial resources from reactive post-disaster spending toward proactive investments in disaster mitigation and preparedness.

• This theme is deeply rooted in the objectives of the Sendai Framework for Disaster Risk Reduction (2015-2030), specifically focusing on Target F, which advocates for enhanced international cooperation to developing countries.

• The focus on funding resilience aims to reduce the economic losses caused by disasters, which disproportionately affect low and middle-income nations, by building climate-resilient infrastructure and robust community safety nets.

• The United Nations Office for Disaster Risk Reduction (UNDRR) leads the coordination of this day, encouraging governments and stakeholders to integrate disaster risk into all financial decision-making processes.

Additional Information

• Historical Context:

• The day was established by the United Nations General Assembly in 1989, initially as part of the International Decade for Natural Disaster Reduction.

• In 2009, the General Assembly officially designated October 13 as the fixed date for the annual observance.

• Key Related Concepts:

• Sendai Framework: A 15-year agreement adopted in Japan that sets seven global targets to reduce disaster risk and losses in lives, livelihoods, and health.

• Early Warning Systems: While not the 2025 theme, Strengthening Early Warning Systems was a primary focus of the 2022 observance under the 'Early Warning for All' initiative.

• Resilience Investment: Every 1 dollar invested in risk reduction and prevention can save up to 15 dollars in post-disaster recovery costs, according to UNDP statistics.

Q60. Answer: (c) fv cv

The logic followed here is,

• Code for happy = fv

• Code for everyone = cv

• So, the code for 'happy everyone' is fv cv.

Hence, the correct answer is "Option 3"

Q61. Answer: (a) One

Given Series: S R E S 2 U ^ $ + X B 7 N M 7 4 C Z 5 @ U 4 D /

Required Conditions : Letter − Number − Symbol

(Left) S R E S 2 U ^ $ + X B 7 N M 7 4 C Z 5 @ U 4 D / (Right)

There is only one such numbers : Z 5 @.

Hence, the correct answer is "option 1"

Q62. Answer: (c) Atomic number

CONCEPT:

• Atomic Notation (also known as nuclide notation) is a standard method used to represent the composition of an atom or its nucleus.

• An element is typically represented using the general formula ^A_Z X, where each symbol represents a specific physical quantity related to the atom.

EXPLANATION:

• In the standard notation ^A_Z X :

• X is the Chemical Symbol of the element (e.g., H for Hydrogen, C for Carbon).

• A is the Mass Number, which represents the total number of protons and neutrons in the nucleus.

• Z is the Atomic Number.

• The Atomic Number (Z) is fundamental to chemistry because it defines the identity of the element. It indicates the total number of protons found in the nucleus of every atom of that element.

• In a neutral atom, the number of protons (Z) is equal to the number of electrons orbiting the nucleus.

• The number of neutrons (N) can be calculated using the formula: N = A − Z.

• Since Z uniquely identifies the number of protons and determines the element's position in the Periodic Table, it is always referred to as the Atomic number.

Therefore, the symbol Z in atomic notation refers to the Atomic number.

Q63. Answer: (d) 600 boxes

Shortcut Trick

Internal dimensions of the box: Length = 56 − 20 = 36 cm, Width = 40 − 20 = 20 cm, Height = 10 cm.

Volume of the closed box = 36 × 20 × 10 = 7200 cm^3.

Volume of one matchbox = 4.0 × 2.0 × 1.5 = 12 cm^3.

Number of boxes = Total Volume ÷ Volume of one matchbox = 7200 ÷ 12 = 600.

Therefore The correct answer is 600 boxes.

Alternate Method

Given:

Length of metallic sheet = 56 cm

Width of metallic sheet = 40 cm

Side of the square cut from each corner = 10 cm

Dimensions of a matchbox = 4.0 cm × 2.0 cm × 1.5 cm

Calculations:

When squares of side 10 cm are cut from each corner and flaps are folded:

=> Length of the resulting box (L) = 56 − (10 + 10) = 36 cm

=> Width of the resulting box (W) = 40 − (10 + 10) = 20 cm

=> Height of the resulting box (H) = Side of square cut = 10 cm

=> Volume of the box = L × W × H

=> Volume of the box = 36 × 20 × 10 = 7200 cm^3

=> Volume of one matchbox = 4.0 × 2.0 × 1.5 = 12 cm^3

=> Number of matchboxes = (Volume of the box) ÷ (Volume of one matchbox)

=> Number of matchboxes = 7200 ÷ 12 = 600

Therefore The correct answer is 600 boxes.

Additional Information

Volume of a Cuboid

The volume of a rectangular box (cuboid) is calculated as Length × Breadth × Height.

Surface Area of an Open Box

For an open box created by cutting corners, Surface Area = Area of Base + 2(Area of Side 1 + Area of Side 2) = LB + 2(BH + LH).

Number of Small Cuboids in a Large Cuboid

Number of items = (L × W × H) of container ÷ (l × w × h) of item, provided the dimensions are divisible to ensure a perfect fit.

Q64. Answer: (d) Ions present in the solution

CONCEPT:

Electrolytic Conduction

• An electrolyte is a substance that dissociates into free ions when dissolved in a solvent (like water) or in a molten state, making the resulting liquid electrically conductive.

• In metallic conductors, electricity is carried by the flow of electrons. However, in solutions, the charge is carried by the migration of ions.

• Acids are chemical substances that, when dissolved in water, release Hydrogen ions (H^+), thereby acting as electrolytes.

EXPLANATION:

• When an acid is dissolved in water, it undergoes ionization or dissociation. For example, Hydrochloric acid (HCl) dissociates into its constituent ions:

HCl → H^+(aq) + Cl^−(aq)

• These ions are charged particles. The H^+ ions (which typically exist as hydronium ions, H3O^+ in water) and the corresponding acid radical ions are free to move throughout the solution.

• When a potential difference (voltage) is applied to the solution using electrodes, these charged ions begin to migrate:

• The positively charged ions (cations) move toward the negative electrode (cathode).

• The negatively charged ions (anions) move toward the positive electrode (anode).

• This continuous movement of charged ions through the solution constitutes the electric current.

• Neutral molecules cannot conduct electricity because they do not carry a net electric charge. Gas bubbles are usually the product of the chemical reactions occurring at the electrodes during electrolysis, rather than the cause of the current flow.

Therefore, the flow of electric current in acidic solutions is due to the ions present in the solution.

Q65. Answer: (d) 36

BODMAS Table:

Letter	Operator
A	÷ (Division)
B	× (Multiplication)
C	• (Addition)
D	− (Subtraction)

By substituting the operators in place of the letters and applying the BODMAS rule:

= 24 + 16 − 8 ÷ 4 × 2

= 24 + 16 − 2 × 2

= 24 + 16 − 4

= 40 − 4

= 36

The final value is 36.

Hence, the correct answer is "Option 4"

Q66. Answer: (c) 9

Given : TON TAR DEV TAB

(Left) TON TAR DEV TAB (Right)

• The second letter of the second word from the right is DEV = E

• The second letter of the first word from the left is TON = O

The letters between E and O are: F, G, H, I, J, K, L, M, and N.

There are exactly 9 letters between them.

Hence, the correct answer is "Option 3"

Q67. Answer: (d) Rs. 2,940

Shortcut Trick

Total cost without discount = 150 × 20 = Rs. 3,000.

Since the quantity (150) is more than 100, a 2% discount applies.

Net payable percentage = 100% − 2% = 98%.

Total Amount = 98% of 3,000 = 0.98 × 3,000 = Rs. 2,940.

Therefore The correct answer is Rs. 2,940.

Alternate Method

Given:

Price per unit = Rs. 20

Quantity purchased = 150 units

Discount rate = 2% (Applicable for purchases > 100 units)

Formula:

Total Payable = (Quantity × Price) − Discount

=> Total Purchase Value = 150 × 20 = Rs. 3,000

=> Discount Amount = 2% of 3,000 = (2 ÷ 100) × 3,000

=> Discount Amount = Rs. 60

=> Total Amount Payable = 3,000 − 60 = Rs. 2,940

Therefore The correct answer is Rs. 2,940.

Additional Information

Trade Discount

A reduction in the list price offered by a wholesaler to a retailer, often based on the quantity of goods purchased.

Net Price Calculation

The actual price paid after deducting all discounts: Net Price = List Price × (1 − d), where d is the discount rate.

Cash Discount vs. Quantity Discount

Cash discount is for prompt payment, while quantity discount is for bulk buying to encourage higher volume sales.

Q68. Answer: (c) C (7, 3)

Shortcut Trick

The Centroid is the average of the vertices.

To find the third vertex directly: 3 × Centroid − Sum of other two vertices.

x-coordinate => 3 × 4 − (1 + 4) = 12 − 5 = 7

y-coordinate => 3 × 5 − (5 + 7) = 15 − 12 = 3

The required vertex is C (7, 3).

Therefore The correct answer is C (7, 3).

Alternate Method

Given: Vertices A(1, 5), B(4, 7), and Centroid D(4, 5).

Formula Used: Centroid (G_x, G_y) = ((x1 + x2 + x3) ÷ 3, (y1 + y2 + y3) ÷ 3)

=> Let the coordinates of vertex C be (x, y).

