RRB NTPC Graduate Level CBT-I Official Paper (Held On: 18 Jun, 2025 Shift 3) (Previous Year Paper)

RRB Group D • 2025 • 100 questions • 90 minutes • Answer key and solutions

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Q1. India's telecom revolution is a major outcome of liberalisation. Which regulatory authority was established in 1997 to oversee the telecom sector?

(a) SEBI
(b) NABARD
(c) IRDAI
(d) TRAI

Q2. What should come in place of the question mark (?) in the given series?

12 29 63 131 267 ?

(a) 543
(b) 521
(c) 531
(d) 539

Q3. Following the 2024 Jammu & Kashmir Assembly elections, who was appointed as the Deputy Chief Minister, and which political party does he represent?

(a) Ghulam Ahmad Mir, Indian National Congress (INC)
(b) Ravinder Raina, Bharatiya Janata Party (BJP)
(c) Surinder Kumar Choudhary, Indian National Congress (INC)
(d) Surinder Kumar Choudhary, Jammu & Kashmir National Conference (JKNC)

Q4. Who among the following travelled from Bithoor to Kalpi, Delhi and Lucknow in 1857 to rally the support of native princes for an uprising against the British?

(a) Tantia Tope
(b) Bahadur Shah Zafar
(c) Nana Saheb
(d) Rani of Jhansi

Q5. A salesman marks his good 84% above the cost price and gives a discount of 50% on them. Find the percentage of this gain or loss.

(a) 6% gain
(b) 9% loss
(c) 5% gain
(d) 8% loss

Q6. A man has to cover a distance of 549 km in 8 hours. If he covers 2/3 of this distance in 3/4 of the time, then what should be his speed (in km/hr) to cover the remaining distance in the time left?

(a) 91.5
(b) 96.5
(c) 82.5
(d) 71.5

Q7. Which two policy areas are explicitly managed by the Union Cabinet in India as part of its coordinating functions?

(a) Agriculture and Labour
(b) Tourism and Sports
(c) Foreign Relations and Defence
(d) Education and Health

Q8. In March 2025, the Indian Government has introduced a _____ incentive scheme for banks to encourage small-value UPI transactions in the financial year 2024-25?

(a) Rs. 1,700 crore
(b) Rs. 1,800 crore
(c) Rs. 1,600 crore
(d) Rs. 1,500 crore

Q9. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

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

(88, 76, 64)

(71, 59, 47)

(a) (64, 52, 40)
(b) (40, 38, 36)
(c) (99, 77, 55)
(d) (58, 46, 24)

Q10. 3 men and 14 women can complete a piece of work in 18 days, and 11 men and 8 women can complete the same work in 12 days. The work of how many women is equivalent to that of one man?

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

Q11. In a certain code language, ‘FISH’ is coded as ‘6458’ and ‘HAVE’ is coded as ‘5723’. What is the code for ‘H’ in the given code language?

(a) 2
(b) 7
(c) 8
(d) 5

Q12. Which of the following films was selected as India's official entry for Oscar 2025?

(a) Jawan
(b) Animal
(c) Laapataa Ladies
(d) 12th Fail

Q13. In a certain code language, ‘BEAR’ is coded as ‘4567’ and ‘RUIN’ is coded as ‘1234’. What is the code for ‘R’ in the given code language?

(a) 7
(b) 1
(c) 2
(d) 4

Q14. What should come in place of the question mark (?) in the given series?

319, 296, 263, ?, 167, 104

(a) 220
(b) 230

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(c) 210
(d) 200

Q15. In which landmark case did the Supreme Court of India rule that the Council of Ministers DOES NOT cease to hold office even after the dissolution of the Lok Sabha?
(a) Kesavananda Bharati vs. State of Kerala, 1973
(b) UNR Rao vs. Indira Gandhi, 1971
(c) Golaknath vs. State of Punjab, 1967
(d) SR Bommai vs. Union of India, 1994

Q16. Find the smallest number by which 4232 must be multiplied to make it a perfect square.
(a) 3
(b) 11
(c) 2
(d) 23

Q17. What will come in the place of the question mark (?) in the following equation, if '+' is replaced by '–' and '×' and '÷' are interchanged?
44 ÷ 8 + 5 × 1 + 7 = ?
(a) 250
(b) 400
(c) 340
(d) 300

Q18. Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week. No one has the exam before V. Only four people have exams between P and R. Q has the exam immediately before R. T has the exam before U but after S.
How many people have exams between S and R?
(a) Four
(b) Two
(c) Three
(d) One

Q19. This question is based on the five, three-digit numbers given below.
(Left) 853 628 981 217 132 (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 the second digit of the highest number is added to the first digit of the lowest number?
(a) 12
(b) 10
(c) 9
(d) 8

Q20. What will come in place of the question mark (?) in the following equation if '÷' and '–' are interchanged and '×' and '+' are interchanged?
522 × 708 – 59 + 19 ÷ 17 = ?
(a) 567
(b) 379
(c) 768
(d) 733

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Q21. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) DX – LE
(b) VP – DX
(c) HB – PJ
(d) ZT – HB

Q22. Which irrigation system is commonly used in arid regions of India to conserve water by directly delivering irrigation water to the roots of plants?

(a) Canal irrigation
(b) Drip irrigation
(c) Tank irrigation
(d) Sprinkler irrigation

Q23. The royal title used by Chandragupta I was:

(a) Maharaj
(b) Chakravartin
(c) Samrat
(d) Maharajadhiraja

Q24. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) TPMH
(b) AWTO
(c) NJGB
(d) EAYS

Q25. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

KDG 19 LEH 30 MFI 41 NGJ 52 ?

(a) OHL 63
(b) OHK 63
(c) OHK 64
(d) OHL 64

Q26. If $a^2 + b^2 = 163$, $a \times b = 27$ and $a > b$, then find the value of $(a - b)/(a + b)$

(a) 109/217
(b) √(119/227)
(c) 119/227
(d) √(109/217)

Q27. Which of the following novels, published in 1961, was written by Attia Hosain and portrays the impact of the Partition on a feudal family?

(a) Clear Light of Day
(b) Sunlight on the Broken Column
(c) Ice Candy Man
(d) Midnight's Children

Q28. For which of the given bills can the President of India summon a joint sitting of both Houses of Parliament?

1. Ordinary Bill
2. Money Bill
3. Constitutional Amendment Bill

(a) 1 and 2 only

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(b) 1, 2 and 3
(c) 1 only
(d) 2 and 3 only

Q29. Which of the following memory types is also called solid-state storage?
(a) Cache Memory
(b) Crystal Storage
(c) Flash Memory
(d) Primary Memory

Q30. A sum, when invested at 20% simple interest per annum, amounts to Rs. 4,800 after 3 years. What is the simple interest (in Rs.) on the same sum at the same rate in 1 year?
(a) 300
(b) 2,400
(c) 1,200
(d) 600

Q31. A cube of side 5 cm and a cuboid of measurements 35 cm,15 cm and 15 cm, respectively, of the same metal are melted and made into cubes of side 10 cm each. The number of cubes of side 10 cm thus formed is:
(a) 9
(b) 7
(c) 8
(d) 10

Q32. LIQM is related to JGOK in a certain way based on the English alphabetical order. In the same way, IFNJ is related to GDLH. To which of the given options is OLTP related, following the same logic?
(a) JMNR
(b) JMRN
(c) MJNR
(d) MJRN

Q33. In which early INC session was the demand first raised for the Indianisation of the higher administrative services, including the civil services?
(a) Allahabad Session, 1890
(b) Calcutta Session, 1886
(c) Madras Session, 1887
(d) Bombay Session, 1885

Q34. What was the theme of the World Sustainable Development Summit 2025?
(a) Partnerships for Accessing Supportive Development and Climate Solutions
(b) Partnership for Accessing Sustainable Development and Climate Solutions
(c) Partnership for Accelerating Sustainable Development and Climate Solutions
(d) Partnership for Approaching Sustainable Development and Climate Change

Q35. What does 'Dhamma' primarily refer to in Ashoka’s inscriptions?
(a) Slogans of Buddha
(b) Royal decree
(c) Buddhist doctrine
(d) Moral law

Q36. In April 2025, India implemented a standardised curriculum in Himalayan Buddhist monasteries. What was the primary objective of this initiative?
(a) To promote Chinese language education
(b) To integrate modern subjects alongside traditional teachings
(c) To convert monasteries into secular schools
(d) To reduce the number of monasteries in border areas

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Q37. India's dependency on food aid reduced after the Green Revolution. Which US program had earlier provided wheat aid to India?

(a) KL-580
(b) Marshall Plan
(c) PL-480
(d) Green Aid

Q38. Cardiomyocytes rely heavily on which mechanism to maintain their membrane potential and ensure proper contraction?

(a) Passive diffusion through gap junctions only
(b) A combination of voltage-gated ion channels and active ion pumps
(c) Facilitated diffusion of nutrients exclusively
(d) Endocytosis of extracellular fluid

Q39. Which feature allows you to create a multi-level numbered list (e.g., 1.1, 1.2) in MS Word 2019?

(a) Change Styles option
(b) Define New Multilevel List
(c) Format Painter
(d) Increase Indent button

Q40. This question is based on the five, three-digit numbers given below.

(Left) 441 317 999 155 444 (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 the third digit of the highest number is subtracted from the first digit of the lowest number?

(a) −5
(b) −8
(c) −7
(d) −9

Q41. Who among the following has become the first woman officer to take over as the Director General, Armed Forces Medical Services, in October 2024?

(a) Anju Rathi Rana
(b) Vijaya Kishore Rahatkar
(c) Deena Mehta
(d) Arti Sarin

Q42. A, B, C, D, R, S and T are sitting around a circular table facing the centre of the table. Only one person sits between T and S when counted from the right of T. Only one person sits between S and C. Only one person sits between T and R. Only two people sit between A and C. Only one person sits between B and R. Who sits third to the right of D?

(a) T
(b) A
(c) S
(d) C

Q43. Which institution was established in 1921 as a deliberative body for princes?

(a) Chamber of Princes
(b) Indian Council
(c) Imperial Assembly
(d) Royal Consultation Board

Q44. What is the median of the following data?

74, 85, 67, 27, 47, 16, 41, 32, 98, 38, 88

(a) 48
(b) 47.5

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(c) 46.5
(d) 47

Q45. The sides (in cm) of a right triangle are (x - 5), (x - 10) and x. Its area (in cm^2) is:

(a) 150
(b) 162
(c) 158
(d) 163

Q46. Find the simplified value of [525 ÷ {19 + 7 × (3 - 5)}].

(a) 105
(b) 108
(c) 104
(d) 102

Q47. What is the median of the following distribution?

Class		---	Class	140-190	190-240	240-290	290-340	340-390
Class						
Frequency	14	37	28	39	12	

(a) 275
(b) 251
(c) 250
(d) 265

Q48. Which of the following statements is NOT correct with reference to the periodic trend of metallic character?

(a) Metallic character increases down a group.
(b) Metallic character decreases across a period from left to right
(c) Metallic character increases across a period from left to right
(d) The change from metallic to non-metallic is gradual.

Q49. In March 2025, Ordnance Factories Day was observed to commemorate the founding of India's first ordnance factory in _____.

(a) Pune
(b) Cossipore
(c) Hyderabad
(d) Jabalpur

Q50. Mr. Yanki starts from Point A and drives 17 km towards the South. He then takes a right turn, drives 19 km, turns right and drives 29 km. He then takes a right turn and drives 15 km, turns right drives 1 km. He then takes a left turn drives 6 km. He takes a final right turn, drives 11 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90 degrees turns only unless specified.)

(a) 8 km to the North
(b) 4 km to the South
(c) 6 km to the East
(d) 2 km to the West

Q51. An article's cost price is Rs. 285, and the marked price is mentioned as Rs. 1,140. What is the profit percentage of the seller if he sells it by allowing a discount of 70% on the marked price?

(a) 19%
(b) 23%
(c) 17%
(d) 20%

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Q52. In a class of 30 students, the average score on a test is 75. If 20 students scored an average of 80, what is the average score of the remaining 10 students?

(a) 72
(b) 60
(c) 70
(d) 65

Q53. The length, breadth and height of a cuboid are (2x - 5y + 3) m, (5x + 7y - 7) m, and (x + y + 3) m, respectively. Find the perimeter of the cuboid.

(a) (16x - 12y + 8) m
(b) (32x + 12y + 4) m
(c) (32x + 12y - 4) m
(d) (16x - 12y - 8) m

Q54. L is the mother of two sons, namely, P and J. F is the wife of P. Q is the daughter of J. How is L related to Q?

(a) Father's mother
(b) Mother's mother
(c) Mother
(d) Husband's mother

Q55. Prime Minister Rajiv Gandhi initiated the Seventh Five-Year Plan (1985–90) in India. Which of the following was a key focus area of the Seventh Five-Year Plan?

(a) Modernisation and technology upgrade
(b) Liberalisation
(c) Structural reforms
(d) Privatisation

Q56. Which of the following actions will create a new folder on a Windows desktop?

(a) Pressing Alt + Tab
(b) Right-clicking on the desktop and selecting 'New' → 'Folder
(c) Clicking on the Recycle Bin icon
(d) Pressing Ctrl + F

Q57. What does PCB stand for in electric circuits?

(a) Peripheral Circuit Bridge
(b) Printed Circuit Board
(c) Programmed Control Base
(d) Process Control Board

Q58. Privatisation was a key pillar of the New Economic Policy of 1991. Which of the following is NOT a form of privatisation?

(a) Strategic sale
(b) Disinvestment
(c) Sovereign borrowing
(d) Asset monetisation

Q59. Which international event focused on climate change was held in Baku, Azerbaijan, in November 2024?