=> For the x-coordinate: 4 = (1 + 4 + x) ÷ 3

=> 4 × 3 = 5 + x

=> 12 = 5 + x

=> x = 12 − 5 = 7

=> For the y-coordinate: 5 = (5 + 7 + y) ÷ 3

=> 5 × 3 = 12 + y

=> 15 = 12 + y

=> y = 15 − 12 = 3

=> Vertex C = (7, 3)

Therefore The correct answer is C (7, 3).

Additional Information

Centroid Definition

The Centroid is the point of intersection of the three medians of a triangle and always lies inside the triangle.

Median Ratio Rule

The centroid divides each median in a 2 : 1 ratio, measuring from the vertex to the midpoint of the opposite side.

Area of Triangle (Coordinates)

Area = 0.5 × |x1(y2 − y3) + x2(y3 − y1) + x3(y1 − y2)|. For ΔABC, Area = 0.5 × |1(7 − 3) + 4(3 − 5) + 7(5 − 7)| = 0.5 × |4 − 8 − 14| = 9 sq. units.

Q69. Answer: (c) 19.2 m

Shortcut Trick

The difference between the outer perimeter and the inner perimeter of a path of uniform width (w) around a rectangle is always constant and independent of the rectangle dimensions.

Shortcut Formula: Difference = 8 × width

=> Difference = 8 × 2.4 m

=> Difference = 19.2 m

Therefore The correct answer is 19.2 m.

Alternate Method

Given: Length of field = 68.5 m, Breadth of field = 45.6 m, Width of path = 2.4 m (Outside).

Formula Used: Perimeter of Rectangle = 2 × (Length + Breadth)

=> Original Perimeter (P1) = 2 × (68.5 + 45.6) = 2 × 114.1 = 228.2 m

=> Outer Length = 68.5 + (2 × 2.4) = 68.5 + 4.8 = 73.3 m

=> Outer Breadth = 45.6 + (2 × 2.4) = 45.6 + 4.8 = 50.4 m

=> Outer Perimeter (P2) = 2 × (73.3 + 50.4) = 2 × 123.7 = 247.4 m

=> Difference = P2 − P1 = 247.4 − 228.2 = 19.2 m

Therefore The correct answer is 19.2 m.

Additional Information

Perimeter Change Rule

For any path of uniform width w added around a rectangle (inside or outside), the difference in perimeter is always 8w.

Path Area (Outside)

The area of a path constructed outside a rectangle is calculated as Area = 2w(L + B + 2w).

Path Area (Inside)

The area of a path constructed inside a rectangle is calculated as Area = 2w(L + B − 2w).

Q70. Answer: (c) 3635

The logic follows here,

• 111 × 2 + 1 = 222 + 1 = 223

• 223 × 2 + 3 = 446 + 3 = 449

• 449 × 2 + 5 = 898 + 5 = 903

• 903 × 2 + 7 = 1806 + 7 = 1813

• 1813 × 2 + 9 = 3626 + 9 = 3635

Thus, the missing term in the series is 3635.

Hence, the correct answer is 'Option 3';

Q71. Answer: (a) LMK

The logic followed here is,

Logic: First letter + 3 = Second letter; Second letter − 5 = Third letter.

For LMK,

For ORM,

For GJE,

For RUP,

Therefore, the letter cluster that is different from the others is LMK.

Hence, the correct answer is 'Option 1'.

Q72. Answer: (a) Interest payments

The correct answer is Interest payments.

Key Points

• Primary Deficit is defined as the difference between the Fiscal Deficit of the current year and the Interest Payments on the borrowings made in previous years.

• It indicates the amount of borrowing the government requires to meet its expenses, excluding the interest burden that has accumulated due to past loans.

• The mathematical representation is: Primary Deficit = Fiscal Deficit − Interest Payments.

• A Zero Primary Deficit indicates that the government is borrowing money only to pay off the interest on its past debts, rather than to fund new expenditures.

• This metric is crucial for understanding fiscal sustainability because it highlights how much of the current fiscal imbalance is due to current policy decisions rather than historical debt obligations.

Additional Information

• Revenue Deficit:

• This occurs when the government's revenue expenditure exceeds its revenue receipts.

• It signifies that the government is using its borrowings to finance consumption expenditure rather than creating productive assets.

• Fiscal Deficit:

• It is the excess of total expenditure (both revenue and capital) over total receipts (excluding borrowings).

• It represents the total borrowing requirements of the government from all sources during a financial year.

• Capital Expenditure:

• Refers to the money spent by the government on the creation of physical assets like roads, hospitals, and schools, or the reduction of long-term liabilities.

• High capital expenditure is generally seen as positive for long-term economic growth and productivity.

Q73. Answer: (a) 1748

Shortcut Trick

Given: (1/2) × First Part = (1/4) × Second Part = (1/8) × Third Part

Ratio of parts A : B : C = 2 : 4 : 8 => 1 : 2 : 4

Sum of ratio units = 1 + 2 + 4 = 7 units

Total sum given = Rs. 3059

Value of 1 unit = 3059 ÷ 7 = Rs. 437

Third Part (4 units) = 4 × 437 = Rs. 1748

Therefore The correct answer is Rs. 1748.

Alternate Method

Given: Total sum = Rs. 3059. Let the three parts be x, y, and z.

Condition: x/2 = y/4 = z/8

=> Let x/2 = y/4 = z/8 = k

=> x = 2k, y = 4k, z = 8k

=> x + y + z = 3059

=> 2k + 4k + 8k = 3059

=> 14k = 3059

=> k = 3059 ÷ 14 = 218.5

=> Third part (z) = 8k = 8 × 218.5

=> z = Rs. 1748

Therefore The correct answer is Rs. 1748.

Additional Information

Ratio of Parts Rule

If parts are given as a/x = b/y = c/z, then the ratio of the parts a : b : c is directly x : y : z.

Sum Distribution Formula

To find a specific share from a total sum S with ratio a:b:c, the share of c is [c / (a + b + c)] × S.

Inverse Ratio Concept

If ax = by = cz, then the ratio a : b : c = (1/x) : (1/y) : (1/z). This is commonly used in partnership and time-speed problems.

Q74. Answer: (b) 200

Shortcut Trick

If 40% of a number is added to 240 to get 100% of itself, then 240 must represent 60% of that number.

60% of the number = 240

10% of the number = 240 ÷ 6 = 40

50% of the number = 40 × 5 = 200

Therefore The correct answer is 200.

Alternate Method

Given: 40% of a number + 240 = the number itself.

Formula: Value = (Percentage/100) × Total Number

=> Let the number be x.

=> (40/100) × x + 240 = x

=> 0.4x + 240 = x

=> x − 0.4x = 240

=> 0.6x = 240

=> x = 240 ÷ 0.6 = 400

=> Required value = 50% of 400

=> Required value = 0.5 × 400 = 200

Therefore The correct answer is 200.

Additional Information

Percentage to Fraction Conversion

To simplify calculations, convert percentages to fractions: 40% = 2/5, 50% = 1/2, and 60% = 3/5.

The Concept of 100%

Any number is always 100% of itself. If a part (a%) is known, the remaining part is always (100 − a)%.

Finding the Original Value

If p% of a number is v, then the original number is calculated as (v × 100) ÷ p.

Q75. Answer: (d) One

The logic follows here,

1. Only two people have scored more than Y

2. Only S has scored less than P

_ > _ > Y > _ > P > S

4. T has scored more than Q but less than Z:

Z > T > Y > Q > P > S.

Z scored higher than T. Therefore, exactly one person scored more than T.

Hence, the correct answer is "Option 4".

Q76. Answer: (c) 75

BODMAS Table:

Signs Interchange:

Original Sign	New Sign
•	–
–	•
times	÷
div	×

After interchanging the signs, and applying the BODMAS rule the equation becomes:

= 35 − 10 ÷ 2 + 15 × 3

= 35 − 5 + 15 × 3

= 35 + 45 − 5

= 80 − 5

= 75

Hence, the correct answer is "option 3"

Q77. Answer: (a) 2 √10

Shortcut Trick

The length of a chord segment between concentric circles is the difference between the half-chord lengths of the outer and inner circles.

Half-chord of outer circle (AM) = √(13² − 3²) = √(169 − 9) = √160 = 4√10 cm.

Half-chord of inner circle (CM) = √(7² − 3²) = √(49 − 9) = √40 = 2√10 cm.

Length of AC = AM − CM = 4√10 − 2√10 = 2√10 cm.

Therefore The correct answer is 2√10 cm.

Alternate Method

Given:

Outer Radius (R) = 13 cm

Inner Radius (r) = 7 cm

Distance of chord from center (OM) = 3 cm
Formula Used:
In a right-angled triangle, Pythagoras Theorem: Hypotenuse² = Base² + Perpendicular²
Length of chord segment = √(Radius² − Distance²)
Let O be the center of the concentric circles and OM be the perpendicular distance from the center to the chord AB.
=> OM = 3 cm, OA = 13 cm (Outer Radius), OC = 7 cm (Inner Radius).
=> Since OM is perpendicular to AB, it bisects both chords AB and CD.
=> In right triangle OMA, $AM^2 = OA^2 - OM^2$
=> $AM^2 = 13^2 - 3^2 = 169 - 9 = 160$
=> $AM = \sqrt{160} = 4\sqrt{10}$ cm.
=> In right triangle OMC, $CM^2 = OC^2 - OM^2$
=> $CM^2 = 7^2 - 3^2 = 49 - 9 = 40$
=> $CM = \sqrt{40} = 2\sqrt{10}$ cm.
=> Length AC = AM − CM
=> $AC = 4\sqrt{10} - 2\sqrt{10} = 2\sqrt{10}$ cm.
Therefore The correct answer is $2\sqrt{10}$ cm.
Additional Information
Perpendicular Bisector Property
A perpendicular drawn from the center of a circle to a chord always bisects the chord (AM = MB and CM = MD).
Concentric Circles Chord Property
For a line intersecting two concentric circles, the segments intercepted between the circles are equal, i.e., AC = DB.
Pythagorean Triplets in Circles
The relationship between radius (r), distance from center (d), and half-chord (l) is $r^2 = d^2 + l^2$.