(a) COP28
(b) COP29
(c) Earth Summit 2024
(d) Global Climate Forum

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Q60. Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week. T has an exam on Friday. Exactly 3 people have an exam between P and U, neither of whom has on exam on Sunday. S has an exam immediately after Q. V has an exam immediately before U. How many people have an exam after S?

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

Q61. When the difference between compound interest, compounded annually, and simple interest for three years is Rs. 228 at 4% interest per annum, the principal is Rs. _____.

(a) 46,875
(b) 47,295
(c) 46,300
(d) 48,075

Q62. What is the typical direction of jet streams influencing the Indian climate in winter?

(a) East to west
(b) Southwest to northeast
(c) Southeast to northwest
(d) West to east

Q63. The curved surface area of a right circular cone is 4335 π cm^2, and the diameter of its base is 102 cm. Find the height (in cm) of the cone.

(a) 63
(b) 68
(c) 64
(d) 69

Q64. The population of a town in 1968 was 4,85,000. If its population increased in two successive decades by 20% in each decade, the population of the town in 1988 was:

(a) 6,98,400
(b) 6,98,405
(c) 6,98,395
(d) 6,98,397

Q65. Which of the following statements regarding the 2024 Haryana Assembly elections are correct?

1. The BJP formed the government for a third consecutive term in Haryana.
2. The Indian National Lok Dal (INLD) secured 2 seats in the election.
3. Independent candidates secured more than 5 seats in the assembly.
4. The majority mark in the Haryana Legislative Assembly was 48 seats.

(a) Only 1 and 3
(b) Only 1, 2 and 4
(c) Only 1 and 2
(d) Only 2 and 3

Q66. The average weight of M and his three friends is 65 kg. If M's weight is 8 kg more than the average weight of his three friends, what is M's weight (in kg)?

(a) 68
(b) 70
(c) 71
(d) 69

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Q67. Which department at the Indian Institute of Science (IIS) led the 2025 research project on synthetic image generation for MR applications?

(a) Department of Artificial Intelligence
(b) Department of Design and Manufacturing
(c) Department of Computer Science
(d) Department of Mechanical Engineering

Q68. What happens if a no-confidence motion is passed in the Indian Lok Sabha against the union government?

(a) The Prime Minister is given a chance to reorganise the Cabinet.
(b) Only the dissenting ministers resign.
(c) The entire Council of Ministers must resign.
(d) A re-election is triggered.

Q69. Which zone of the Great Indian Plains has high humidity and marshy conditions?

(a) Bhabar
(b) Bhangar
(c) Delta
(d) Terai

Q70. If the third proportional of 81 and Z is 9, then what is the positive value of Z?

(a) 25
(b) 28
(c) 27
(d) 30

Q71. Which union territory was added to India by the Fourteenth Amendment Act, 1962?

(a) Goa
(b) Daman and Diu
(c) Lakshadweep
(d) Puducherry

Q72. GF 7 is related to EA -10 in a certain way. In the same way, UG 14 is related to SB -3. To which of the given options is LN 2 related, following the same logic?

(a) JI -15
(b) IJ -15
(c) II -13
(d) JJ -14

Q73. Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?

: IKO :: TVZ : %

(a) = EGK, % = YZD
(b) # = EGK, % = XZD
(c) = ELK, % = XZD
(d) = FGK, % = XZD

Q74. What will come in the place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

117 ÷ 7 + 426 × 6 − 66 = ?

(a) 804
(b) 814
(c) 811
(d) 809

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Q75. In MS PowerPoint, what is the significance of the aspect ratio setting (e.g. 16 : 9, 4 : 3) when you are setting up your slide size?

(a) It sets the default font size and style for all text boxes in the presentation.

(b) It defines the proportions of the slide displayed on the screen, influencing how the content is laid out and how it appears on different display devices.

(c) It determines the file size of the saved presentation.

(d) It controls the number of slides that can be included in the presentation

Q76. Gaddi Nati is the famous folk dance of which of the following States?

(a) Madhya Pradesh

(b) Himachal Pradesh

(c) Uttar Pradesh

(d) Andhra Pradesh

Q77. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only. (NOTE: All numbers are single digit numbers only)

(Left) & # 9 % 6 4 % © @ & 6 4 6 7 © 9 8 5 % 9 © 7 (Right)

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

(a) 3

(b) 2

(c) 1

(d) 4

Q78. Seven boxes, A, B, C, D, E, F and G, are kept one over the other, but not necessarily in the same order. Only four boxes are kept between C and D. Only E is kept above C. Only two boxes are kept between F and A. G is kept immediately above B. A is not kept immediately above G. How many boxes are kept above F?

(a) 4

(b) 2

(c) 1

(d) 3

Q79. A person who spends 32% of his monthly income is able to save Rs. 7,752 per month. His monthly expenses (in Rs.) are:

(a) 3,864

(b) 3,648

(c) 3,684

(d) 3,846

Q80. 4 chairs and 14 tables cost Rs. 4,000 and 16 chairs and 12 tables cost Rs. 5,000. What is the cost of 8 chairs and 4 tables?

(a) Rs. 1,998

(b) Rs. 2,004

(c) Rs. 2,000

(d) Rs. 2,002

Q81. Read the given statements and conclusions carefully. Assuming that the information

given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

All birds are omnivores.

All omnivores are lions.

Some birds are reptiles.

Conclusions:

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(1) Some omnivores are reptiles.

(1) Some reptiles are lions

(a) Either conclusion (I) or (II) follows
(b) Both conclusions (I) and (II) follow.
(c) Only conclusion (I) follows.
(d) Only conclusion (II) follows.

Q82. Which city did PM Modi and President Macron visit to inaugurate a new Indian consulate in February 2025?

(a) Baku
(b) Marseille
(c) Lyon
(d) Toulouse

Q83. A, B, C, D, E, F, and G are sitting around a circular table facing the centre. A sits to the immediate left of G. D sits to the immediate left of B. B sits second to the left of F. E sits third to the left of G. How many people sit between C and F when counted from the left of C?

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

Q84. Three numbers are in the ratio 3 : 2 : 13, and their LCM is 4758. Their HCF is _____.

(a) 75
(b) 46
(c) 61
(d) 64

Q85. A and B can do a piece of work in 13 days and 52 days, respectively. Both work for 2 days and then A goes away. How long (in days) will B take to complete the remaining work?

(a) 44
(b) 42
(c) 43
(d) 41

Q86. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

RCX TDS VEN XFI ?

(a) ZHE
(b) ZIF
(c) ZIE
(d) ZGD

Q87. In a certain code language, ‘NEAR’ is coded as ‘3571’ and ‘WINK’ is coded as ‘2346’. What is the code for ‘N’ in the given code language?

(a) 1
(b) 3
(c) 7
(d) 4

Q88. Which of the following numbers is divisible by 87?

(a) 8088
(b) 8004
(c) 7150
(d) 7835

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Q89. If the quadratic equations $6x^2 - 7x - 20 = 0$ and $6x^2 + bx - 10 = 0$ have one root in common, find the value of b.

(a) 11
(b) -10
(c) 10
(d) -11

Q90. Which of the following pairs is an acid-base conjugate pair?

(a) H^+ and O²^-
(b) H2O and H2O2
(c) HCl and Cl2
(d) NH4^+ and NH3

Q91. TQ = 6 cm is a tangent to the circle and TPX is a secant. If TP = y cm and PX = 5 em, find y.

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

Q92. If 12, 60, 13, and y are in proportion, then the value of y is:

(a) 56
(b) 65
(c) 63
(d) 72

Q93. If 2 is added to each odd digit and 1 is subtracted from each even digit in the number 5634812, how many digits will appear more than once in the new number thus formed?

(a) 1
(b) 3
(c) 0
(d) 2

Q94. Fenil starts from Point Y and drives 19 km towards the west. He then takes a left turn, drives 49 km, turns left and drives 12 km. He then takes a left turn and drives 28 km. He takes a left turn and drives 38 km. He then turns right and drives 21 km to stop at Point Z. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90 degree turns only unless specified.)

(a) 41 km towards the south
(b) 51 km towards the south
(c) 45 km towards the east
(d) 39 km towards the west

Q95. The farming system that involves both crop cultivation and livestock raising is known as:

(a) Mixed farming
(b) Terrace agriculture
(c) Plantation farming
(d) Subsistence farming

Q96. A bike can finish a certain journey in 20 hours at the speed of 66 km/hr. In order to cover the same distance in 15 hours, the speed of the bike (in km/hr) must be increased by

(a) 14
(b) 25
(c) 18
(d) 22

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Q97. If sin A = 3/4 then calculate cosA cotA.

(a) 7/12
(b) 7/6
(c) 12/7
(d) 6/7

Q98. If the manufacturer gains 10%, the wholesale gains 16% and the retailer gains 25%, then find the cost of production of a table (in Rs.), whose retail price for the customer is Rs. 63,800. (NOTE: Manufacturer sells to wholesaler, wholesaler sells to retailer and retailer sells to customer.)

(a) 40,000
(b) 50,000
(c) 46,400
(d) 44,000

Q99. Select the pair that follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

HKO : FJM

DPY : BOW

(a) TRK : RQI
(b) WGO : SCJ
(c) BPS : AKI
(d) BZI : WVD

Q100. Which Indian states are covered under the CITI-CDRA project as of March 2025?

(a) Rajasthan, Madhya Pradesh, Maharashtra
(b) Gujarat, Haryana, Punjab
(c) Tamil Nadu, Karnataka, Kerala
(d) Odisha, West Bengal, Assam

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) TRAI

The correct answer is TRAI.

Key Points

• The Telecom Regulatory Authority of India (TRAI) was established in the year 1997 under the Telecom Regulatory Authority of India Act, 1997.

• TRAI was formed to regulate the telecommunication services in India and to promote fair competition in the telecom sector.

• The authority ensures that the interests of both service providers and consumers are protected. It also monitors the quality of

service provided by the telecom operators.

• TRAI provides recommendations to the Government on matters related to licenses, spectrum allocation, and tariffs.

• The organization plays a pivotal role in the growth and development of the telecom industry in India, especially after the liberalization policies were implemented.

• It also aims at ensuring the availability of affordable telecom services to the common people, thus contributing to the telecom revolution in India.

Additional Information

• SEBI

• SEBI stands for the Securities and Exchange Board of India.

• It was established in 1988 and given statutory powers in 1992 under the SEBI Act, 1992.

• SEBI regulates the securities market in India to protect the interests of investors and to promote the development of the securities market.

• NABARD

• NABARD stands for National Bank for Agriculture and Rural Development.

• It was established in 1982 under the NABARD Act, 1981.

• NABARD focuses on providing credit and other facilities for the promotion of agriculture, small-scale industries, and rural development in India.

• IRDAI

• IRDAI stands for Insurance Regulatory and Development Authority of India.

• It was established in 1999 under the IRDA Act, 1999.

• The IRDAI regulates and promotes the insurance industry in India to protect the interests of policyholders.

Q2. Answer: (d) 539

The logic followed here is:

Thus, the missing term in the series is 539.

Hence, the correct answer is "Option 4";

Q3. Answer: (d) Surinder Kumar Choudhary, Jammu & Kashmir National Conference (JKNC)

The Correct answer is Surinder Kumar Choudhary, Jammu & Kashmir National Conference (JKNC).

Key Points

• Surinder Kumar Choudhary is a prominent political leader from Jammu & Kashmir, representing the Jammu & Kashmir National Conference (JKNC).

• Following the 2024 Jammu & Kashmir Assembly elections, he was appointed as the Deputy Chief Minister.

• The JKNC, one of the oldest political parties in Jammu & Kashmir, has historically played a significant role in the region's politics.

• Surinder Kumar Choudhary's appointment reflects the party's focus on strengthening governance and addressing regional issues.

• The Deputy Chief Minister plays a crucial role in assisting the Chief Minister in administrative responsibilities and policy-making.

• His leadership is expected to bring attention to important matters such as development, infrastructure, and regional harmony.

Additional Information

• Ghulam Ahmad Mir

• Ghulam Ahmad Mir is a senior leader of the Indian National Congress (INC).

• He has served as the President of the Jammu & Kashmir Pradesh Congress Committee (JKPCC).

• Although a strong contender, he was not appointed as the Deputy Chief Minister following the 2024 Assembly elections.

• Ravinder Raina

• Ravinder Raina is associated with the Bharatiya Janata Party (BJP).

• He is known for his vocal stance on issues concerning Jammu & Kashmir.

• Ravinder Raina has previously served as the President of the BJP's Jammu & Kashmir unit.

• Despite being influential, he was not selected for the Deputy Chief Minister's position post-election.

• Indian National Congress (INC)

• The Indian National Congress (INC) is one of India's oldest political parties, founded in 1885.

• It has a significant presence in Jammu & Kashmir but did not secure the Deputy Chief Minister's position in the 2024 elections.

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Q4. Answer: (c) Nana Saheb

The Correct answer is Nana Saheb.

Key Points

• Nana Saheb, also known as Dhondu Pant, was one of the prominent leaders of the Indian Rebellion of 1857.

• He travelled to places like Bithoor, Kalpi, Delhi, and Lucknow to rally the support of native princes and leaders against British rule.

• He was the adopted son of Peshwa Baji Rao II, and his grievance with the British stemmed from their refusal to grant him the pension that was given to his father.

• Nana Saheb led the rebellion in Kanpur, where he played a significant role in the uprising against the British forces.

• He sought to unify Indian rulers and build a strong alliance to overthrow British authority during the revolt.

• His efforts were pivotal in orchestrating and sustaining the rebellion in key regions during the 1857 uprising.

• After the rebellion, he is believed to have escaped to Nepal, where his later life remains shrouded in mystery.

Additional Information

• Tantia Tope

• Tantia Tope was another prominent leader of the 1857 uprising, known for his guerrilla warfare tactics.

• He was a close associate of Nana Saheb and supported him in the rebellion.

• Tantia Tope led successful campaigns in regions like Kanpur, Gwalior, and central India.

• He was eventually captured and executed by the British in 1860.

• Bahadur Shah Zafar

• Bahadur Shah Zafar, the last Mughal emperor, was declared the symbolic leader of the 1857 revolt.

• He provided moral and symbolic support to the rebellion but had limited actual control over the uprising.

• After the revolt was suppressed, he was captured by the British and exiled to Rangoon (present-day Yangon, Myanmar).

• Rani of Jhansi

• Rani Lakshmibai, the Rani of Jhansi, was one of the most iconic figures of the 1857 revolt.

• She fought valiantly against the British forces to protect her kingdom of Jhansi.

• She is remembered for her bravery and leadership, especially in battles like the Siege of Jhansi and the defense of Gwalior.

Q5. Answer: (d) 8% loss

Shortcut Trick

Net Profit or Loss percentage can be calculated using the Successive Percentage formula: a + b + (a × b) ÷ 100.

Here, a = 84 (Markup percentage) and b = −50 (Discount percentage).

Net effect = 84 − 50 + (84 × (−50)) ÷ 100.

Net effect = 34 − 4200 ÷ 100 = 34 − 42 = −8%.

The negative sign indicates a loss of 8%.

Therefore The correct answer is 8% loss.

Alternate Method

Given: Markup % = 84%, Discount % = 50%.

Formulas: MP = CP × (100 + Markup%) ÷ 100 | SP = MP × (100 − Discount%) ÷ 100 | Loss% = (CP − SP) ÷ CP × 100.

=> Let the Cost Price (CP) be 100.

=> Marked Price (MP) = 100 + 84% of 100 = 184.

=> Selling Price (SP) = 184 − 50% of 184 = 184 − 92 = 92.

=> Loss = CP − SP = 100 − 92 = 8.

=> Loss % = (8 ÷ 100) × 100 = 8%.

Therefore The correct answer is 8% loss.

Additional Information

Marked Price and Discount

The price listed on the label is the Marked Price. Discount is always calculated on the MP to arrive at the Selling Price.

Relationship Formula

MP ÷ CP = (100 + Profit%) ÷ (100 − Discount%). This helps find any one value if the other three are known.

Q6. Answer: (a) 91.5

Shortcut Trick

Remaining distance = (1 − 2/3) × 549 = 1/3 × 549 = 183 km.

Remaining time = (1 − 3/4) × 8 = 1/4 × 8 = 2 hours.

Required Speed = Remaining Distance ÷ Remaining Time = 183 ÷ 2 = 91.5 km/hr.

Therefore The correct answer is 91.5 km/hr.

Alternate Method

Given: Total distance = 549 km, Total time = 8 hours.

Formula Used: Speed = Distance ÷ Time

=> Distance covered = 2/3 × 549 = 366 km

=> Remaining distance = 549 − 366 = 183 km

=> Time taken = 3/4 × 8 = 6 hours

=> Remaining time = 8 − 6 = 2 hours

=> Required Speed = 183 ÷ 2 = 91.5 km/hr

Therefore The correct answer is 91.5 km/hr.

Additional Information

Average Speed

Average Speed = Total Distance ÷ Total Time. If distances are equal, Average Speed = 2xy/(x+y).

Unit Conversion

To convert km/hr to m/s, multiply by 5/18. To convert m/s to km/hr, multiply by 18/5.

Relative Speed

Same direction = S1 − S2 | Opposite direction = S1 + S2.

Q7. Answer: (c) Foreign Relations and Defence

The Correct answer is Foreign Relations and Defence.

Key Points

• The Union Cabinet in India explicitly manages Foreign Relations and Defence as part of its coordinating functions.

• Under Article 73 of the Indian Constitution, the Union Government has exclusive powers to legislate on matters relating to foreign affairs and defence.

• Foreign Relations involve managing India’s diplomatic ties, treaties, trade agreements, and coordination with international organizations such as the United Nations.

• Defence encompasses the responsibility of ensuring national security, managing the armed forces (Army, Navy, and Air Force), and overseeing strategic operations.

• The Union Cabinet handles critical decisions such as signing international treaties, defense procurement, and deploying forces during crises.

• These areas are fundamental to maintaining the sovereignty, security, and global standing of India, which is why they are explicitly managed by the central government.

• The Ministry of External Affairs and the Ministry of Defence work in coordination with the Union Cabinet to implement policies in these domains.

Additional Information

• Agriculture and Labour

• Agriculture falls under the State List as per the Constitution of India, meaning that state governments primarily manage policies related to agriculture.

• Labour is included in the Concurrent List, which allows both the Union and State Governments to legislate on issues such as employment, wages, and industrial disputes.

• The Union Cabinet does intervene in labour matters for national-level policies, but these are not exclusively managed by the Union Cabinet.

• Tourism and Sports

• Tourism is primarily managed by the states, though the Union Government promotes national-level tourism campaigns and policies like Incredible India.

• Sports policies and development programs are largely coordinated by the Ministry of Youth Affairs and Sports, but these do not fall under the exclusive domain of the Union Cabinet.

• Education and Health

• Education is part of the Concurrent List, and both Union and State Governments can legislate on matters related to schools, universities, and other educational institutions.

• Health is also in the State List, meaning state governments have primary responsibility for healthcare policies, though the Union Government coordinates national health schemes like Ayushman Bharat.

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Q8. Answer: (d) Rs. 1,500 crore

The Correct answer is Rs. 1,500 crore.

Key Points

• The Indian Government introduced a Rs. 1,500 crore incentive scheme in March 2025 to encourage small-value UPI transactions during the financial year 2024-25.

• The primary aim of this initiative is to boost the adoption and usage of Unified Payments Interface (UPI), particularly for micro and small transactions.

• This incentive is part of the government's effort to accelerate digital payments and reduce reliance on cash-based transactions.

• UPI has become one of the most popular and widely used payment systems in India, significantly contributing to financial inclusion.

• The scheme reflects the government's commitment towards promoting a cashless economy and leveraging technology-driven financial solutions.

• Such initiatives encourage banks to focus on increasing the penetration of UPI, especially in rural and semi-urban areas where digital payment adoption is comparatively lower.

• This move aligns with India's vision of becoming a global leader in digital payments infrastructure.

Additional Information

• Rs. 1,700 crore

• The incentive amount of Rs. 1,700 crore might represent a higher allocation, but it is not the correct figure for the scheme introduced in March 2025.

• Higher allocations could indicate a more expansive effort towards promoting UPI transactions in future years.

• Rs. 1,800 crore

• Rs. 1,800 crore as an option may reflect government policies or schemes with larger budgets, but it does not correspond to the specific scheme for small-value UPI transactions in FY 2024-25.

• Rs. 1,600 crore

• The allocation of Rs. 1,600 crore could have been used for other financial or digital initiatives by the government, but it is not related to the scheme introduced in March 2025.

Q9. Answer: (a) (64, 52, 40)

The logic followed here is:

Logic: 1st number - 12 = 2nd number - 12 = 3rd number.

For, (88, 76, 64)

88 - 12 = 76 - 12 = 64.

Here, the logic followed.

For, (71, 59, 47)

71 - 12 = 59 - 12 = 47.

Here, the logic followed.

Now, let's check the options based on this logic:

Option 1) (64, 52, 40)

64 - 12 = 52 - 12 = 40. (Matches)

Here, logic followed.

Option 2) (40, 38, 36)

40 - 12 = 28. (Given Second number is 38, 38 ≠ 28)

Here, logic not followed.

Option 3) (99, 77, 55)

=> First to Second: 99 - 12 = 87. (Given Second number is 77, 77 ≠ 87)

Here, logic not followed.

Option 4) (58, 46, 24)

=> First to Second: 58 - 12 = 46 - 12 = 34. (Given Third number is 24, 24 ≠ 34)

Here, logic not followed.

Hence, the correct answer is "Option 1".

Q10. Answer: (d) 2

Shortcut Trick

Equate Total Work: (3M + 14W) × 18 = (11M + 8W) × 12

Divide both sides by 6: (3M + 14W) × 3 = (11M + 8W) × 2

9M + 42W = 22M + 16W

26W = 13M => 2W = 1M

Therefore The correct answer is 2.

Alternate Method

Given:

Case 1: 3 Men and 14 Women in 18 days.

Case 2: 11 Men and 8 Women in 12 days.

Formula Used:

Total Work = (Number of workers × Time taken)

Calculations:

=> Total Work = (3M + 14W) × 18 --- (i)

=> Total Work = (11M + 8W) × 12 --- (ii)

=> (3M + 14W) × 18 = (11M + 8W) × 12

=> 3(3M + 14W) = 2(11M + 8W)

=> 9M + 42W = 22M + 16W

=> 42W − 16W = 22M − 9M

=> 26W = 13M

=> 1M = 2W

Therefore The correct answer is 2.

Additional Information

Man-Day Concept

Total work is constant and expressed as the product of efficiency and time. M1D1 = M2D2.

Work and Wages

Wages are distributed based on the ratio of work done, which is often the ratio of efficiencies when time is constant.

Q11. Answer: (d) 5

The given code language is:

Thus, 'H' is coded as '5'.

Hence, the correct answer is "Option 4".

Q12. Answer: (c) Laapataa Ladies

The Correct answer is Laapataa Ladies.

Key Points

• Laapataa Ladies has been selected as India's official entry for the Oscar Awards 2025 in the Best International Feature Film category.

• The film is directed by Kiran Rao, who is known for her unique storytelling and creative approach to filmmaking.

• Laapataa Ladies is a Hindi-language drama that explores themes of gender, identity, and societal norms in rural India.

• The film is set in the 1990s and follows the story of two young brides who go missing during a train journey, leading to a search filled with humor and heartfelt moments.

• It is produced under the banner of Aamir Khan Productions, ensuring high production quality and wide reach.

• The movie premiered at the Toronto International Film Festival (TIFF) and received critical acclaim for its storytelling and performances.

• This selection highlights India's commitment to showcasing diverse narratives and promoting regional stories on the global stage.

Additional Information

• Jawan

• Jawan is a blockbuster action-thriller film directed by Atlee and starring Shah Rukh Khan.

• The film focuses on themes of vigilantism and social justice but was not selected for the Oscars as it primarily caters to a commercial audience.

• Animal

• Animal is an upcoming action-drama film directed by Sandeep Reddy Vanga and starring Ranbir Kapoor.

• The film explores complex relationships, especially between a father and son, but it is yet to be released and hence was not eligible for Oscar consideration.

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• 12th Fail

• 12th Fail is an inspirational film directed by Vidhu Vinod Chopra, based on the struggles of a student preparing for competitive exams in India.

• Though it delivers a strong social message, it did not make it as India's official Oscar entry.

Q13. Answer: (d) 4

The given code language is:

Thus, 'R' is coded as '4'.

Hence, the correct answer is "Option 4".

Q14. Answer: (a) 220

The logic followed here is:

Thus, the missing number in the series is 220.

Hence, the correct answer is "Option 1".

Q15. Answer: (b) UNR Rao vs. Indira Gandhi, 1971

The Correct answer is UNR Rao vs. Indira Gandhi, 1971.

Key Points

• The case of UNR Rao vs. Indira Gandhi, 1971, is a landmark judgment by the Supreme Court of India.

• In this case, the court ruled that the Council of Ministers does not cease to hold office even after the dissolution of the Lok Sabha.

• This judgment clarified that the Council of Ministers continues to function and assist the President of India in discharging their duties.

• The decision was based on the interpretation of Article 74 of the Indian Constitution, which provides for a Council of Ministers headed by the Prime Minister to aid and advise the President.

• This case established that the executive authority of the government does not come to a standstill with the dissolution of the Lok Sabha, ensuring continuity in governance.

• It highlights the importance of the principle of collective responsibility of the Council of Ministers to the Lok Sabha, as enshrined in the Constitution.

Additional Information

• Kesavananda Bharati vs. State of Kerala, 1973

• This case is famous for the Basic Structure Doctrine, which limits the power of Parliament to amend the Constitution.

• The court ruled that while Parliament can amend any part of the Constitution, it cannot alter its basic structure.

• This case is considered a cornerstone in the history of Indian constitutional law.

• Golaknath vs. State of Punjab, 1967

• This case ruled that Fundamental Rights cannot be amended by Parliament.

• It declared that the Constitution's Fundamental Rights were sacrosanct and inviolable.

• However, this decision was later overturned by the Kesavananda Bharati case.

• SR Bommai vs. Union of India, 1994

• This case is a landmark judgment in the context of the President's Rule under Article 356 of the Constitution.

• The court laid down the principles of judicial review of the imposition of President's Rule.

• It emphasized that the secular character of the Constitution is part of its basic structure.

Q16. Answer: (c) 2

Shortcut Trick

Perform prime factorization of 4232.

$4232 = 2 \times 2116 = 2 \times 2 \times 1058 = 2 \times 2 \times 2 \times 529 = 2^3 \times 23^2$

Grouping into pairs: $(2 \times 2) \times 2 \times (23 \times 23)$.

Only one 2 is left without a pair, so we must multiply by 2.

Therefore The correct answer is 2.

Alternate Method

Given number is 4232.

To find the smallest number to multiply to make it a perfect square, we use the prime factorization method.

=> Prime factors of $4232 = 2 \times 2 \times 2 \times 23 \times 23$

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=> Grouping the prime factors in identical pairs: (2 × 2) × (23 × 23) × 2

=> The prime factor 2 does not have a pair.

=> Therefore, 4232 must be multiplied by 2 to make it a perfect square.

=> New number = 4232 × 2 = 8464 (which is 92^2)

Therefore The correct answer is 2.