Q78. Answer: (b) One

Given : Y 7 H # 4 B Q $ 3 L 9 @ N 8 X Z * & T 2 R
Required Pattern: Number - Symbol - Letter
(Left) Y 7 H # 4 B Q $ 3 L 9 @ N 8 X Z * & T 2 R (Right)
Only one such symbol exists in the series that is immediately preceded by a number and followed by a letter- 9 @ N
Hence, the correct answer is "Option 2"

Q79. Answer: (b) 120 cm

Shortcut Trick
In right-angled ΔOPQ (where angle P = 90°), $PQ = \sqrt{(OQ^2 - OP^2)} = \sqrt{(41^2 - 9^2)} = 40$ cm.
Since PQ and QR are tangents from the same point, PQ = QR = 40 cm.
In ΔPQR, if PQ = QR and angle PQR = 60°, it is an equilateral triangle.
Therefore, PR = PQ = QR = 40 cm.
Perimeter of ΔPRQ = 3 × 40 = 120 cm.
Therefore The correct answer is 120 cm.
Alternate Method
Given: Radius (OP = OR) = 9 cm, Distance (OQ) = 41 cm, angle PQR = 60°.
Formula Used: Length of tangent from external point $L = \sqrt{(d^2 - r^2)}$; Perimeter of triangle = Sum of all sides.
=> In ΔOPQ, angle OPQ = 90° (Tangent is perpendicular to the radius).
=> $PQ^2 = OQ^2 - OP^2$
=> $PQ^2 = 41^2 - 9^2 = 1681 - 81 = 1600$
=> PQ = 40 cm.
=> Length of tangents from external point Q are equal, so PQ = QR = 40 cm.
=> In ΔPQR, PQ = QR and angle PQR = 60°.
=> Remaining angles angle QPR = angle QRP = (180° − 60°) ÷ 2 = 60°.
=> This makes ΔPQR an equilateral triangle with side = 40 cm.
=> Perimeter of ΔPRQ = PQ + QR + PR = 40 + 40 + 40 = 120 cm.
Therefore The correct answer is 120 cm.

Additional Information

Tangent Length Property

Tangents drawn from an external point to a circle are equal in length (PQ = QR) and the line joining the center to the external point (OQ) bisects the angle between the tangents.

Equilateral Triangle Condition

If an isosceles triangle has one angle equal to 60°, then all its internal angles are 60°, making it an equilateral triangle where all three sides are equal.

Tangent-Radius Theorem

A tangent at any point on a circle is perpendicular to the radius through the point of contact (angle OPQ = 90°).

Q80. Answer: (c) Narasimham Committee I (1991)

The correct answer is Narasimham Committee I (1991).

Key Points

• The Committee on the Financial System, popularly known as the Narasimham Committee I, was established in August 1991 under the chairmanship of Maidavolu Narasimham to suggest reforms for the Indian banking sector.

• One of the most critical recommendations was the transition from an administered interest rate regime to a market-determined interest rate structure. Before 1991, the Reserve Bank of India (RBI) strictly controlled the rates banks could charge on loans and offer on deposits.

• The committee observed that administered rates led to financial repression, distorted credit allocation, and reduced the profitability of commercial banks. It proposed that interest rates should be determined by market forces of demand and supply.

• Based on these recommendations, the RBI initiated the phased deregulation of lending and deposit rates, allowing banks to set their own rates based on their cost of funds and risk perceptions.

• The committee also suggested reducing the Statutory Liquidity Ratio (SLR) and Cash Reserve Ratio (CRR) to release more liquidity into the banking system for commercial lending.

Additional Information

• Chelliah Committee (1991)

• This was the Tax Reforms Committee led by Raja Chelliah.

• It focused on simplifying the tax structure, reducing the number of income tax slabs, and rationalizing excise and customs duties to improve tax compliance and revenue.

• Kelkar Committee (2002)

• Chaired by Vijay Kelkar, this committee focused on Direct and Indirect Tax reforms.

• It proposed significant changes like the removal of tax exemptions, lowering of corporate tax, and set the foundational philosophy for the eventual implementation of the Goods and Services Tax (GST).

• Rangarajan Committee (1997)

• C. Rangarajan headed several committees, but the 1997 panel is notably associated with Public Sector Disinvestment.

• It provided guidelines on the percentage of government equity to be sold in various categories of Public Sector Undertakings (PSUs).

Q81. Answer: (d) 6 √6 cm

Shortcut Trick

Side of each cube = $\sqrt[3]{216} = 6$ cm.

Two cubes joined end to end form a cuboid with dimensions: l = 12 cm, b = 6 cm, and h = 6 cm.

Diagonal of cuboid = $\sqrt{(l^2 + b^2 + h^2)} = \sqrt{(12^2 + 6^2 + 6^2)} = \sqrt{216} = 6\sqrt{6}$ cm.

Therefore The correct answer is $6\sqrt{6}$ cm.

Alternate Method

Given:

Volume of each cube = 216 cm^3

Formula Used:

1. Volume of a cube = a^3, where a is the side of the cube.

2. Diagonal of a cuboid = $\sqrt{(l^2 + b^2 + h^2)}$, where l, b, and h are the length, breadth, and height of the cuboid respectively.

Calculations:

Let the side of each cube be a.

=> $a^3 = 216$

=> $a = \sqrt[3]{216} = 6$ cm

When two cubes are joined end to end, only the length of the resulting cuboid increases:

=> Length (l) = a + a = 6 + 6 = 12 cm

=> Breadth (b) = a = 6 cm

=> Height (h) = a = 6 cm

Substituting these dimensions into the diagonal formula:

=> Diagonal = $\sqrt{(l^2 + b^2 + h^2)}$

=> Diagonal = $\sqrt{(12^2 + 6^2 + 6^2)}$

=> Diagonal = $\sqrt{(144 + 36 + 36)}$

=> Diagonal = $\sqrt{216}$

=> Diagonal = $\sqrt{(36 \times 6)} = 6\sqrt{6}$ cm

Therefore The correct answer is $6\sqrt{6}$ cm.

Additional Information

Volume of Cuboid

The volume of a cuboid is given by V = l × b × h, where l, b, and h are the length, breadth, and height of the cuboid.

Total Surface Area of Cuboid

The total surface area (TSA) of a cuboid is given by TSA = 2(lb + bh + lh).

Lateral Surface Area of Cuboid

The lateral surface area (LSA) of a cuboid represents the area of its four side faces and is given by LSA = 2h(l + b).

Diagonal of Cube

The diagonal of a cube with side length a is given by $d = a\sqrt{3}$.

Q82. Answer: (c) 149

BODMAS Table:

Equation after interchanging the signs and applying the BODMAS rule:

$42 \div 3 + 25 \times 5 - (56 \div 8) \times 2 + 24$

$= 42 \div 3 + 25 \times 5 - 7 \times 2 + 24$

$= 14 + 25 \times 5 - 7 \times 2 + 24$

$= 14 + 125 - 14 + 24$

$= 139 + 24 - 14$

$= 163 - 14$

$= 149$

The correct answer is 149.

Hence, the correct answer is "Option 3"

Q83. Answer: (c) Four

Given: H, I, J, K, U, V, W and X are sitting around a square table facing the centre of the table. Four of them are sitting at the corners while four are sitting at the exact centre of the sides.

• Only three people sit between J and W.

• J does not sit at any of the corners.

• I sits third to the left of W.

• H sits second to the left of J.

• V is an immediate neighbour of both W and H.

• U is an immediate neighbor of J.

• X sits second to the left of W.

The Final Arrangement is,

There are Four people (X, I, J, and U) sitting between K and H when counted from the left of K.

Hence, the correct answer is "Option 3"

Q84. Answer: (d) ZSL 335

The logic follows here,

Combining the letter cluster and the number, the next term in the series is ZSL 335.

Hence, the correct answer is "Option 4"

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Q85. Answer: (d) Establishing a socialist pattern of society

The correct answer is Establishing a socialist pattern of society.

Key Points

• The Industrial Policy Resolution (IPR) of 1956 was a landmark policy adopted by the Indian Parliament in April 1956, which served as the 'Economic Constitution' of India for several decades.

• This policy was designed to support the objectives of the Second Five-Year Plan, which followed the Mahalanobis Model focusing on rapid industrialization through heavy and basic industries.

• The primary goal of the IPR 1956 was establishing a socialist pattern of society, a vision adopted during the Avadi Session of the Indian National Congress in 1955, emphasizing the state's dominant role in the economy.

• The resolution classified industries into three categories: Schedule A (17 industries under the exclusive responsibility of the State), Schedule B (12 industries progressively state-owned), and Schedule C (remaining industries open to the private sector but under state regulation).

• It aimed to reduce regional disparities by providing incentives, such as tax concessions and subsidized power, for industries established in economically backward regions.

• The policy also recognized the vital role of Village and Small-Scale Industries in generating employment and ensuring a more equitable distribution of national income.

Additional Information

• Promoting consumer goods industries:

• The 1956 resolution shifted the focus toward Capital Goods and Heavy Industries (like steel, machine building, and chemicals) rather than focusing purely on consumer goods, which was more characteristic of the first plan.

• Reducing public sector involvement:

• Contrary to reducing involvement, the resolution expanded the Public Sector, giving it the 'commanding heights' of the economy to ensure that the development followed socialistic principles.

• Privatization of heavy industries:

• The policy actually limited the scope of the private sector in heavy industries through a strict Licensing System (Industrial Licensing), requiring government permission for starting, expanding, or diversifying any industrial unit.

Q86. Answer: (b) Kaziranga National Park

The correct answer is Kaziranga National Park.

Key Points

• Kaziranga National Park, situated in the state of Assam, is globally celebrated for the successful conservation of the Great Indian One-horned Rhinoceros (Rhinoceros unicornis).

• It currently hosts approximately two-thirds of the entire world population of this species, with the 2022 census estimating the count at 2,613 individuals within the park boundaries.

• The park was designated a UNESCO World Heritage Site in 1985 due to its unique ecological importance and its role as a sanctuary for several threatened species.

• Located on the edge of the Eastern Himalaya biodiversity hotspot, its landscape consists of vast alluvial grasslands, marshlands, and tropical moist broadleaf forests created by the Brahmaputra River.

• Established as a Reserve Forest in 1905 and later a National Park in 1974, it was also declared a Tiger Reserve in 2006, boasting one of the highest densities of tigers in the world.

Additional Information

• Silent Valley National Park:

• Located in the Nilgiri Hills of Kerala, it is famous for the conservation of the endangered Lion-tailed Macaque.

• It represents one of the last undisturbed tracts of South Western Ghats mountain rain forests and tropical evergreen forests in India.

• Periyar Wildlife Sanctuary:

• Situated in the Western Ghats of Kerala, this site is a prominent Elephant Reserve and Tiger Reserve.

• It is centered around the Periyar Lake and is known for its diverse flora and fauna, including the Nilgiri Langur.

• Gir National Park:

• Located in Gujarat, it is the only natural habitat in the world where the Asiatic Lion survives in the wild.

• The ecosystem is characterized by dry deciduous forests and teak-dominated vegetation.

Q87. Answer: (a) 221

The logic followed here is:

Logic: Second Number = First Number × 13

For the first pair 9 : 117

=> 9 × 13 = 117

For the second pair 12 : 156

=> 12 × 13 = 156

Applying the same logic to the third pair

17 : ?

=> 17 × 13 = 221

Hence, the correct answer is 'Option 1'.

Q88. Answer: (c) 6

Shortcut Trick

For a data set in Arithmetic Progression (AP) with an odd number of terms, the Mean is equal to the middle term (15).

Absolute deviations from the mean (15) are: 10, 5, 0, 5, 10.

Sum of these absolute deviations = 10 + 5 + 0 + 5 + 10 = 30.

Mean Deviation = Total Deviation ÷ Number of observations = 30 ÷ 5 = 6.

Therefore The correct answer is 6.

Alternate Method

Given: Data points (x_i) = 5, 10, 15, 20, 25 | Number of observations (n) = 5.

Formula Used:

Mean (x) = $(\sum x_i) \div n$

Mean Deviation (MD) = $(\sum |x_i - x|) \div n$

Calculations:

=> Sum ($\sum x_i$) = 5 + 10 + 15 + 20 + 25 = 75

=> Mean (x) = 75 ÷ 5 = 15

=> Absolute deviations from mean $|x_i - 15|$:

=> |5 − 15| = 10

=> |10 − 15| = 5

=> |15 − 15| = 0

=> |20 − 15| = 5

=> |25 − 15| = 10

=> Sum of absolute deviations = 10 + 5 + 0 + 5 + 10 = 30

=> Mean Deviation = 30 ÷ 5 = 6

Therefore The correct answer is 6.

Additional Information

Mean Deviation about Median

It is the average of absolute differences from the median. MD (Median) = $(\sum |x_i - \text{Median}|) \div n$. It is minimum when calculated about the median.

Coefficient of Mean Deviation

A relative measure of dispersion calculated as: Coefficient = [Mean Deviation ÷ Mean] × 100.

Variance and Standard Deviation

Variance (σ^2) is the mean of squared deviations: $\sum (x_i - x)^2 \div n$. Standard Deviation (σ) is √Variance.

Q89. Answer: (d) 28

Shortcut Trick

Total Work = LCM(35, 60) = 420 units.

Combined Efficiency (A + B) = 12; Efficiency of A = 7.

Efficiency of B = 12 − 7 = 5 units/day.

Time for B to do 1/3 work = (420 ÷ 3) ÷ 5 = 140 ÷ 5 = 28 days.

Therefore The correct answer is 28 days.

Alternate Method

Given:

Time taken by A and B = 35 days.

Time taken by A alone = 60 days.

Formula Used:

Efficiency = Total Work ÷ Time

Person	Days	Total Work (LCM)	Efficiency
A + B	35	420	12
A	60	7	

=> Efficiency of B = Efficiency of (A + B) − Efficiency of A

=> Efficiency of B = 12 − 7 = 5 units/day.

=> One-third of the total work = 1/3 × 420 = 140 units.

=> Time taken by B alone = 140 ÷ 5 = 28 days.

Therefore The correct answer is 28 days.

Additional Information

Work and Efficiency Relationship

Efficiency is inversely proportional to the time taken to complete the work. Efficiency = 1 ÷ Time.

Combined Work Formula

If A takes 'x' days and B takes 'y' days, they together take (x × y) ÷ (x + y) days to complete the work.

Partial Work Calculation

The time taken to complete a fraction '1/n' of the work is equal to (Total time taken for full work) ÷ n.

Q90. Answer: (d) Right to freedom of speech and expression

The correct answer is Right to freedom of speech and expression.

Key Points

• The Constitution of India distinguishes between fundamental rights available to all persons and those available exclusively to the citizens of India.

• Article 19 of the Indian Constitution guarantees the Right to freedom of speech and expression, along with five other freedoms (assembly, association, movement, residence, and profession). These rights are fundamental civil liberties granted only to individuals who owe allegiance to the Indian State.

• Legal precedents and constitutional provisions clarify that Article 19 is strictly reserved for citizens to ensure that the political and democratic discourse of the country remains in the hands of its own people.

• The specific Fundamental Rights available only to citizens (and not foreigners) are Articles 15, 16, 19, 29, and 30.

• Article 15 prohibits discrimination on grounds of religion, race, caste, sex, or place of birth; Article 16 ensures equality of opportunity in public employment; and Articles 29 and 30 protect the cultural and educational rights of minorities.

Additional Information

• Fundamental Rights available to both citizens and foreigners (except enemy aliens):

• Right to Equality before law: Under Article 14, the State shall not deny to any person equality before the law or equal protection of laws within the territory of India. This applies to legal persons, companies, and aliens.

• Right to life and personal liberty: Article 21 is a basic human right that states no person shall be deprived of life or liberty except according to procedure established by law. It is the most broadly interpreted right by the Supreme Court.

• Right against exploitation: Articles 23 and 24 prohibit human trafficking, begar (forced labor), and the employment of children in hazardous factories. These protections are universal to ensure human dignity.

• Protection in respect of conviction for offences: Article 20 provides safeguards against arbitrary and excessive punishment to any person, regardless of nationality.

Q91. Answer: (b) 7.5%

Shortcut Trick

Let the price at place P be 100%.

Price at Q = 85% (15% less than P).

Gross saving = Price difference = 15% of price at P.

Net saving = Gross saving − Travel cost => Rs. 150 = 15% − Rs. 150.

15% of price at P = Rs. 300 => Price at P = (300 ÷ 15) × 100 = Rs. 2000.

Percentage net saving = (Net saving ÷ Price at P) × 100 = (150 ÷ 2000) × 100 = 7.5%.

Therefore The correct answer is 7.5%.

Alternate Method

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Given:

Reduction in price at Q = 15%

Travel cost = Rs. 150

Net saving = Rs. 150

Formula Used:

Net Saving = (Price at P − Price at Q) − Travel Cost

Percentage Saving = (Net Saving ÷ Price at P) × 100

Calculations:

Let the price of the article at place P be x.

=> Price at place Q = x − 0.15x = 0.85x

=> Total expenditure at Q = Price at Q + Travel cost = 0.85x + 150

=> Saving = Price at P − Total expenditure at Q

=> 150 = x − (0.85x + 150)

=> 150 = 0.15x − 150

=> 0.15x = 300

=> x = 300 ÷ 0.15 = 2000

=> Price at P = Rs. 2000

=> Percentage saving = (150 ÷ 2000) × 100

=> Percentage saving = 15 ÷ 2 = 7.5%

Therefore The correct answer is 7.5%.

Additional Information

Percentage Saving Calculation

Percentage saving is always calculated on the original price or base price mentioned in the question (in this case, price at P). Formula: (Actual Saving ÷ Original Price) × 100.

Effective Discount

When additional expenses like transport or tax are involved, the effective discount is the net reduction in total cost after considering all overheads.

Break-even Point in Shopping

Traveling to a cheaper location is only beneficial if the reduction in price is greater than the total travel expenses incurred.