Additional Information

Perfect Square Property

In the prime factorization of any perfect square, the exponent of every prime factor must be an even number.

Division Rule for Perfect Squares

The smallest number by which a number must be divided to make it a perfect square is also the unpaired factor (which is 2 in this case).

Q17. Answer: (c) 340

Given interchange rules:

• '+' is replaced by '−'.

• '×' and '÷' are interchanged.

The given equation is:

44 ÷ 8 + 5 × 1 + 7 = ?

After applying the interchange rules, the equation becomes:

44 × 8 − 5 ÷ 1 − 7 = ?

Now, we solve the equation following the BODMAS rule:

= 44 × 8 − 5 ÷ 1 − 7

= 352 − 5 − 7

= 347 − 7

= 340

Hence, the correct answer is "Option 3".

Q18. Answer: (c) Three

Given: Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.

1) No one has the exam before V.

2) Only four people have exams between P and R.

3) Q has the exam immediately before R.

Day	Person
Monday	V
Tuesday	P
Wednesday	
Thursday	
Friday	
Saturday	Q
Sunday	R

4: T is after S but before U. The only available slots are Wednesday, Thursday, and Friday. So, S = Wednesday, T = Thursday, U = Friday.

Day	Person
Monday	V
Tuesday	P
Wednesday	S
Thursday	T

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Friday	U
Saturday	Q
Sunday	R

Thus, To find how many people have exams between S (Wednesday) and R (Sunday): Thursday (T), Friday (U), Saturday (Q) → 3 people.

Hence, the correct answer is Three (Option 3).

Q19. Answer: (c) 9

As per the question,

Given Numbers: 853 628 981 217 132

Rule: Add the second digit of the highest number to the first digit of the lowest number.

→ Highest number: 981

→ Second digit of the highest number: 8

→ Lowest number: 132

→ First digit of the lowest number: 1

(Second digit of highest) + (First digit of lowest)

8 + 1 = 9

Hence, the correct answer is "Option 3".

Q20. Answer: (d) 733

Given interchange rules:

• '÷' and '−' are interchanged.

• '×' and '+' are interchanged.

The given equation is:

522 × 708 − 59 + 19 ÷ 17 = ?

After applying the interchange rules, the equation becomes:

522 + 708 ÷ 59 × 19 − 17 = ?

Now, we solve the equation following the BODMAS rule:

= 522 + 708 ÷ 59 × 19 − 17

= 522 + 12 × 19 − 17

= 522 + 228 − 17

= 750 − 17

= 733

Hence, the correct answer is "Option 4".

Q21. Answer: (a) DX – LE

The logic followed here is.

Option (1) DX – LE

Option (2) VP – DX

Option (3) HB – PJ

Option (4) ZT – HB

Thus, option 1 is odd one.

Hence, the correct answer is "Option 1".

Q22. Answer: (b) Drip irrigation

The Correct answer is Drip irrigation.

Key Points

• Drip irrigation is a micro-irrigation system designed to save water and nutrients by allowing water to drip slowly to the roots of plants.

• This system is ideal for arid and semi-arid regions, where water conservation is critical.

• The water is delivered through a network of valves, pipes, tubing, and emitters, ensuring precise delivery directly to the plant's root zone.

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• It helps to minimize evaporation and runoff, making it a highly efficient method of irrigation.

• Drip irrigation is particularly beneficial for cultivating crops such as vegetables, fruits, and flowers, where water management is crucial for growth.

• This system reduces weed growth, as water is not dispersed widely across the field, but targeted only where needed.

• The Government of India promotes drip irrigation under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to encourage farmers to adopt water-efficient practices.

• It is recognized as one of the most effective irrigation techniques in regions like Rajasthan, Gujarat, and Maharashtra, where water scarcity is a major challenge.

Additional Information

• Canal irrigation

• Canal irrigation involves the distribution of water through a network of canals and is commonly used in areas with an abundant supply of surface water.

• It is widely used in northern India, especially in states like Punjab, Haryana, and Uttar Pradesh.

• Canal irrigation is less efficient than drip irrigation due to significant water loss through evaporation and seepage.

• Tank irrigation

• Tank irrigation involves storing water in tanks or reservoirs for later use in irrigation.

• This system is commonly found in southern India, especially in states like Tamil Nadu, Andhra Pradesh, and Karnataka.

• It is suitable for areas with uneven terrain where other methods like canal irrigation are not feasible.

• Sprinkler irrigation

• Sprinkler irrigation involves spraying water over crops using sprinklers, simulating rainfall.

• This method is suitable for undulating terrain and is commonly used for horticultural crops, lawns, and golf courses.

• Although efficient, sprinkler irrigation is less effective in arid regions due to water loss from evaporation.

Q23. Answer: (d) Maharajadhiraja

The correct answer is Maharajadhiraja.

Key Points

• Chandragupta I was the founder of the Gupta Empire and reigned during the early 4th century CE.

• He adopted the title of "Maharajadhiraja," meaning "King of Kings," to signify his authority over other rulers and his elevated status.

• The use of this title marked the rise of the Gupta Empire as a prominent and centralized political power in ancient India.

• This designation highlighted the imperial ambitions of Chandragupta I, as he sought to consolidate power and unify regions under his rule.

• The title "Maharajadhiraja" had been used by other rulers in ancient India, but its adoption by Chandragupta I signified the beginning of the Gupta dynasty's golden age.

• Under Chandragupta I's reign, the Gupta Empire expanded its influence, particularly in the Magadha region, which was a significant center of power.

• This era is considered a period of political stability, economic prosperity, and cultural advancements, laying the foundation for the Gupta Empire's future achievements.

Additional Information

• Maharaj

• The term "Maharaj" simply means "great king" but does not carry the same imperial connotation as "Maharajadhiraja."

• It was commonly used by rulers, including those who governed smaller kingdoms or regions, during ancient Indian history.

• Chakravartin

• The term "Chakravartin" refers to a "universal ruler" or someone who rules ethically and universally over the known world.

• It was a title often associated with rulers who adhered to Dharmic principles and was more symbolic than political.

• This title was not specifically used by Chandragupta I.

• Samrat

• The title "Samrat" means "emperor" and was used by rulers to denote supreme authority.

• While it is similar to "Maharajadhiraja," Chandragupta I specifically chose the latter to emphasize his superiority over other kings.

Q24. Answer: (d) EAYS

The logic followed here is:

Option (1): TPMH

Option (2): AWTO

Option (3): NJGB

Option (4): EAYS

The letter-cluster that DOES NOT belong to the group is: EAYS.

Hence, the correct answer is "Option (4)"

Q25. Answer: (b) OHK 63

The pattern followed here is.

K(11)	D(4)	G(7)	19
+1 ↓	+1 ↓	+1 ↓	+11 ↓
L(12)	E(5)	H(8)	30
+1 ↓	+1 ↓	+1 ↓	+11 ↓
M(13)	F(6)	I(9)	41
+1 ↓	+1 ↓	+1 ↓	+11 ↓
N(14)	G(7)	J(10)	52
+1 ↓	+1 ↓	+1 ↓	+11 ↓
O(15)	H(8)	K(11)	63

Thus, the missing term in the series is OHK 63.

Hence, the correct answer is Option 2.

Q26. Answer: (d) √(109/217)

Shortcut Trick

To find (a − b) / (a + b), we use the square identities: $(a - b)^2 = (a^2 + b^2) - 2ab$ and $(a + b)^2 = (a^2 + b^2) + 2ab$.

Numerator value: $(a - b)^2 = 163 - 2(27) = 163 - 54 = 109$.

Denominator value: $(a + b)^2 = 163 + 2(27) = 163 + 54 = 217$.

Taking the square root of both sides: (a − b) / (a + b) = √109 / √217 = √(109/217).

Therefore The correct answer is √(109/217).

Alternate Method

Given:

$a^2 + b^2 = 163$

$a \times b = 27$

a > b

Formula Used:

1. $(a + b)^2 = a^2 + b^2 + 2ab$
2. $(a - b)^2 = a^2 + b^2 - 2ab$

Calculations:

$\Rightarrow 2ab = 2 \times 27 = 54$

$\Rightarrow (a + b)^2 = 163 + 54 = 217$

$\Rightarrow a + b = \sqrt{217}$ (Since a > b, sum is positive)

$\Rightarrow (a - b)^2 = 163 - 54 = 109$

$\Rightarrow a - b = \sqrt{109}$ (Since a > b, difference is positive)

$\Rightarrow (a - b) / (a + b) = \sqrt{109} / \sqrt{217}$

$\Rightarrow (a - b) / (a + b) = \sqrt{(109 / 217)}$

Therefore The correct answer is √(109/217).

Additional Information

Algebraic Expansion of Square of Sum

$(a + b)^2 = a^2 + b^2 + 2ab$. This identity links the sum of squares, the product of terms, and the square of the sum.

Algebraic Expansion of Square of Difference

$(a - b)^2 = a^2 + b^2 - 2ab$. This is used to find the difference between two variables when their squares and product are known.

Difference of Two Squares

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a2 − b2 = (a + b)(a − b). This is a fundamental factoring identity used to simplify fractional algebraic expressions.

Q27. Answer: (b) Sunlight on the Broken Column

The Correct answer is Sunlight on the Broken Column.

Key Points

• Sunlight on the Broken Column is a novel written by Attia Hosain, published in the year 1961.

• The novel is set in the background of the Partition of India, which divided British India into two countries: India and Pakistan.

• It portrays the impact of Partition on a feudal family and explores themes of tradition, change, and personal identity.

• The protagonist, Laila, navigates her life amidst the upheaval of Partition, addressing issues such as patriarchy, familial expectations, and political turmoil.

• The novel is significant for its vivid depiction of the social and cultural transformation that accompanied the historical event of Partition.

• Attia Hosain, the author, was also a noted writer, broadcaster, and journalist, who brought a unique perspective to her writing as a member of the Muslim aristocracy in pre-Partition India.

• The novel is considered a classic piece of literature that offers an insightful portrayal of the socio-political challenges during a critical period in Indian history.

Additional Information

• Clear Light of Day

• Written by Anita Desai, this novel was published in 1980.

• It focuses on the dynamics of a middle-class family in Old Delhi and explores themes such as family relationships, memory, and time.

• Unlike "Sunlight on the Broken Column," it does not directly deal with the Partition.

• Ice Candy Man

• Written by Bapsi Sidhwa, this novel is also known as Cracking India.

• It depicts the Partition of India through the eyes of a young girl, Lenny, in Lahore.

• The novel is notable for its portrayal of communal violence and the human impact of Partition.

• Midnight’s Children

• Written by Salman Rushdie, this iconic novel was published in 1981.

• The book blends magical realism with historical fiction, narrating the story of India’s transition from British colonialism to independence and Partition.

• It is a celebrated work but is distinct in style and narrative from Attia Hosain's novel.

Q28. Answer: (c) 1 only

The Correct answer is 1 only.

Key Points

• The President of India can summon a joint sitting of both Houses of Parliament under Article 108 of the Constitution.

• This is applicable in cases of a legislative deadlock on an Ordinary Bill, where both Houses fail to agree on its passage.

• A joint sitting is presided over by the Speaker of the Lok Sabha, or in their absence, the Deputy Speaker.

• Joint sittings are convened to resolve disputes between the Lok Sabha and Rajya Sabha concerning an Ordinary Bill.

• The Money Bill and Constitutional Amendment Bill are excluded from this provision as they have distinct procedural requirements and do not fall under legislative deadlock scenarios.

• The joint sitting mechanism reflects the principle of resolving conflicts and ensuring the smooth functioning of the legislative process in a parliamentary democracy.

Additional Information

• Money Bill

• A Money Bill is specifically defined under Article 110 of the Indian Constitution.

• It primarily deals with matters related to the imposition, abolition, remission, alteration, or regulation of taxes, borrowing of money, expenditure from the Consolidated Fund of India, etc.

• The Lok Sabha has exclusive power to approve a Money Bill, while the Rajya Sabha can only recommend changes within a limited timeframe.

• No provision for a joint sitting exists for Money Bills, as the Lok Sabha holds greater authority in financial matters.

• Constitutional Amendment Bill

• A Constitutional Amendment Bill is governed under Article 368 of the Constitution.

• Such bills are passed with a special majority in both Houses of Parliament, and there is no provision for a joint sitting to resolve

differences.

• These bills often require ratification by at least half of the State Legislatures for amendments impacting the federal structure.

• The procedural requirements for Constitutional Amendment Bills are distinct from Ordinary Bills and Money Bills.

Q29. Answer: (c) Flash Memory

The Correct answer is Flash Memory.

Key Points

• Flash Memory is a type of non-volatile storage, meaning it retains data even when the power is turned off.

• It is often referred to as solid-state storage because it has no moving parts, unlike traditional hard drives.

• This memory is widely used in devices such as USB flash drives, memory cards, solid-state drives (SSDs), and various embedded systems.

• It is based on NAND or NOR flash technology, which uses floating-gate transistors to store data.

• Flash memory is known for its high speed, durability, and compact size, making it suitable for modern computing and mobile devices.

• It enables the storage of data in a rewritable format, allowing users to repeatedly write and erase data.

• Flash memory is also highly energy-efficient compared to other storage technologies, making it ideal for portable devices.

• Common applications include smartphones, tablets, cameras, and solid-state drives (SSDs) in computers.

Additional Information

• Cache Memory

• Cache Memory is a high-speed memory that temporarily stores frequently accessed data for quick retrieval.

• It is located closer to the CPU and is used to improve processing speed.

• Cache memory is not considered solid-state storage because it is volatile and does not retain data when power is off.

• Crystal Storage

• Crystal Storage refers to experimental data storage technologies using crystals, such as quartz glass.

• It is not widely implemented and is different from flash memory.