Q92. Answer: (b) Uttaramerur Inscription

The correct answer is Uttaramerur Inscription.

Key Points

• The Uttaramerur Inscription, dating back to the 10th century CE during the reign of the Chola King Parantaka I, provides an incredibly detailed account of the local self-government system in ancient Tamil Nadu.

• Located in the Vaikunda Perumal Temple at Uttaramerur in the Kanchipuram district, these inscriptions explain the functioning of the Sabha, which was the assembly of the Brahmin settlements (Agraharas).

• The records highlight the Kudavolai system (pot-ticket system) used for electing members to village committees or Variyams, ensuring a decentralized administrative structure.

• Specific committees mentioned include the Thotta Variyam (Garden Committee), Eri Variyam (Tank Committee), and Pon Variyam (Gold Committee), each managing distinct aspects of village welfare.

• The inscription details eligibility criteria for candidates, such as age (between 35 and 70), ownership of land, and proficiency in the Vedas and Brahmanas.

• It also emphasizes accountability by listing disqualifications for those who failed to submit accounts or committed moral offenses, reflecting a high level of political maturity and transparency.

Additional Information

• Aihole Inscription

• Written by Ravikirti, the court poet of the Chalukya King Pulakeshin II.

• It describes the defeat of the northern ruler Harshavardhana by Pulakeshin II and the shifting of the capital to Badami.

• Allahabad Pillar Inscription

• Also known as the Prayag Prashasti, it was composed by Harisena in the 4th century CE.

• It serves as a eulogy for Samudragupta, detailing his extensive military conquests across the Indian subcontinent.

• Hathigumpha Inscription

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• Located in the Udayagiri Hills of Odisha, it belongs to King Kharavela of the Kalinga region.

• It is inscribed in Prakrit and provides a year-by-year record of the king's achievements and public works.

Q93. Answer: (d) Cells divide actively and contribute to plant growth

The correct answer is - Cells divide actively and contribute to plant growth

Key Points

• Meristematic Tissue

• The primary characteristic that distinguishes meristematic tissue from other plant tissues is its ability to divide actively throughout the life of the plant.

• These tissues consist of undifferentiated cells that are capable of continuous cell division (mitosis), leading to the production of new cells.

• This active division is fundamental for the growth of the plant, including an increase in length (primary growth) and thickness (secondary growth).

• The cells of meristematic tissue are typically small, have thin cellulose walls, dense cytoplasm, and a prominent nucleus, but usually lack large vacuoles.

Additional Information

• Types of Meristematic Tissues

• Apical Meristem: Found at the growing tips of stems and roots. It is responsible for the increase in the length of the plant.

• Lateral Meristem: Found on the lateral sides of stems and roots (e.g., vascular cambium). It helps in increasing the girth or thickness of the plant.

• Intercalary Meristem: Located at the base of leaves or internodes. It aids in the longitudinal growth of the plant parts and helps grass regrow after being eaten by herbivores.

• Permanent Tissues

• When meristematic cells take up a specific role and lose the ability to divide, they form permanent tissues through a process called differentiation.

• Parenchyma: Mainly involved in storage of nutrients and photosynthesis.

• Vascular Tissues: These include Xylem (transports water and minerals) and Phloem (transports food/nutrients).

• Protective Tissues: The epidermis forms a protective layer across the plant surface to prevent water loss and injury.

Q94. Answer: (c) Kudremukh Iron Ore Project – Karnataka

The correct answer is Kudremukh Iron Ore Project - Karnataka.

Key Points

• The Neyveli Lignite Project is located in the Cuddalore district of Tamil Nadu and is renowned for having the largest lignite (brown coal) reserves in India. Hence, Neyveli Lignite Project - Punjab is incorrectly matched.

• The Korba Coalfield is situated in the Korba district of Chhattisgarh in the basin of the Hasdeo River, which is a tributary of the Mahanadi. Hence, Korba Coalfield - Rajasthan is incorrectly matched.

• The Kudremukh Iron Ore Project is located in the Chikkamagaluru district of Karnataka. The term Kudremukh means horse-face in Kannada, referring to the unique shape of a mountain peak in the Western Ghats. It is a massive magnetite iron ore deposit. Hence, Kudremukh Iron Ore Project - Karnataka is correctly matched.

• The Raniganj Coalfield is located in the Paschim Bardhaman district of West Bengal. It is historically significant as the site where coal mining first began in India in 1774. Hence, Raniganj Coalfield - Gujarat is incorrectly matched.

Additional Information

• Neyveli Lignite Project (Tamil Nadu):

• Operated by NLC India Limited (formerly Neyveli Lignite Corporation), it supports massive thermal power stations.

• Lignite is a lower grade of coal with high moisture content, used primarily for electricity generation.

• Korba Coalfield (Chhattisgarh):

• It serves as a primary energy source for the NTPC Korba Super Thermal Power Station.

• The region is a critical part of the Gondwana coal deposits in Central India.

• Raniganj Coalfield (West Bengal):

• It is part of the Damodar River Valley, often referred to as the Ruhr of India due to its high concentration of minerals and industries.

• The coal found here is largely non-coking bituminous coal.

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Q95. Answer: (b) Three

Given: Each of V, U, T, O, N, M and L was born in a different month viz. January, March, May, June, July, September and December of the same year, starting from January and ending in December.

1. Only U is elder than O
2. Only two people are elder than M
3. Only two people were born between L and M
4. T is elder than N but younger than V

The final arrangement is as follows:

Month	Person
January	U
March	O
May	M
June	V
July	T
September	L
December	N

• The people born between them are O, M, and V.

• Thus, there are three people born between T and U.

Hence, the correct answer is "Option 2"

Q96. Answer: (b) Council of Ministers

The correct answer is Council of Ministers.

Key Points

• Article 75(3) of the Constitution of India explicitly mandates that the Council of Ministers shall be collectively responsible to the House of the People, which is popularly known as the Lok Sabha.

• The principle of Collective Responsibility is a fundamental feature of the Parliamentary form of government, signifying that the ministry functions as a cohesive unit; thus, they 'sink or swim together' in the eyes of the legislature.

• If a No-Confidence Motion is passed in the Lok Sabha, the entire Council of Ministers, including those members who belong to the Rajya Sabha, must resign from their positions.

• This provision ensures that the executive branch remains directly accountable to the elected representatives of the citizens, upholding the democratic essence of the Indian Constitution.

Additional Information

• Rajya Sabha

• Commonly referred to as the Council of States or the Upper House, it represents the interests of states and Union Territories.

• Unlike the Lok Sabha, it is a permanent body and is not subject to dissolution, though one-third of its members retire every second year.

• Supreme Court of India

• Constitutes the highest judicial forum and the final court of appeal under the Constitution of India as per Article 124.

• It acts as the custodian of the Constitution and has the power of Judicial Review to check the constitutionality of legislative and executive actions.

• Finance Commission of India

• A constitutional body established by the President of India under Article 280.

• Its primary role is to provide recommendations on the distribution of tax proceeds between the Union and the States.

Q97. Answer: (a) 6 – 6 – 36 – 216

The logic followed here is:

Logic: 2^(nd) Number = 1^(st) Number × 1; 3^(rd) Number = 2^(nd) Number × 1^(st) Number; 4^(th) Number = 3^(rd) Number × 1^(st) Number

For 5 − 5 − 25 − 125

=> 2^(nd) number: 5 × 1 = 5

=> 3^(rd) number: 5 × 5 = 25

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=> 4^(th) number: 25 × 5 = 125

For 4 − 4 − 16 − 64

=> 2^(nd) number: 4 × 1 = 4

=> 3^(rd) number: 4 × 4 = 16

=> 4^(th) number: 16 × 4 = 64

Applying the same logic to the options:

For (6 − 6 − 36 − 216)

=> 2^(nd) number: 6 × 1 = 6

=> 3^(rd) number: 6 × 6 = 36

=> 4^(th) number: 36 × 6 = 216

Hence, the correct answer is "Option 1".

Q98. Answer: (a) Parag Jain

The correct answer is Parag Jain.

Key Points

• In June 2025, the Appointments Committee of the Cabinet (ACC) approved the appointment of Parag Jain as the Secretary of the Research and Analysis Wing (RAW).

• Parag Jain is a senior Indian Police Service (IPS) officer of the 1989 batch belonging to the Punjab cadre.

• He took over the leadership of India's external intelligence agency from Ravi Sinha, whose two-year tenure ended in June 2025.

• Before being appointed as the chief, Parag Jain served as an Additional Secretary in the Cabinet Secretariat and has spent over two decades in various capacities within the intelligence community.

• His appointment is seen as a strategic move to leverage his deep expertise in counter-terrorism and regional security dynamics, especially concerning the neighborhood first policy.

Additional Information

• Research and Analysis Wing (RAW):

• Founded on September 21, 1968, under the guidance of its first director, R. N. Kao, to provide dedicated external intelligence.

• The agency functions under the Cabinet Secretariat and is directly accountable to the Prime Minister.

• Headquartered in New Delhi, its primary functions include intelligence gathering, counter-proliferation, and covert operations.

• Notable Figures mentioned in options:

• Ravi Sinha: A 1988-batch IPS officer who served as the RAW Chief from June 2023 to June 2025.

• Samant Goel: A 1984-batch officer who headed RAW for four years (including extensions) from 2019 to 2023.

• Arvind Kumar: A former Director of the Intelligence Bureau (IB), which is India's internal intelligence agency.

Q99. Answer: (c) 41

BODMAS Table:

Signs interchange:

• '+' and '−' are interchanged.

• '×' and '÷' are interchanged.

Equation after interchanging the signs and applying BODMAS rule,

= 81 ÷ 9 + 14 × 2 − (60 ÷ 6) × 3 + 49 − 15 = ?

= 81 ÷ 9 + 14 × 2 − (60 ÷ 6) × 3 + 49 − 15

= 9 + 14 × 2 − 10 × 3 + 49 − 15

= 9 + 28 − 30 + 49 − 15

= 37 + 49 − 15 − 30

= 86 - 45

= 41

Hence, the correct answer is "option 3"

Q100. Answer: (c) Promoting domestic–foreign joint ventures

The correct answer is Promoting domestic-foreign joint ventures.

Key Points

• The Economic Survey 2002-03 reflects on the decade following the 1991 Economic Reforms, which introduced Liberalisation, Privatisation, and Globalisation (LPG) to transition India toward a market-driven economy.

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• Globalisation specifically aimed at integrating the Indian economy with the global market by encouraging the inflow of Foreign Direct Investment (FDI) and the adoption of International Best Practices.

• Promoting Domestic-Foreign Joint Ventures became a core strategy for industrial growth, as it facilitated the transfer of Advanced Technology, modern management techniques, and global capital into local districts.

• Under the post-1991 framework, Joint Ventures allowed Indian firms to mitigate risks while gaining access to Global Supply Chains, which was a significant departure from the earlier era of Import Substitution and Protectionism.

• The survey highlights that for a district or state to attract new industries in a globalized era, it must offer an environment conducive to External Commercial Borrowings and Equity Participation by foreign entities.

Additional Information

• Industrial Licensing:

• Prior to 1991, the License Raj required government approval for setting up or expanding industries; however, the reforms led to Abolition of Industrial Licensing for almost all sectors to promote Ease of Doing Business.

• Foreign Financial Institutions (FFIs):

• Contrary to restriction, the post-reform era focused on opening the Financial Sector to Foreign Institutional Investors (FIIs) to deepen the capital markets and provide diverse funding sources for Infrastructure Development.

• 1991 Reform Objectives:

• The primary goals included reducing the Fiscal Deficit, improving Balance of Payments (BoP), and enhancing the Efficiency of the industrial sector through global competition.

Q101. Answer: (c) a = 6; b = 14

Shortcut Trick

For infinitely many solutions, the equations must be proportional: a1/a2 = b1/b2 = c1/c2.

Compare the constant terms: 15 → 30 (multiplied by 2).

Apply the same multiplier 2 to the coefficients of x and y.

a = 3 × 2 = 6.

b = 7 × 2 = 14.

Therefore The correct answer is a = 6; b = 14.

Alternate Method

Given Equations:

1) 3x + 7y = 15

2) ax + by = 30

Condition for Infinitely Many Solutions:

a1/a2 = b1/b2 = c1/c2

=> Comparing the first and third ratios: 3/a = 15/30

=> 3/a = 1/2

=> a = 3 × 2 = 6

=> Comparing the second and third ratios: 7/b = 15/30

=> 7/b = 1/2

=> b = 7 × 2 = 14

Therefore The correct answer is a = 6; b = 14.

Additional Information

Unique Solution (Consistent)

The system has a single solution if the lines intersect at one point: a1/a2 ≠ b1/b2.

No Solution (Inconsistent)

The system has no solution if the lines are parallel and never meet: a1/a2 = b1/b2 ≠ c1/c2.

Coincident Lines

When a system has infinitely many solutions, the two lines lie exactly on top of each other (coincide).

Q102. Answer: (a) The box remains at rest.

Concept:

• Newton's First Law of Motion: A body at rest will remain at rest, and a body in motion will continue in motion with a constant velocity unless acted upon by a net external force.

• Net Force: The vector sum of all forces acting on an object. When two forces act in opposite directions, the net force is the difference between their magnitudes.

• Force (F):

• Definition: An interaction that changes or tends to change the state of rest or motion of an object.

• SI Unit: Newton (N).

• Dimensional Formula: [MLT^(−2)].

• Important Formula: F = m × a.

Calculation:

Given Data:

Pushing force (to the right), F1 = 30 N

Frictional force (to the left), F2 = 30 N

Solution:

Calculate the net force acting on the box:

F_(net) = F1 − F2

=> F_(net) = 30 − 30

=> F_(net) = 0 N

The net force acting on the box is zero, which means the forces are balanced. Since the box was initially at rest and no unbalanced force is acting on it, its state of motion will not change.

Hence, the box remains at rest.

Q103. Answer: (c) Intermediate level

The correct answer is Intermediate level.

Key Points

• The 73rd Constitutional Amendment Act, 1992, established a uniform three-tier structure of Panchayati Raj across India to strengthen rural self-government.

• The Intermediate level, also known as the Block level, serves as the link between the Village Panchayats and the District-level administration.

• According to Article 243B of the Constitution of India, every state must constitute Panchayats at the village, intermediate, and district levels.

• The name for this intermediate tier varies by state; it is commonly called the Mandal Panchayat in Karnataka, Taluka Panchayat in Gujarat, Panchayat Samiti in Maharashtra and Rajasthan, and Mandal Praja Parishad in Andhra Pradesh.

• The Constitution provides an exemption for states with a population not exceeding 20 lakhs, where the intermediate level may not be constituted.

Additional Information

• Village level:

• Governed by the Gram Panchayat, which is the lowest tier of the Panchayati Raj system.

• Includes the Gram Sabha, a permanent body comprising all registered voters within the village area.

• District level:

• Managed by the Zila Parishad, the uppermost tier responsible for coordinating the plans of all Block-level Panchayats.

• Members usually include Chairpersons of the intermediate panchayats and elected representatives like MPs and MLAs.

• Metropolitan level:

• Relates to Urban Local Bodies governed under the 74th Constitutional Amendment Act.

• Involves Metropolitan Planning Committees designed for areas with a population of 10 lakhs or more to handle urban development.

Q104. Answer: (d) Article 38

The correct answer is Article 38.

Key Points

• Article 38 of the Indian Constitution is a core provision within the Directive Principles of State Policy (DPSP), which are detailed in Part IV from Articles 36 to 51.

• The article mandates that the State shall strive to promote the welfare of the people by securing and protecting a social order where justice—social, economic, and political—is the guiding principle for all national institutions.

• It serves as the constitutional foundation for the Welfare State, directing the government to move beyond maintaining law and order to actively improving the socio-economic conditions of its citizens.

• The 44th Constitutional Amendment Act, 1978, expanded this article by adding Clause (2), which requires the State to minimize inequalities in income and eliminate disparities in status, facilities, and opportunities.

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• By emphasizing justice, Article 38 aligns with the objectives laid out in the Preamble of the Constitution, specifically the promise of social, economic, and political equity.

Additional Information

• Other important articles mentioned in the options include:

• Article 39: Directs the State to ensure citizens have the right to an adequate means of livelihood, prevent concentration of wealth, and provide equal pay for equal work for both men and women.

• Article 40: Instructs the State to organize Village Panchayats and endow them with the powers necessary to function as units of self-government.

• Article 41: Asserts that the State shall provide the right to work, to education, and to public assistance in cases of unemployment, old age, sickness, and disablement.

• DPSP Nature: These principles are non-justiciable, meaning they cannot be enforced by courts, yet they are fundamental in the governance of the country as per Article 37.

Q105. Answer: (c) 68/99

Shortcut Trick

Total work = LCM(9, 22) = 198 units.

Efficiency: A = 22, B = 9 (Total efficiency = 31).

Work done in 2 days = 31 × 2 = 62 units.

Remaining work = 198 − 62 = 136 units.

Fraction of unfinished work = 136 / 198 = 68/99.

Therefore The correct answer is 68/99.

Alternate Method

Given: Time taken by A = 9 days, Time taken by B = 22 days, Working duration = 2 days.

Formula Used: Efficiency = Total Work ÷ Time; Unfinished fraction = (Total Work − Work Done) ÷ Total Work.

Person	Days	Total Work	Efficiency
A	9	198	22
B	22	9	

=> Combined efficiency of A and B = 22 + 9 = 31 units/day.

=> Work completed by both in 2 days = 31 × 2 = 62 units.

=> Unfinished work = Total Work − Work Done = 198 − 62 = 136 units.

=> Fraction of work remaining = 136 / 198.

=> Simplifying the fraction by dividing by 2 = 68/99.

Therefore The correct answer is 68/99.

Additional Information

Total Work Assumption

Taking the LCM of individual days as the total work simplifies calculation by avoiding complex fractions during intermediate steps.

Unitary Method for Work

If a person completes work in D days, the work done in 1 day is 1/D. The work done in t days is t/D.

Work and Wages

Wages are always distributed in the ratio of work done, which is equivalent to the ratio of efficiencies if all persons work for the same duration.

Q106. Answer: (a) 2.5 ohms

Concept:

• Resistance is the physical property of a substance due to which it opposes the flow of electric current through it.

• The resistance of a conductor is directly proportional to its length (L) and inversely proportional to its area of cross-section (A).

• SI Unit: Ohm (Ω)

• Dimensional Formula: [M¹L²T^(−3)I^(−2)]

• Formula: R = ρ × (L / A), where ρ is the resistivity.