• Primary Memory

• Primary Memory, also known as main memory, includes RAM and ROM.

• It is volatile in the case of RAM and does not qualify as solid-state storage.

• ROM, while non-volatile, is not rewritable like flash memory.

Q30. Answer: (d) 600

Shortcut Trick

Total interest percentage for 3 years at 20% = 20% × 3 = 60%.

Total amount percentage = Principal (100%) + Interest (60%) = 160%.

Given: 160% = Rs. 4,800 => 1% = 4800 ÷ 160 = Rs. 30.

Interest for 1 year at 20% = 20 × 30 = Rs. 600.

Therefore The correct answer is Rs. 600.

Alternate Method

Given: Amount (A) = Rs. 4,800, Rate (R) = 20% p.a., Time (T) = 3 years.

Formula Used: Amount (A) = P + SI = P + (P × R × T) ÷ 100

=> 4,800 = P × (1 + (20 × 3) ÷ 100)

=> 4,800 = P × (1 + 0.6)

=> 4,800 = P × 1.6

=> P = 4,800 ÷ 1.6 = Rs. 3,000

=> Simple Interest for 1 year = (3000 × 20 × 1) ÷ 100

=> Simple Interest = 30 × 20 = Rs. 600

Therefore The correct answer is Rs. 600.

Additional Information

Simple Interest (SI) formula

SI is calculated only on the Principal amount: SI = (P × R × T) ÷ 100, where P is principal, R is rate per annum, and T is time in years.

Amount in Simple Interest

The total Amount (A) is the sum of the Principal and Simple Interest: A = P + SI = P(1 + RT/100).

Annual Interest Constant

In Simple Interest, the interest earned remains constant every year because it is always calculated on the original principal.

Q31. Answer: (c) 8

Shortcut Trick

Total Volume = Volume of Cube + Volume of Cuboid

Total Volume = 5^3 + (35 × 15 × 15) = 125 + 7875 = 8000 cm^3

Number of new cubes = Total Volume ÷ Volume of New Cube

Number of new cubes = 8000 ÷ 10^3 = 8000 ÷ 1000 = 8

Therefore The correct answer is 8 cubes.

Alternate Method

Given:

Side of the first metal cube (a1) = 5 cm

Dimensions of the metal cuboid = 35 cm × 15 cm × 15 cm

Side of the newly formed cubes (a2) = 10 cm

Formula Used:

Volume of a Cube = $(Side)^3$

Volume of a Cuboid = Length × Breadth × Height

Calculations:

=> Volume of small metal cube = 5 × 5 × 5 = 125 cm^3

=> Volume of metal cuboid = 35 × 15 × 15 = 7875 cm^3

=> Total volume of metal available = 125 + 7875 = 8000 cm^3

=> Volume of one new cube = 10 × 10 × 10 = 1000 cm^3

=> Number of cubes = Total Volume ÷ Volume of one new cube

=> Number of cubes = 8000 ÷ 1000 = 8

Therefore The correct answer is 8 cubes.

Additional Information

Conservation of Volume

When one or more solid objects are melted and recast into new shapes, the total volume remains constant.

Cuboid Properties

Total Surface Area of cuboid = $2(lb + bh + hl)$ and Diagonal = $\sqrt{(l^2 + b^2 + h^2)}$.

Cube Properties

Total Surface Area of cube = $6a^2$ and Diagonal = $a\sqrt{3}$.

Q32. Answer: (d) MJRN

The logic followed here is that each letter of the first term is shifted backward by 2 positions to get the second term. The pattern can be summarized as (-2, -2, -2, -2).

Pair 1: LIQM : JGOK

Pair 2: IFNJ : GDLH

Applying the logic to OLTP:

Thus, OLTP is related to MJRN.

Hence, the correct answer is "Option 4".

Q33. Answer: (d) Bombay Session, 1885

The Correct answer is Bombay Session, 1885.

Key Points

• The demand for Indianisation of higher administrative services, including the civil services, was first formally raised during the Bombay Session of the Indian National Congress (INC) in 1885.

• This session marked the foundation of the INC, which aimed to voice Indian aspirations and seek reforms from the British administration.

• One of the key demands during this session was to ensure greater representation of Indians in administrative services, as these services were dominated by British officials, leading to a lack of Indian involvement in decision-making processes.

• The demand for Indianisation was rooted in the belief that Indians were equally competent to serve in higher administrative roles and that their inclusion would lead to more effective governance.

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• This issue was significant as it highlighted the growing nationalist sentiment and dissatisfaction with British policies that excluded Indians from key roles in governance.

• The Bombay Session was presided over by W.C. Bonnerjee, the first president of the INC, and laid the foundation for subsequent sessions to address various political and economic grievances.

• The demand for Indianisation of administrative services became a recurring theme in the early years of the INC and reflected the aspirations of educated Indians for equal opportunities under British rule.

Additional Information

• Allahabad Session, 1890

• The Allahabad Session of INC in 1890 was presided over by Pherozeshah Mehta.

• This session focused on broader issues like economic reforms and self-governance but did not specifically raise the demand for Indianisation of administrative services.

• Calcutta Session, 1886

• The Calcutta Session of 1886 was significant as it was presided over by Dadabhai Naoroji, one of the founding members of the INC.

• Although the session addressed issues related to economic exploitation by the British, Indianisation was not the central focus.

• Madras Session, 1887

• The Madras Session of 1887 was presided over by Badruddin Tyabji, the first Muslim president of the INC.

• This session was more focused on unity and communal harmony among Indians rather than administrative reforms.

Q34. Answer: (c) Partnership for Accelerating Sustainable Development and Climate Solutions

The Correct answer is Partnership for Accelerating Sustainable Development and Climate Solutions.

Key Points

• The theme of the World Sustainable Development Summit (WSDS) 2025 is "Partnership for Accelerating Sustainable Development and Climate Solutions."

• The WSDS is an annual flagship event organized by The Energy and Resources Institute (TERI), headquartered in New Delhi, India.

• This theme highlights the importance of global partnerships to address challenges like climate change and achieve the Sustainable Development Goals (SDGs).

• The summit serves as a platform for policy-makers, researchers, and industry leaders to collaborate and discuss actionable strategies for a sustainable future.

• It emphasizes climate solutions through technological advancements, inclusive policies, and international cooperation.

• By accelerating sustainable development, the summit aims to ensure a balance between economic growth, environmental conservation, and social inclusion.

• The WSDS is aligned with global frameworks such as the Paris Agreement and the United Nations 2030 Agenda.

Additional Information

• Partnerships for Accessing Supportive Development and Climate Solutions

• This option incorrectly mentions "Accessing Supportive Development," which is not the focus of the summit's theme.

• The correct emphasis is on accelerating solutions rather than just accessing support.

• Partnership for Accessing Sustainable Development and Climate Solutions

• This option incorrectly uses the term "Accessing Sustainable Development."

• The summit theme focuses on speeding up (accelerating) development rather than merely accessing it.

• Partnership for Approaching Sustainable Development and Climate Change

• This option incorrectly uses the term "Approaching," which does not align with the dynamic and urgent nature of the summit's objectives.

• The focus is on action and acceleration, not just approaching the issues.

Q35. Answer: (d) Moral law

The Correct answer is Moral law.

Key Points

• The term 'Dhamma', as used in Ashoka's inscriptions, primarily refers to a set of ethical and moral principles that were intended to guide the behavior of individuals and the administration of the state.

• This concept of Dhamma was not limited to Buddhist teachings but was a broader moral code aimed at promoting social harmony, tolerance, and non-violence.

• The Dhamma included principles such as respect for elders, compassion towards all living beings, non-violence (Ahimsa), and truthfulness.

• Ashoka, after embracing Buddhism, adopted these moral principles and propagated them through his edicts, which were inscribed on rocks and pillars across his empire.

• The inscriptions reflect Ashoka's efforts to create a just and ethical society by emphasizing the importance of moral conduct over rituals and ceremonies.

• Ashoka's Dhamma was not sectarian; it was designed to be universally acceptable, addressing the welfare of all people, including animals.

• The promotion of Dhamma was a key part of Ashoka's efforts to govern his empire based on the principles of righteousness and justice.

Additional Information

• Slogans of Buddha

• This option refers to the teachings or sayings of Buddha, which are known as Dhammapada or other Buddhist scriptures. However, Ashoka's Dhamma was broader than just Buddhist slogans; it was a universal moral code.

• Royal decree

• While Ashoka's inscriptions can be considered as royal decrees, the term 'Dhamma' specifically refers to the ethical and moral principles promoted through these decrees.

• Buddhist doctrine

• Though Ashoka was a follower of Buddhism, his concept of Dhamma was not confined to Buddhist doctrine. It was a more inclusive and universal set of principles.

Q36. Answer: (b) To integrate modern subjects alongside traditional teachings

The Correct answer is To integrate modern subjects alongside traditional teachings.

Key Points

• The primary objective of implementing a standardised curriculum in Himalayan Buddhist monasteries was to integrate modern education with traditional Buddhist teachings.

• This initiative aims to equip monks and students with knowledge in modern subjects like science, mathematics, and technology, alongside their spiritual and philosophical studies.

• The program also seeks to enhance the overall educational standards in monasteries and help the monastic community adapt to contemporary socio-economic challenges.

• Introducing modern subjects ensures that students in monasteries remain competitive and can contribute effectively to national development while preserving their cultural and spiritual heritage.

• This initiative reflects the Indian government's efforts to promote a more holistic and inclusive education system in remote areas, particularly in the Himalayan region.

• The move also aligns with India's broader aim of fostering educational equity and ensuring that all communities, including those in monasteries, receive access to quality education.

Additional Information

• To promote Chinese language education

• This option is incorrect because the initiative was focused on integrating modern subjects with traditional Buddhist teachings rather than promoting any specific foreign language like Chinese.

• Chinese language education is typically associated with China's efforts in cultural diplomacy through programs like Confucius Institutes, not India's monastic curriculum.

• To convert monasteries into secular schools

• This option is incorrect because the initiative aimed to enhance the existing monastic education system, not replace it with a secular school structure.

• The focus was on preserving traditional Buddhist teachings while complementing them with modern subjects.

• To reduce the number of monasteries in border areas

• This option is incorrect as the initiative was intended to support monasteries by upgrading their educational standards, not to reduce their presence.

• The monasteries play a crucial role in maintaining the cultural and spiritual identity of the Himalayan region.

Q37. Answer: (c) PL-480

The Correct answer is PL-480.

Key Points

• PL-480 stands for the Public Law 480, also referred to as the Food for Peace Program.

• This program was initiated by the United States in 1954 to provide food aid to countries facing food shortages.

• Under this program, India received substantial amounts of wheat and other grains during the 1950s and 1960s to address its chronic food insecurity.

• The dependency on PL-480 reduced significantly after the Green Revolution in India, which began in the late 1960s and led to an increase in agricultural production.

• This program was a form of economic assistance and was instrumental in building US-India relations during the initial years of India's independence.

• PL-480 not only supported India during its food crises but also laid the groundwork for the modernization of India's agricultural sector.

Additional Information

• KL-580

• KL-580 appears to be an arbitrary term with no specific historical or factual relevance to India's food aid or agricultural history.

• Marshall Plan

• The Marshall Plan was a post-World War II initiative by the United States to provide economic assistance for the reconstruction of Europe.

• This plan was not related to food aid in India but focused on rebuilding war-torn European economies during the late 1940s and early 1950s.

• Green Aid

• Green Aid does not correspond to any specific program or initiative associated with India's food aid or agricultural development.

• The term might be confused with the Green Revolution, which was a domestic Indian initiative to increase agricultural productivity.

Q38. Answer: (b) A combination of voltage-gated ion channels and active ion pumps

The Correct answer is A combination of voltage-gated ion channels and active ion pumps.

Key Points

• Cardiomyocytes, or heart muscle cells, rely heavily on a combination of voltage-gated ion channels and active ion pumps to maintain their membrane potential and ensure proper contraction.

• Voltage-gated ion channels are specialized proteins that allow ions like sodium (Na^+), potassium (K^+), and calcium (Ca^(2+)) to move across the membrane in response to changes in voltage.

• During the cardiac action potential, these channels facilitate the influx of sodium and calcium ions, which depolarize the cell membrane, while potassium ion efflux repolarizes it.

• Active ion pumps, such as the sodium-potassium pump (Na^+/K^+-ATPase), maintain the ionic gradients by actively transporting ions against their concentration gradients using ATP energy.

• The calcium pump and the sodium-calcium exchanger also play critical roles in regulating intracellular calcium levels, which directly influence the contractile function of cardiomyocytes.

• The precise coordination of these mechanisms ensures the rhythmic contraction and relaxation of the heart, which is essential for pumping blood effectively throughout the body.

Additional Information

• Passive diffusion through gap junctions only

• Gap junctions are specialized structures that allow direct communication between adjacent cardiomyocytes.

• While they are important for the propagation of electrical signals, they do not actively maintain the membrane potential or regulate ion gradients.

• Facilitated diffusion of nutrients exclusively

• Facilitated diffusion is a process by which certain molecules, such as glucose, are transported across cell membranes via protein channels.

• While important for providing energy to cardiomyocytes, this mechanism does not directly influence the membrane potential or contraction.

• Endocytosis of extracellular fluid

• Endocytosis is a process that involves the uptake of extracellular substances or fluid into the cell via vesicles.

• This is not a primary mechanism for maintaining the membrane potential or supporting the contractile function of cardiomyocytes.

Q39. Answer: (b) Define New Multilevel List

The correct answer is Define New Multilevel List.

Key Points

• The Define New Multilevel List feature in MS Word 2019 allows users to create structured, multi-level numbered lists, such as 1, 1.1, 1.2, 2, etc.