• When a wire is cut into 'n' equal pieces, the resistance of each piece becomes R / n.

• For a parallel combination of 'n' identical resistors, the equivalent resistance (R_(eq)) is given by: R_(eq) = r / n, where 'r' is the resistance of each piece.

Calculation:

Given Data:

Total resistance of the wire, R = 10 Ω

Number of equal pieces, n = 2

Solution:

Resistance of each piece (r) = R ÷ n

=> r = 10 ÷ 2

=> r = 5 Ω

Now, these two pieces are connected in parallel.

The equivalent resistance (R_(eq)) for parallel connection is:

1/R_(eq) = 1/r1 + 1/r2

=> 1/R_(eq) = 1/5 + 1/5

=> 1/R_(eq) = 2/5

=> R_(eq) = 5/2

=> R_(eq) = 2.5 Ω

Hence, the equivalent resistance is 2.5 ohms.

Q107. Answer: (b) Geographical coordinates

The correct answer is Geographical coordinates.

Key Points

• Geographical coordinates are a set of imaginary lines used to determine the absolute and precise location of any point on the Earth's surface.

• The system consists of two primary components: Latitude and Longitude, which together form a geographic grid or graticule.

• Latitudes are horizontal circles that run parallel to the Equator (0°), measuring the angular distance North or South up to 90° at the poles.

• Longitudes, also known as Meridians, are vertical semi-circles that converge at the poles and measure the angular distance East or West of the Prime Meridian (0°), which passes through Greenwich, London.

• The intersection of a specific parallel of latitude and a meridian of longitude provides a unique coordinate pair, which is essential for navigation, cartography, and modern Global Positioning System (GPS) technology.

Additional Information

• Geographical boundaries:

• These refer to natural or artificial limits that separate different areas, such as international borders, coastlines, or mountain ranges like the Himalayas.

• They can be physical boundaries (rivers, oceans) or political boundaries defined by treaties and laws.

• Global divisions:

• This term generally refers to the classification of the Earth into Hemispheres (Northern, Southern, Eastern, and Western) or large-scale regions like continents and oceans.

• The Equator divides the Earth into the Northern and Southern Hemispheres, while the Prime Meridian and 180° Meridian divide it into the Eastern and Western Hemispheres.

• Planetary markers:

• While not a standard technical term for the grid system, markers on a planetary scale usually refer to geodetic benchmarks or specific astronomical reference points used to orient celestial bodies.

Q108. Answer: (a) A.R. Rahman

The correct answer is A.R. Rahman.

Key Points

• Secret Mountain is a pioneering metahuman digital band that represents a convergence of music, storytelling, and cutting-edge technology.

• The project was conceptualized and launched by the Academy Award-winning Indian composer A.R. Rahman, marking his significant entry into the Metaverse and Web3 space.

• The band consists of hyper-realistic digital avatars or metahumans created using Epic Games' Unreal Engine, allowing for seamless integration into virtual performance environments.

• The initiative aims to create a global musical experience where the virtual band members possess unique cultural identities and backstories, reflecting Rahman's vision of universal harmony.

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• Unlike traditional bands, Secret Mountain leverages Artificial Intelligence (AI) and motion-capture technology to perform in digital realms, transcending the physical limitations of live concerts.

Additional Information

• Metahuman Technology:

• It involves the creation of high-fidelity digital humans that exhibit realistic facial expressions, body movements, and skin textures.

• In the entertainment industry, metahumans are used to host virtual events, act in CGI films, and lead digital bands.

• Digital Bands in the Metaverse:

• This concept follows the lineage of virtual bands like Gorillaz but utilizes Real-time Rendering to allow for interactive fan experiences.

• These bands often utilize Blockchain technology for the distribution of exclusive content and NFTs (Non-Fungible Tokens) to build a decentralized fan community.

• A.R. Rahman's Tech Ventures:

• Beyond Secret Mountain, Rahman has been a proponent of Intellectual Property (IP) protection in the digital age and has explored Dolby Atmos and Virtual Reality (VR) in his previous cinematic and musical projects.

Q109. Answer: (c) 66

BODMAS Table:

Given sign substitutions:

Letter	Operation
P	×
Q	÷
R	−
S	•

Given : (42 Q 6) P 5 S 7 P 11 R (64 Q 8) P 2 R 5 P 6 = ?

After replacing the letters with their respective signs and BODMAS rule,

= (42 ÷ 6) × 5 + 7 × 11 − (64 ÷ 8) × 2 − 5 × 6

= 7 × 5 + 7 × 11 − 8 × 2 − 5 × 6

= 35 + 77 − 16 − 30

= 112 − 16 − 30

= 112 - 46

= 66

Hence, the correct answer is "Option 3"

Q110. Answer: (c) Data in Statement II alone is sufficient to answer the question while data in statement I is not

Given: Five, girls, Gauri, Ragini, Navya, Kajal and Lovely, are sitting around a circular table facing towards the centr

Step 1: Analyzing Statement I

Gauri is sitting immediately to the right of Lovely. Ragini is sitting immediately to the left of Kajal.

From this statement, we can have the following possibilities:

Case 1:

Case 2:

Since there is no unique answer, Statement I alone is not sufficient.

Statement II

• Navya is sitting second to the left of Kajal.

• Gauri is an immediate neighbour of both Navya and Lovely.

The final arrangement is:

Statement II alone is sufficient.

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

Hence, the correct answer is "Option 3"

Q111. Answer: (b) Both A and R are true, and R is the correct explanation of A.

The correct answer is Both A and R are true, and R is the correct explanation of A..

Key Points

• The Election Commission of India (ECI) is an autonomous constitutional authority established under Article 324 of the Constitution of India, tasked with administering election processes. It has the exclusive power to register and categorize political parties as National Parties or State Parties. Hence, statement A is correct.

• The recognition status is governed by the Election Symbols (Reservation and Allotment) Order, 1968. To attain or retain recognition, a party must meet specific statistical benchmarks related to the percentage of valid votes polled or the number of seats won in either the Lok Sabha or the State Legislative Assemblies. Hence, statement R is correct.

• The Reason (R) explains the mechanism behind the Assertion (A) by clarifying that recognition is not arbitrary but is strictly based on electoral performance and compliance with the ECI guidelines regarding financial transparency and internal party rules. Hence, R is the correct explanation of A.

Additional Information

• Criteria for National Party status:

• A party must win at least 2 percent of the total Lok Sabha seats from at least three different states.

• Alternatively, it must secure 6 percent of the valid votes in any four or more states in a general election and win at least four Lok Sabha seats.

• A party may also be recognized as a national party if it is recognized as a State Party in at least four states.

• Criteria for State Party status:

• Securing at least 6 percent of the valid votes in a state and winning two seats in the Legislative Assembly.

• Securing at least 3 percent of the total number of seats in the Legislative Assembly or a minimum of three seats, whichever is higher.

• Recognized parties enjoy benefits like a reserved election symbol, free airtime on public broadcasters, and the provision of two sets of electoral rolls free of cost.

Q112. Answer: (a) KEAT - EAKT - TAEK

The logic follows here,

For BARS − ARBS − SRAB

For FLAM − LAFM − MALF

Applying the same logic,

KEAT − EAKT − TAEK

Hence, the correct answer is "option 1"

Q113. Answer: (b) 9

Shortcut Trick

Total number of observations (n) = 6 (which is even).

In an even dataset, the median is the average of the two middle terms.

The two middle terms are the 3^(rd) term (8) and the 4^(th) term (10).

Median = (8 + 10) ÷ 2 = 18 ÷ 2 = 9.

Therefore The correct answer is 9.

Alternate Method

Given: Data set = 4, 6, 8, 10, 12, 14

Formula Used:

For an even number of observations (n):

Median = [(n/2)^(th) observation + (n/2 + 1)^(th) observation] ÷ 2

Calculations:

=> Number of terms n = 6

=> n/2 = 6/2 = 3^(rd) term

=> n/2 + 1 = 3 + 1 = 4^(th) term

=> Value of 3^(rd) term = 8

=> Value of 4^(th) term = 10

=> Median = (8 + 10) ÷ 2

=> Median = 18 ÷ 2 = 9

Therefore The correct answer is 9.

Additional Information

Median for Odd Observations

If the number of observations (n) is odd, the Median is the value of the ((n + 1) ÷ 2)^(th) term after arranging in ascending/descending order.

Empirical Relationship

The relationship between the three measures of central tendency is: Mode = 3 × Median − 2 × Mean.

Mean Calculation

The arithmetic Mean is the sum of all observations divided by the total number of observations: Mean = (∑ x_i) ÷ n.

Q114. Answer: (c) Raja Rajendra Mullick

The correct answer is Raja Rajendra Mullick.

Key Points

• Raja Rajendra Mullick, an affluent merchant and the adopted son of Nilmoni Mullick, commissioned the construction of the Marble Palace in 1835.

• Located in the Chorbagan area of North Kolkata, the mansion is one of the finest examples of Neoclassical architecture in India, featuring grand Corinthian columns and intricate marble-lined walls.

• The name Marble Palace is derived from the more than ninety varieties of marble imported from across the globe to decorate its floors and walls.

• It houses an extraordinary collection of Western sculptures and Renaissance art, including original paintings by celebrated European masters such as Peter Paul Rubens, Sir Joshua Reynolds, and Titian.

• The premises also include the Marble Palace Zoo, which was the first private zoo established in India, and it continues to house various species of exotic birds and mammals.

• The palace remains a private residence for the descendants of the Mullick family, though it is open to visitors who obtain the necessary permits from the West Bengal Tourism department.

Additional Information

• Dadabhai Naoroji

• Commonly referred to as the Grand Old Man of India, he was a founding member of the Indian National Congress and formulated the Drain Theory regarding British economic exploitation.

• Keshab Chandra Sen

• A prominent social reformer and philosopher who led the Brahmo Samaj of India and worked extensively for the Bengal Renaissance and women's rights.

• Bankim Chandra Chatterjee

• A legendary Bengali novelist who composed Vande Mataram, the national song of India, and authored the 1882 historical novel Anandamath.

Q115. Answer: (a) 27 days

Shortcut Trick

Since the amount of work (building the wall) is constant, the number of workers is inversely proportional to the days taken.

Using the formula: M1 × D1 = M2 × D2

12 × 18 = 8 × D2

D2 = 216 ÷ 8 = 27 days

Therefore The correct answer is 27 days.

Alternate Method

Given:

Initial workers (M1) = 12 workers

Initial days (D1) = 18 days

New workers (M2) = 8 workers

Formula Used:

Total Work = Workers × Days

Group	Days	Total Work	Efficiency (Workers)
Group 1	18	216	12
Group 2	27	8	

Calculations:

=> Total Work = 12 × 18 = 216 units

=> Efficiency of 8 workers = 8 units/day

=> Time required (D2) = Total Work ÷ Efficiency

=> D2 = 216 ÷ 8

=> D2 = 27 days

Therefore The correct answer is 27 days.

Additional Information

Chain Rule Formula

For work problems involving multiple variables, use M1D1H1/W1 = M2D2H2/W2, where M is workers, D is days, H is hours, and W is work done.

Inverse Proportion

In work-time problems, if the number of workers decreases, the time required to complete the task increases in the same ratio.

Work and Efficiency

Total work is always the product of time and efficiency (Rate of work). Efficiency prop. to 1/Time.

Q116. Answer: (c) Joel Mokyr

The correct answer is Joel Mokyr.

Key Points

• The 2025 Nobel Prize in Economic Sciences (formally the Sveriges Riksbank Prize) was awarded to Joel Mokyr for his transformative research into the economic history of growth and the Industrial Revolution.

• Mokyr is a distinguished professor at Northwestern University, and his work centers on the idea that technological progress is the primary engine of long-term economic development.

• He is widely acclaimed for his thesis on the Industrial Enlightenment, a period where the systematic application of scientific knowledge to production processes created the foundation for modern prosperity.

• His research distinguishes between propositional knowledge (understanding natural phenomena) and prescriptive knowledge (techniques and instructions), arguing that the synergy between the two triggered the Great Enrichment.

• In his seminal works, such as The Lever of Riches and A Culture of Growth, he demonstrates how cultural shifts and institutional frameworks in Western Europe allowed for the rapid diffusion of useful knowledge.

• By analyzing the interplay of technology and culture, Mokyr provided a new framework for understanding why some nations transitioned to sustained economic growth while others remained in the Malthusian trap.

Additional Information

• Paul Krugman:

• Awarded the Nobel Prize in 2008 for his work on New Trade Theory.

• His research explained economies of scale and how they influence trade patterns and the geographic location of economic activity.

• Daron Acemoglu:

• A 2024 Nobel Laureate (jointly with Simon Johnson and James Robinson).

• Known for his work on the role of inclusive versus extractive institutions in shaping the economic prosperity of nations.

• Thomas Piketty:

• An influential French economist specializing in wealth and income inequality.

• Author of Capital in the Twenty-First Century, which analyzes the concentration of capital and the historical dynamics of the rate of return vs. economic growth.

Q117. Answer: (d) 12

BODMAS Table:

Given equation:

108 × 4 − 13 + 4 ÷ 7 = ?

Interchanging the signs:

• + ↔ −

• × ↔ ÷

The new equation after interchanging signs and applying the BODMAS rule

= 108 ÷ 4 + 13 − 4 × 7 = ?

= 27 + 13 − 4 × 7

= 27 + 13 − 28

= 40 - 28

= 12.

Hence, the correct answer is "Option 4"

Q118. Answer: (d) Lothal

The correct answer is Lothal.

Key Points

• Lothal, situated in the Bhal region of modern-day Gujarat, was a vital maritime hub of the Indus Valley Civilization (IVC).

• The site is world-renowned for its artificial dockyard, which is considered the earliest known dockyard in the world, dating back to roughly 2400 BCE.

• This dockyard was a trapezoidal structure built with kiln-burnt bricks and measured approximately 218 meters in length and 37 meters in width.

• It was connected to an ancient course of the Bhogava River, a tributary of the Sabarmati, which allowed ships to enter from the Gulf of Khambhat during high tides.

• The presence of this dockyard signifies that Lothal was a major center for maritime trade, facilitating the exchange of goods like beads, gems, and ivory with civilizations in Mesopotamia and Sumer.

Additional Information

• Mohenjo-daro:

• Located in the Larkana district of Sindh (Pakistan) on the banks of the Indus River.

• It is famous for the Great Bath, the Great Granary, and the discovery of the Bronze Dancing Girl statue.

• Harappa:

• The first site of the civilization to be excavated in 1921 by Daya Ram Sahni, located near the Ravi River in Punjab (Pakistan).

• Key features include granaries located outside the citadel and stone symbols of Lingam and Yoni.

• Kalibangan:

• Situated in the Hanumangarh district of Rajasthan on the banks of the dried-up Ghaggar River.

• It is significant for the discovery of the world’s earliest ploughed field and several fire altars used for rituals.

Q119. Answer: (c) Emphasised mass participation and direct political agitation

The correct answer is Emphasised mass participation and direct political agitation.

Key Points

• The Extremist phase of the Indian National Congress, which gained prominence between 1905 and 1918, marked a radical departure from the Moderate ideology by advocating for mass mobilization and active resistance.

• Unlike the Moderates, who believed in the inherent justice of the British and confined their activities to the educated elite, Extremists sought to involve students, workers, and the lower-middle class in the freedom struggle.

• The Extremist leaders, notably the Lal-Bal-Pal trio (Lala Lajpat Rai, Bal Gangadhar Tilak, and Bipin Chandra Pal), argued that political rights must be fought for rather than prayed for through petitions.

• They introduced powerful tools of direct political agitation, such as Boycott of foreign goods, Swadeshi (promotion of indigenous products), and National Education to create a self-reliant nation.

• Bal Gangadhar Tilak popularized the slogan, 'Swaraj is my birthright and I shall have it', shifting the political goal from mere administrative reforms to absolute self-rule.

• The Extremists utilized traditional festivals and melas, like the Ganpati and Shivaji festivals in Maharashtra, as platforms to spread nationalistic feelings among the common people.

Additional Information

• Moderate Approach:

• Led by leaders like Dadabhai Naoroji, Pherozeshah Mehta, and Gopal Krishna Gokhale, the Moderates relied on Constitutional Agitation.

• Their methods were famously known as the 3Ps: Prayer, Petition, and Protest, aimed at gradual reforms within the British framework.

• The Surat Split (1907):

• Ideological differences regarding the scope of the Swadeshi Movement led to a formal split between Moderates and Extremists during the Surat Session of 1907.

• The Extremists wanted to extend the Boycott movement across India and include all forms of association with the government, whereas Moderates wanted to limit it to Bengal.

• Ideological Foundation:

• The Extremists were heavily influenced by the Partition of Bengal (1905) by Lord Curzon, which convinced them that British rule

was detrimental to Indian interests and required a more aggressive response.

Q120. Answer: (b) R.K. Narayan

The correct answer is R.K. Narayan.

Key Points

• R.K. Narayan, born as Rasipuram Krishnaswami Iyer Narayanaswami, published the novel 'The Guide' in 1958.

• The story is set in the fictional South Indian town of Malgudi, which is the recurring setting for almost all of Narayan's literary works.

• The plot follows the life of Raju, a charismatic tour guide who falls in love with a dancer named Rosie, leads a life of deceit, and eventually undergoes a forced spiritual transformation into a Mahatma (great soul).

• For this work, R.K. Narayan was honored with the Sahitya Akademi Award for English in 1960, making him one of the first Indian writers in English to receive this prestigious recognition.

• The novel was later adapted into a highly successful 1965 Hindi film titled 'Guide', starring Dev Anand and Waheeda Rehman, with a screenplay that brought the story to a massive domestic audience.

• Narayan's writing style in the book is noted for its simplicity, subtle irony, and its vivid portrayal of the social and cultural nuances of post-independence India.

Additional Information

• Vikram Seth

• He is best known for his monumental novel 'A Suitable Boy' (1993), which is one of the longest single-volume novels ever published in the English language.

• His other significant works include 'The Golden Gate', a novel written entirely in Onegin stanzas, and 'An Equal Music'.

• Raja Rao

• Considered one of the foundational figures of Indian English literature, he is famous for 'Kanthapura' (1938), which depicts the Gandhian struggle in a South Indian village.

• His work 'The Serpent and the Rope' won the Sahitya Akademi Award in 1964.

• Khushwant Singh

• A prolific author and journalist, he is most renowned for 'Train to Pakistan' (1956), a classic historical novel centered on the Partition of India.

• He served as the editor of The Illustrated Weekly of India and was a member of the Rajya Sabha.

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