• This tool is particularly useful for creating hierarchical documents, such as outlines, legal documents, or academic papers.

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• Users can customize the number style (e.g., Arabic numerals, Roman numerals, or letters) for each level of the list.

• It also allows the user to specify the indentation for each level, making the document appear more organized and professional.

• To access this feature, navigate to the Home tab, click on the Multilevel List dropdown, and select Define New Multilevel List.

• Within the dialog box, users can define the numbering format, alignment, and linking of levels to styles.

• This feature improves document readability and ensures a consistent numbering scheme throughout the content.

Additional Information

• Change Styles option

• The Change Styles option in MS Word is used to quickly apply or modify document themes, including font styles, colors, and paragraph spacing.

• This feature is located under the Home tab and is more focused on formatting the document's appearance rather than managing lists.

• Format Painter

• The Format Painter is a tool used for copying and applying formatting (such as font type, size, and color) from one section of text to another.

• It does not handle list creation or numbering but is useful for maintaining consistency in text styling.

• Increase Indent button

• The Increase Indent button, available in the Paragraph group of the Home tab, is used to increase the indentation of a paragraph or text.

• It is not specifically designed for creating or modifying multilevel numbered lists, but it can adjust list levels within a predefined numbering scheme.

Q40. Answer: (b) −8

The given three-digit numbers are: 441, 317, 999, 155, 444.

Now,

The highest number is 999. Its third digit is 9.

The lowest number is 155. Its first digit is 1.

Perform the subtraction.

Subtract the third digit of the highest number 9 from the first digit of the lowest number 1.

1 - 9 = -8.

Hence, the correct answer is "Option 2".

Q41. Answer: (d) Arti Sarin

The correct answer is Arti Sarin.

Key Points

• Arti Sarin has created history by becoming the first woman officer to take over as the Director General of the Armed Forces Medical Services (DG AFMS) in October 2024.

• This achievement marks a significant milestone for women in the Indian Armed Forces.

• The Armed Forces Medical Services (AFMS) is responsible for the medical care of armed forces personnel, and this is one of the highest ranks in the organization.

• Her appointment highlights the growing role of women in leadership positions in the defense forces.

• Arti Sarin is known for her outstanding contributions to the field of military medicine and has served in various critical roles during her career.

• This achievement reflects the progressive steps taken by the Indian Armed Forces towards promoting gender equality.

Additional Information

• Anju Rathi Rana

• Anju Rathi Rana is a well-known name in the Indian defense sector, but she has not been appointed as the Director General of AFMS.

• She has contributed significantly to the administrative and operational aspects of the armed forces.

• Vijaya Kishore Rahatkar

• Vijaya Kishore Rahatkar is a prominent Indian politician and social activist.

• She has been associated with the Bharatiya Janata Party (BJP) and served as the Chairperson of the Maharashtra State Commission for Women.

• Her work primarily focuses on women's empowerment and social reforms, not military services.

• Deena Mehta

• Deena Mehta is a distinguished figure in the Indian financial sector.
• She was the first woman president of the Bombay Stock Exchange (BSE).
• Her expertise lies in finance and stock market operations, not in the armed forces.

Q42. Answer: (c) S

Given: A, B, C, D, R, S and T are sitting around a circular table facing the centre of the table.
Only one person sits between T and S when counted from the right of T.
Only one person sits between S and C. Only one person sits between T and R.
Only two people sit between A and C. Only one person sits between B and R.
Thus, S sits third to the right of D.
Hence, the correct answer is "Option 3".

Q43. Answer: (a) Chamber of Princes

The Correct answer is Chamber of Princes.
Key Points
• The Chamber of Princes was established in the year 1921 as a deliberative and advisory body for the princely states in British India.
• It was set up by the British Government to provide a platform for the princely rulers to discuss and deliberate matters related to their states and their relationship with the British Crown.
• The Chamber of Princes was inaugurated by the then Duke of Connaught in 1921 at the Rashtrapati Bhavan (then known as the Viceroy's House).
• This body consisted of 108 members, including rulers of princely states and their representatives.
• The Chamber was a purely advisory body and had no legislative powers, functioning as a forum for princes to exchange ideas and communicate with the British Government.
• It was a part of the British Government's attempt to control and manage the princely states effectively.
• The Chamber ceased to exist after India’s independence in 1947 when princely states were integrated into the Indian Union.
Additional Information
• Indian Council
• The Indian Council, also known as the Council of India, was established under the Government of India Act 1858 to assist the Secretary of State for India.
• It was not a deliberative body for princes but instead an advisory body for the administration of British India.
• The members of the Indian Council were based in London and were responsible for advising on policy matters.
• Imperial Assembly
• The term Imperial Assembly does not refer to any specific institution in the context of British India.
• It may appear to suggest a legislative body, but such an assembly did not exist under this name during British rule in India.
• Royal Consultation Board
• The Royal Consultation Board is not a historically recognized institution under British rule in India.
• It does not relate to the Chamber of Princes or any similar body.

Q44. Answer: (d) 47

Shortcut Trick
Count the total number of observations, n = 11 (which is an odd number).
Arrange the data in ascending order: 16, 27, 32, 38, 41, 47, 67, 74, 85, 88, 98.
For odd n, the Median is the middle term: ((n + 1) ÷ 2)^(th) term.
Median = (12 ÷ 2)^(th) term = 6^(th) term = 47.
Therefore The correct answer is 47.
Alternate Method
Given: Data set = {74, 85, 67, 27, 47, 16, 41, 32, 98, 38, 88}
Formula Used: Median = ((n + 1) ÷ 2)^(th) term, where n is the number of observations (when n is odd).
=> Total number of observations (n) = 11
=> Arranging the data in ascending order: 16, 27, 32, 38, 41, 47, 67, 74, 85, 88, 98
=> Median = ((11 + 1) ÷ 2)^(th) term
=> Median = 6^(th) term
=> Median = 47

Therefore The correct answer is 47.

Additional Information

Median for Even Number of Terms

If n is even, the Median is the arithmetic mean of the (n/2)^(th) and (n/2 + 1)^(th) terms after arranging the data in order.

Mean (Arithmetic Average)

The Mean is the sum of all observations divided by the total number of observations: Σx ÷ n.

Mode

The Mode is the value that occurs most frequently in the given data set. A data set can have one mode, more than one mode, or no mode at all.

Q45. Answer: (a) 150

Shortcut Trick

For a Right-Angled Triangle, the sides often follow standard Pythagorean Triplets.

Given sides: (x − 10), (x − 5), and x. These represent sides with a constant difference of 5.

The only standard triplet with a constant difference is 3 : 4 : 5. Multiplying by 5, we get 15 : 20 : 25.

Check: 25 − 10 = 15 and 25 − 5 = 20. Thus, x = 25, Base = 15, Height = 20.

Area = 1/2 × Base × Height = 1/2 × 15 × 20 = 150 cm².

Therefore The correct answer is 150 cm².

Alternate Method

Given: Sides of right triangle are (x − 10), (x − 5) and x.

Formula Used: Pythagoras Theorem: $a^2 + b^2 = c^2$, where c is the hypotenuse (longest side).

=> $(x - 10)^2 + (x - 5)^2 = x^2$

=> $(x^2 - 20x + 100) + (x^2 - 10x + 25) = x^2$

=> $2x^2 - 30x + 125 = x^2$

=> $x^2 - 30x + 125 = 0$

=> $x^2 - 25x - 5x + 125 = 0$

=> $x(x - 25) - 5(x - 25) = 0$

=> $(x - 25)(x - 5) = 0$

=> x = 25 or x = 5 (x=5 not possible as side x−5 would be 0 and x−10 would be negative)

=> Sides are: 25, (25−5)=20, (25−10)=15

=> Area = 1/2 × 15 × 20 = 150 cm²

Therefore The correct answer is 150 cm².

Additional Information

Pythagorean Triplets

Sets of three integers that satisfy $a^2 + b^2 = c^2$, such as (3, 4, 5), (5, 12, 13), and (8, 15, 17).

Area of Right Triangle

Area is calculated as 1/2 × base × height, where base and height are the two legs forming the 90° angle.

Hypotenuse Property

The hypotenuse is always the longest side of a right-angled triangle and is opposite the right angle.

Q46. Answer: (a) 105

Given:

Expression to solve: [525 ÷ {19 + 7 × (3 - 5)}]

Calculation:

[525 ÷ {19 + 7 × (3 - 5)}]}

=> [525 ÷ {19 + 7 × (-2)}]

=> [525 ÷ {19 - 14}]

=> [525 ÷ 5]

=> 105

Therefore The correct answer is option (1).

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Q47. Answer: (d) 265

Shortcut Trick

Calculate Total Frequency (N) = 14 + 37 + 28 + 39 + 12 = 130.

Find N/2 = 130 ÷ 2 = 65.

Identify Median Class by Cumulative Frequency (CF): 14, 51, 79... (65 falls in the 240-290 class).

Apply Median = L + [(N/2 − CF_p) ÷ f] × h = 240 + [(65 − 51) ÷ 28] × 50.

Median = 240 + [14 ÷ 28] × 50 = 240 + 25 = 265.

Therefore The correct answer is 265.

Alternate Method

Given: Distribution of classes and their respective frequencies.

Formula Used: Median = L + [((N/2) − CF) ÷ f] × h

Where: L = Lower limit of median class, N = Total frequency, CF = Cumulative frequency of preceding class, f = Frequency of median class, h = Class width.

Step 1: Calculate Cumulative Frequencies (CF)

=> Class 140-190: f = 14, CF = 14

=> Class 190-240: f = 37, CF = 14 + 37 = 51

=> Class 240-290: f = 28, CF = 51 + 28 = 79

=> Class 290-340: f = 39, CF = 79 + 39 = 118

=> Class 340-390: f = 12, CF = 118 + 12 = 130

Step 2: Find Median Class

=> Total Frequency (N) = 130

=> N/2 = 130 ÷ 2 = 65

=> The CF just greater than 65 is 79, which corresponds to the Median Class 240-290.

Step 3: Apply Median Formula

=> L = 240, CF = 51, f = 28, h = 50

=> Median = 240 + [(65 − 51) ÷ 28] × 50

=> Median = 240 + [14 ÷ 28] × 50

=> Median = 240 + [0.5 × 50]

=> Median = 240 + 25 = 265

Therefore The correct answer is 265.

Additional Information

Empirical Relationship

For a moderately skewed distribution: Mode = 3 Median − 2 Mean.

Mode of Grouped Data

Mode = L + [(f1 − f0) ÷ (2f1 − f0 − f2)] × h, where f1 is the frequency of the modal class.

Mean of Grouped Data

Mean (μ) = Σ(f_i × x_i) ÷ Σf_i, where x_i is the class mark (mid-point) of each interval.

Q48. Answer: (c) Metallic character increases across a period from left to right

The correct answer is Metallic character increases across a period from left to right.

Key Points

• Metallic character refers to the ability of an element to lose electrons and form positive ions (cations).

• Across a period in the periodic table (from left to right), the metallic character decreases. This is because the atomic radius decreases, and the effective nuclear charge increases, making it harder for atoms to lose electrons.

• The statement "Metallic character increases across a period from left to right" is incorrect because non-metallic character increases across a period instead.

• For example, in Period 3 of the periodic table, elements transition from metals (like sodium) to metalloids (like silicon) and finally to non-metals (like chlorine).

• In contrast, metallic character increases down a group as atomic size increases and the outer electrons become easier to lose due to a weaker hold by the nucleus.

• This trend is closely related to other periodic properties like ionization energy and electronegativity.

• Thus, the correct answer is the statement that contradicts this trend: "Metallic character increases across a period from left to right".

Additional Information

• Metallic character increases down a group

• As we move down a group, the atomic size increases, and the outermost electrons are farther from the nucleus.

• This reduces the effective nuclear charge experienced by the outermost electrons, making it easier for the atom to lose electrons and exhibit metallic character.

• For example, in Group 1, lithium is less metallic than cesium.

• Metallic character decreases across a period from left to right

• Across a period, the atomic radius decreases as the number of protons increases, resulting in a stronger nuclear pull on the electrons.

• This makes it harder for atoms to lose electrons, reducing their metallic character.

• For example, in Period 2, beryllium (metal) transitions to fluorine (non-metal).

• The change from metallic to non-metallic is gradual

• This statement is correct because elements transition from metals to metalloids and then to non-metals as we move from left to right across a period.

• For example, in Period 3, aluminum (metal) transitions to silicon (metalloid) and finally to sulfur (non-metal).

Q49. Answer: (b) Cossipore

The Correct answer is Cossipore.

Key Points

• The first Ordnance Factory in India was established in Cossipore, Kolkata, in the year 1801.

• It is known as the Cossipore Gun & Shell Factory, and it is the oldest ordnance factory in India.

• The establishment of this factory marked the beginning of the Ordnance Factories Board (OFB), which is now part of India's defense production sector.

• Ordnance Factories Day is observed on 18th March every year to commemorate the foundation of this factory.

• The ordnance factories are responsible for the manufacture of arms, ammunition, and defense equipment for the Indian Armed Forces.

• The factory in Cossipore played a significant role in the defense preparedness of India during both World War I and World War II.

• It is under the administrative control of the Department of Defence Production, Ministry of Defence, Government of India.

• The factory is equipped with advanced manufacturing technologies and continues to produce a wide range of defense products.

Additional Information

• Pune

• Pune is a major industrial and educational hub in India, but it is not the location of India's first ordnance factory.

• However, Pune is home to several defense-related institutions such as the Defence Institute of Advanced Technology (DIAT) and the National Defence Academy (NDA).

• Hyderabad

• Hyderabad is known for its contribution to the defense sector through establishments like the Defence Research and Development Laboratory (DRDL) and the Research Centre Imarat (RCI).

• It is not the location of India's first ordnance factory.

• Jabalpur

• Jabalpur is another important center for defense production in India with facilities like the Gun Carriage Factory (GCF) and Vehicle Factory Jabalpur (VFJ).

• While significant, it is not the location of the first ordnance factory.

Q50. Answer: (d) 2 km to the West

Given: Mr. Yanki starts from Point A and drives 17 km towards the South.

He then takes a right turn, drives 19 km, turns right and drives 29 km.

He then takes a right turn and drives 15 km, turns right drives 1 km.

He then takes a left turn drives 6 km.

He takes a final right turn, drives 11 km and stops at Point P.

Thus, he drive 2 km to the West in order to reach Point A again.

Hence, the correct answer is "Option 4".

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Q51. Answer: (d) 20%

Shortcut Trick

Given Cost Price (CP) = Rs. 285 and Marked Price (MP) = Rs. 1,140.

The ratio of CP to MP is 285 : 1140 = 1 : 4.

If MP = 100 units, then CP = 25 units.

Selling Price (SP) at 70% discount = 100 − 70 = 30 units.

Profit% = (SP − CP) ÷ CP × 100 = (30 − 25) ÷ 25 × 100 = 5 ÷ 25 × 100 = 20%.

Therefore The correct answer is 20%.

Alternate Method

Given: Cost Price (CP) = Rs. 285, Marked Price (MP) = Rs. 1,140, Discount = 70%.

Formulas: SP = MP × (100 − Discount%) ÷ 100 | Profit% = (SP − CP) ÷ CP × 100.

=> Step 1: Calculate Selling Price (SP) = 1140 × (100 − 70) ÷ 100

=> SP = 1140 × 30 ÷ 100 = 114 × 3 = Rs. 342

=> Step 2: Calculate Profit = SP − CP = 342 − 285 = Rs. 57

=> Step 3: Calculate Profit Percentage = (57 ÷ 285) × 100

=> Profit% = (1 ÷ 5) × 100 = 20%

Therefore The correct answer is 20%.

Additional Information

Marked Price & Discount

Marked Price (MP) is the price printed on an article. Discount is always calculated on the MP to arrive at the Selling Price (SP). Formula: SP = MP − Discount.

Profit and CP Relationship

Profit or loss is always calculated on the Cost Price (CP) unless otherwise stated. Formula: Profit% = [(SP − CP) ÷ CP] × 100.

Q52. Answer: (d) 65

Shortcut Trick

The overall average of 30 students is 75.

The first 20 students have an average of 80, which is +5 more than the total average.

Total excess score = 20 × 5 = +100.

To balance this, the remaining 10 students must have a total deficit of −100.

Average of remaining 10 students = 75 + (−100 ÷ 10) = 65.

Therefore The correct answer is 65.

Alternate Method

Given:

Total number of students = 30

Average score of class = 75

Average score of 20 students = 80

Formula Used:

Sum of values = Average × Number of observations

Calculations:

=> Total score of all 30 students = 30 × 75 = 2250

=> Total score of 20 students = 20 × 80 = 1600

=> Total score of remaining 10 students = 2250 − 1600 = 650

=> Average score of remaining 10 students = 650 ÷ 10 = 65

Therefore The correct answer is 65.

Additional Information

Weighted Average Formula

When two groups with averages a1 and a2 and sizes n1 and n2 are combined, the new average is (n1a1 + n2a2) ÷ (n1 + n2).

Net Deviation Rule

The sum of the deviations of all items in a set from their arithmetic mean is always zero.

Constant Change

If every value in a data set is increased or decreased by a constant 'k', the average of the set also increases or decreases by 'k'.

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Q53. Answer: (c) (32x + 12y - 4) m

Shortcut Trick

Perimeter of a cuboid = 4 × (Length + Breadth + Height)

Sum of terms = (2x + 5x + x) + (−5y + 7y + y) + (3 − 7 + 3) = 8x + 3y − 1

Perimeter = 4 × (8x + 3y − 1) = 32x + 12y − 4

Therefore The correct answer is (32x + 12y − 4) m.

Alternate Method

Given:

Length (l) = (2x − 5y + 3) m

Breadth (b) = (5x + 7y − 7) m

Height (h) = (x + y + 3) m

Formula Used:

Perimeter of Cuboid = 4(l + b + h)

Calculations:

=> Sum = (2x − 5y + 3) + (5x + 7y − 7) + (x + y + 3)

=> Sum = (2x + 5x + x) + (−5y + 7y + y) + (3 − 7 + 3)

=> Sum = 8x + 3y − 1

=> Perimeter = 4 × (8x + 3y − 1)

=> Perimeter = 32x + 12y − 4

Therefore The correct answer is (32x + 12y − 4) m.

Additional Information

Total Surface Area of Cuboid

The total area of all six faces is given by 2(lb + bh + hl).

Volume of Cuboid

The space occupied by the cuboid is calculated as Length × Breadth × Height.

Diagonal of Cuboid

The longest rod that can be placed inside is $\sqrt{(l^2 + b^2 + h^2)}$.

Q54. Answer: (a) Father's mother

Given: L is the mother of two sons, namely, P and J. F is the wife of P. Q is the daughter of J.

Thus, L is the Father's mother of Q.

Hence, the correct answer is "Option 1".

Q55. Answer: (a) Modernisation and technology upgrade

The Correct answer is Modernisation and technology upgrade.

Key Points

• The Seventh Five-Year Plan (1985–90) in India was initiated under the leadership of Prime Minister Rajiv Gandhi.

• The focus of this plan was on modernisation, technology upgrade, and self-reliance.

• It aimed to improve industrial productivity through the adoption of advanced technologies and techniques.

• There was a strong emphasis on the use of modern technology in agriculture to increase yield and efficiency.

• This plan targeted economic growth by strengthening the infrastructure and fostering the development of sectors like energy, telecommunications, and transport.

• It also aimed to achieve sustainable development by balancing growth with environmental protection.

• The plan prioritized the reduction of regional disparities through balanced regional development and equitable distribution of resources.

• Special attention was given to employment generation and improving the living standards of the people.

Additional Information

• Liberalisation

• Liberalisation refers to the relaxation of government restrictions in areas like trade, investment, and industry.

• The concept became prominent in India during the economic reforms of 1991, not in the Seventh Five-Year Plan.

• It focuses on reducing trade barriers, tariffs, and regulations to encourage foreign investment and improve competitiveness.

• Structural reforms

• Structural reforms are comprehensive changes aimed at improving the functioning of an economy.

• In India, structural reforms were notably implemented during the 1991 economic liberalisation, focusing on sectors like banking, trade, and public enterprises.

• Privatisation

• Privatisation involves transferring ownership of public sector enterprises to private entities.

• Although some privatisation steps were taken earlier, it became a major policy focus during the post-1991 economic reforms.

Q56. Answer: (b) Right-clicking on the desktop and selecting 'New' → 'Folder

The Correct answer is Right-clicking on the desktop and selecting 'New' → 'Folder'.

Key Points

• Creating a new folder on a Windows desktop can be easily achieved by right-clicking on the desktop space.

• After right-clicking, a context menu appears with several options such as 'View', 'Sort by', 'Refresh', 'New', etc.

• Select the 'New' option, which opens a secondary menu with options to create different items like Folder, Shortcut, Text Document, etc.

• Clicking on 'Folder' creates a new folder on the desktop, which appears with the default name 'New Folder'.

• The user can rename the folder immediately by typing the desired name or later by right-clicking on the folder and selecting 'Rename'.

• This method is a graphical user interface (GUI)-based approach, making it simple and intuitive for users of all skill levels.

• The process works on most Windows operating systems, including Windows 7, 8, 10, and 11.

Additional Information

• Alt + Tab

• Alt + Tab is a keyboard shortcut used to switch between open applications or windows on a computer.

• This shortcut does not relate to creating folders but enhances multitasking efficiency.

• Recycle Bin Icon

• Clicking on the Recycle Bin icon allows users to view deleted files and restore or permanently delete them.

• The Recycle Bin is part of Windows' file management system, but it cannot be used to create folders.

• Ctrl + F

• Ctrl + F is a shortcut used to find text or specific items within a document, webpage, or application.

• It is commonly used for searching content but has no function related to creating folders.

Q57. Answer: (b) Printed Circuit Board

The Correct answer is Printed Circuit Board.

Key Points

• Printed Circuit Board (PCB) is a critical component used in electronic circuits to mechanically support and electrically connect electronic components.

• It is made of layers of conductive material (typically copper) and non-conductive substrate (such as fiberglass or epoxy resin).

• PCBs are designed using specialized software to create a precise layout of electrical connections between components.

• They are widely used in various applications such as computers, mobile phones, medical devices, automotive electronics, and industrial equipment.

• PCBs eliminate the need for complex wiring by embedding the circuitry directly onto the board, making them compact and efficient.

• PCB manufacturing involves multiple steps, including designing, etching, drilling, soldering, and assembly.

• The primary types of PCBs include single-sided, double-sided, and multi-layer boards, depending on the complexity of the circuit.

• Advanced PCBs may also include components like integrated circuits (ICs), resistors, capacitors, and connectors.

• PCBs are critical for ensuring the reliability, performance, and scalability of electronic systems.

Additional Information

• Peripheral Circuit Bridge

• This term does not exist as a standard concept in electronics or electrical circuits.

• The word Peripheral commonly refers to external devices connected to a computer, such as printers, keyboards, and mice, but does not relate to PCBs.

• Programmed Control Base

• This term could refer to a component or system used for automation or control in industrial applications, but it is not related to PCBs.

Programmable Logic Controllers (PLCs) are often used for programmed control, but these are separate devices and not synonymous with PCBs.

• • Process Control Board

• Process control systems are used in industries to monitor and control production processes. However, this term is not a standard replacement for Printed Circuit Board.

• Process control boards may contain PCBs, but they refer to a specific application rather than the general concept of a PCB.

Q58. Answer: (c) Sovereign borrowing

The Correct answer is Sovereign borrowing.

Key Points

• Sovereign borrowing refers to the process where a government borrows money, typically through the issuance of bonds or loans, to finance its expenditures or development projects. It is not considered a form of privatisation, as privatisation involves transferring ownership or control of government assets to private entities.

• Privatisation is a key element of the New Economic Policy of 1991, which aimed to reduce the role of the government in economic activities and promote private sector participation. However, sovereign borrowing does not align with this objective, as it does not involve transferring ownership or management to private players.

• Sovereign borrowing is primarily used to bridge fiscal deficits, fund infrastructure projects, or manage economic crises, and does not involve selling or monetising government-owned assets.

• The term "privatisation" is typically associated with methods like strategic sale, disinvestment, and asset monetisation, all of which involve reducing government control or ownership in public enterprises or assets.

• In contrast, sovereign borrowing is a financial mechanism, not a structural reform like privatisation.

Additional Information

• Strategic Sale

• A strategic sale involves selling a significant portion of a government-owned enterprise to a private entity, usually with the transfer of management control.

• It is a form of privatisation, as it reduces government ownership and promotes private sector efficiency.

• An example is the sale of Air India to the Tata Group in 2021.

• Disinvestment

• Disinvestment refers to the process where the government reduces its stake in a public sector enterprise, often by selling shares to private investors.

• It is a common method of privatisation and helps raise funds for the government while increasing private sector participation.

• An example is the disinvestment in companies like Bharat Petroleum Corporation Limited (BPCL).

• Asset Monetisation

• Asset monetisation involves leasing or selling government-owned assets like roads, railways, or airports to private entities to generate revenue.

• It is considered a form of privatisation as it allows private players to manage and utilise public assets while reducing government control.

• For example, the National Monetisation Pipeline (NMP) launched in India aims to monetise assets worth Rs. 6 lakh crore.

Q59. Answer: (b) COP29

The Correct answer is COP29.

Key Points

• COP29 refers to the 29th annual Conference of the Parties under the United Nations Framework Convention on Climate Change (UNFCCC).

• The event is scheduled to take place in Baku, Azerbaijan, in November 2024.

• COP29 serves as a significant platform where world leaders, policymakers, and environmental experts come together to address climate change and discuss strategies for mitigating its effects.

• The focus of COP29 will likely include discussions on implementing the Paris Agreement, setting new targets for reducing greenhouse gas emissions, and advancing climate finance mechanisms for developing nations.

• These conferences are crucial for achieving a global consensus on climate-related issues and for ensuring that countries are held accountable for their commitments.

• The UNFCCC, established in 1992 during the Earth Summit in Rio de Janeiro, oversees these conferences as part of its efforts to combat climate change globally.

• Azerbaijan's hosting of COP29 underscores its increasing role in global climate diplomacy and its efforts to integrate sustainable practices within its development framework.

Additional Information

• COP28

• COP28 refers to the 28th Conference of the Parties under the UNFCCC and is scheduled to take place in Dubai, United Arab Emirates (UAE), in 2023.

• The COP28 agenda focuses on achieving the Global Stocktake, a critical assessment of global progress toward meeting climate goals set out in the Paris Agreement.

• Earth Summit 2024

• The term "Earth Summit" typically refers to the 1992 United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil.

• While no event titled Earth Summit 2024 is officially recognized under UNFCCC proceedings, such summits historically address sustainable development and environmental protection.

• Global Climate Forum

• The Global Climate Forum is a platform for researchers and stakeholders to collaboratively address climate-related challenges.

• Although it plays a significant role in shaping climate policies and research, it is distinct from the COP conferences under the UNFCCC.

Q60. Answer: (a) 3

Given: Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.

1) T has an exam on Friday.

2) Exactly 3 people have an exam between P and U, neither of whom has an exam on Sunday.

3) V has an exam immediately before U.

Day	Person
Monday	V
Tuesday	U
Wednesday	
Thursday	
Friday	T
Saturday	P
Sunday	

4) S has an exam immediately after Q.

Day	Person
Monday	P
Tuesday	Q
Wednesday	S
Thursday	V
Friday	T
Saturday	U
Sunday	R

Thus, People after S (Wednesday) → Thursday (V), Friday (T), Saturday (U), Sunday (empty) → 3 people have exams after S.

Hence, the correct answer is 3 (Option 1).

Q61. Answer: (a) 46,875

Shortcut Trick

For a 3-year period, the difference (D) between Compound Interest and Simple Interest is given by the formula:

$D = P \times (r/100)^2 \times (3 + r/100)$

Given: D = Rs. 228 and r = 4%.

$\Rightarrow 228 = P \times (4/100)^2 \times (3 + 4/100)$

$\Rightarrow 228 = P \times (1/625) \times (304/100)$

=> P = (228 × 625 × 100) / 304 = 46875

Therefore The correct answer is Rs. 46,875.

Alternate Method

Given:

Time (T) = 3 years

Rate (R) = 4% per annum

Difference (CI − SI) = Rs. 228

Let the Principal be P.

Simple Interest (SI) for 3 years:

=> SI = (P × R × T) / 100

=> SI = (P × 4 × 3) / 100 = 12P / 100

Compound Interest (CI) for 3 years:

=> Amount (A) = P(1 + R/100)^T

=> A = P(1 + 4/100)³ = P(1 + 1/25)³ = P(26/25)³

=> A = P(17576 / 15625)

=> CI = A − P = P(17576/15625 − 1) = 1951P / 15625

According to the question, CI − SI = 228:

=> 1951P / 15625 − 12P / 100 = 228

=> (1951P × 4 − 12P × 625) / 62500 = 228

=> (7804P − 7500P) / 62500 = 228

=> 304P / 62500 = 228

=> P = (228 × 62500) / 304

=> P = 3/4 × 62500 = 3 × 15625 = 46875

Therefore The correct answer is Rs. 46,875.

Additional Information

Difference for 2 years

The difference between CI and SI for a 2-year period is given by D = P(r/100)².

Effective Rate Method

For CI of 2 years, effective rate = r + r + (r×r)/100. For 3 years, apply the successive formula again.

Simple Interest Property

Simple Interest remains the same for every year if the principal and rate are constant.

Q62. Answer: (d) West to east

The Correct answer is West to east.

Key Points

• In winter, the jet streams influencing the Indian climate typically flow from west to east.

• Jet streams are fast-moving air currents found in the upper levels of the atmosphere, mainly in the troposphere.

• These streams play a vital role in shaping the weather patterns, especially during winter months.

• The western jet stream influences the Indian subcontinent, bringing cold weather conditions and impacting the western disturbances.

• The western disturbances, driven by these jet streams, are responsible for the winter rainfall in the northwestern parts of India.

• The direction of jet streams is primarily governed by the rotation of the Earth and the temperature contrast between the equator and poles.

• During winter, the position of the jet streams shifts southward, influencing the weather over South Asia, including India.

• The west-to-east flow of jet streams also impacts the movement of cyclonic systems in the region, contributing to the formation of rain-bearing clouds.

• These jet streams have a significant effect on agriculture, as winter rainfall supports the Rabi crop season.

Additional Information

• East to west

• Jet streams typically do not flow from east to west due to the Earth's rotation and the temperature gradient between the poles and the equator.

• This direction would contradict the general movement of atmospheric circulation in the Northern Hemisphere.

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• Southwest to northeast

• This direction is commonly associated with the movement of the Southwest Monsoon winds in India during the summer season, not winter.

• The monsoon winds are influenced by the heating of the Indian Ocean and the Himalayas, which is distinct from the jet streams.

• Southeast to northwest

• Jet streams in this direction are unusual and do not align with the typical atmospheric circulation observed in the Indian subcontinent.

• This option is not relevant for the Indian winter climate influenced by jet streams.

Q63. Answer: (b) 68

Shortcut Trick

Identify Radius (r) = 102 ÷ 2 = 51 cm.

Using CSA = πrl => 4335π = π × 51 × l => Slant height (l) = 85 cm.

Apply Pythagorean Triplet (8, 15, 17) scaled by 5 × 17 = 85, 3 × 17 = 51, 4 × 17 = 68.

Therefore The height is 68 cm.

Therefore The correct answer is 68 cm.

Alternate Method

Given: Curved Surface Area (CSA) = 4335π cm², Diameter (d) = 102 cm.

Formula Used: CSA = πrl and $l^2 = r^2 + h^2$

=> Radius (r) = 102 ÷ 2 = 51 cm.

=> π × r × l = 4335π

=> 51 × l = 4335

=> l = 4335 ÷ 51 = 85 cm.

=> $h^2 = l^2 - r^2$

=> $h^2 = 85^2 - 51^2 = (85 - 51)(85 + 51)$

=> $h^2 = 34 \times 136 = 4624$

=> h = √4624 = 68 cm.

Therefore The correct answer is 68 cm.

Additional Information

Total Surface Area of Cone

The total surface area includes the CSA and the Base Area: TSA = πr(l + r).

Volume of Cone

The capacity of a cone is exactly one-third the volume of a cylinder with the same base and height: $V = (1/3)\pi r^2 h$.

Relation between l, r, and h

In a right circular cone, the slant height (l), vertical height (h), and radius (r) form a Right-Angled Triangle: $l^2 = r^2 + h^2$.

Q64. Answer: (a) 6,98,400

Shortcut Trick

Net percentage increase for two successive decades of 20% each = 20 + 20 + (20 × 20)/100 = 44%.

Population in 1988 = 4,85,000 × (144/100).

Population in 1988 = 4,850 × 144 = 6,98,400.

Therefore The correct answer is 6,98,400.

Alternate Method

Given: Initial population (1968) = 4,85,000. Increase per decade = 20%. Time period = 1968 to 1988 = 2 decades.

Formula: Final Population = $P \times (1 + R/100)^n$

=> Population in 1978 = 4,85,000 × (120/100) = 5,82,000

=> Population in 1988 = 5,82,000 × (120/100)

=> Population in 1988 = 5,820 × 120

=> Population in 1988 = 6,98,400

Therefore The correct answer is 6,98,400.

Additional Information

Successive Percentage Change

If a value changes by x% and then by y%, the effective change is (x + y + xy/100)%.

Population Growth Formula

Similar to compound interest, growth is calculated as A = P(1 + r/100)^t, where r is growth rate per period.

Base Change Property

In successive growth, the second percentage increase is applied to the new base (the value after the first increase).

Q65. Answer: (c) Only 1 and 2

The correct answer is Only 1 and 2.

Key Points

• In the 2024 Haryana Assembly Elections, the Bharatiya Janata Party (BJP) formed the government for the third consecutive term in the state. Hence, Statement 1 is correct.

• The Indian National Lok Dal (INLD) secured 2 seats in the Haryana Legislative Assembly elections. Hence, Statement 2 is correct.

• Independent candidates did not secure more than 5 seats in the election. Hence, Statement 3 is incorrect.

• The Haryana Legislative Assembly has a total of 90 seats, and the majority mark required to form the government is 46 seats, not 48. Hence, Statement 4 is incorrect.

• Statement-wise Analysis:

• 1. BJP formed the government for a third consecutive term – Correct.

• 2. INLD secured 2 seats – Correct.

• 3. Independent candidates secured more than 5 seats – Incorrect.

• 4. Majority mark was 48 seats – Incorrect.

• Hence, the correct answer is Only 1 and 2.

Additional Information

• Haryana Legislative Assembly is a unicameral legislature consisting of 90 elected members.

• The term of the Haryana Assembly is generally 5 years unless dissolved earlier.

• Chandigarh serves as the capital of both Haryana and Punjab.

• Indian National Lok Dal (INLD) is a regional political party mainly active in Haryana and was founded by Devi Lal.

• The Election Commission of India (ECI) conducts Assembly elections under the provisions of the Constitution of India.

Important Points

• The majority mark in any legislative assembly is calculated as more than half of the total seats.

• Questions related to recent elections, constitutional bodies, political parties, and state legislatures are frequently asked in competitive examinations.

Q66. Answer: (c) 71

Shortcut Trick

Total weight of all 4 people = 65 × 4 = 260 kg.

Let the average weight of the 3 friends be x kg.

M's weight = x + 8 kg.

Sum of weights = 3x + (x + 8) = 260 => 4x = 252 => x = 63 kg.

M's weight = 63 + 8 = 71 kg.

Therefore The correct answer is 71 kg.

Alternate Method

Given:

Average weight of M and 3 friends (Total 4 people) = 65 kg.

Difference between M's weight and the average of 3 friends = 8 kg.

Formula Used:

Total Sum = Average × Number of entities

Calculations:

=> Total weight of M + 3 friends = 4 × 65 = 260 kg

=> Let the average weight of 3 friends be A kg.

=> Weight of M = A + 8 kg

=> Sum of weight of 3 friends = 3 × A

=> Total Weight = (Sum of 3 friends) + (Weight of M)

=> 260 = 3A + (A + 8)

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=> 260 = 4A + 8

=> 4A = 260 − 8

=> 4A = 252

=> A = 252 ÷ 4 = 63 kg

=> M's weight = A + 8 = 63 + 8 = 71 kg

Therefore The correct answer is 71 kg.

Additional Information

Weighted Average

When groups with different averages are combined, the total average = (n1x1 + n2x2) ÷ (n1 + n2).

Average Deviation

The sum of deviations of all observations from their arithmetic mean is always zero.

Arithmetic Mean

Mean = (Sum of all observations) ÷ (Total number of observations).

Q67. Answer: (b) Department of Design and Manufacturing

The Correct answer is Department of Design and Manufacturing.

Key Points

• The Department of Design and Manufacturing at the Indian Institute of Science (IISc) focuses on cutting-edge research in the areas of design, manufacturing, and engineering systems.

• In the context of the 2025 research project on synthetic image generation for Magnetic Resonance (MR) applications, the department played a critical role in developing innovative technologies to enhance medical imaging.

• The research aimed to improve MR imaging quality using synthetic image generation techniques, which are essential for better diagnostics and treatment planning.

• The department leverages advanced technologies such as machine learning, computer vision, and optimization algorithms to design systems that meet specific requirements of industries, including healthcare.

• The team likely collaborated with experts from other interdisciplinary fields to ensure the successful application of synthetic image generation in MR systems.

• The department is well-known for its focus on innovative solutions in engineering design and manufacturing processes, which makes it a key contributor to projects requiring technical expertise and precision.

• This project highlights the department's capability to merge engineering design principles with modern technological advancements.

Additional Information

• Department of Artificial Intelligence

• This department primarily focuses on machine learning, deep learning, and other AI-related technologies.

• While AI plays a role in synthetic image generation, the Department of Design and Manufacturing was specifically involved due to the engineering and manufacturing aspects of the project.

• AI applications are more general and cross-disciplinary, but this project required expertise in the integration of design principles with manufacturing systems.

• Department of Computer Science

• The Department of Computer Science specializes in theoretical and applied computer science, including algorithms, data structures, and computational systems.

• Although computer science techniques such as image processing might have been used in the project, the focus on design and manufacturing systems made the Department of Design and Manufacturing more suitable for leadership in this context.

• Department of Mechanical Engineering

• The Department of Mechanical Engineering is more focused on traditional engineering disciplines, such as thermodynamics, fluid mechanics, and structural analysis.

• While it contributes significantly to engineering projects, this specific research on synthetic image generation for MR applications required expertise in design systems and manufacturing technologies, making the Department of Design and Manufacturing a better fit.

Q68. Answer: (c) The entire Council of Ministers must resign.

The Correct answer is The entire Council of Ministers must resign.

Key Points

• A No-Confidence Motion is a parliamentary motion moved against the Union Government, indicating that the ruling government no longer holds the confidence of the majority of members in the Lok Sabha, as per Article 75(3) of the Indian Constitution.

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• If the motion is passed, it leads to a loss of majority for the ruling government in the Lok Sabha, thereby mandating the resignation of the entire Council of Ministers, including the Prime Minister.

• The Prime Minister and the Council of Ministers collectively hold office during the pleasure of the President, but this is contingent upon the government maintaining the confidence of the Lok Sabha.

• It is a crucial legislative mechanism to ensure the accountability of the government to the elected representatives of the people.

• Once the Council of Ministers resigns, the President may invite the leader of another party or coalition that can prove majority support to form the new government, or may call for fresh general elections.

• The process of a No-Confidence Motion ensures the stability and democratic functioning of India's parliamentary system.

Additional Information

• The Prime Minister is given a chance to reorganise the Cabinet.

• This option is incorrect because a No-Confidence Motion does not provide the Prime Minister with an opportunity to reorganize the Cabinet. Instead, the motion directly challenges the authority and legitimacy of the entire government.

• The motion signifies loss of majority support, making it mandatory for the entire Council of Ministers to resign.

• Only the dissenting ministers resign.

• In the parliamentary system, the Council of Ministers functions as a collective entity. Hence, resignation due to a No-Confidence Motion applies to the entire Council of Ministers, not just dissenting members.

• Individual resignations do not address the fundamental issue of lack of majority support in the Lok Sabha.

• A re-election is triggered.

• While a No-Confidence Motion may eventually lead to fresh elections, it is not an automatic outcome of the motion being passed.

• The President can invite another party or coalition with a proven majority in the Lok Sabha to form the government before considering general elections.

Q69. Answer: (d) Terai

The Correct answer is Terai.

Key Points

• The Terai region is a marshy and humid zone located in the Great Indian Plains, situated along the foothills of the Himalayas.

• It is characterized by high groundwater levels due to frequent seepage from rivers descending from the Himalayas.

• The region is known for its dense forests and fertile land, making it an agriculturally productive area.

• The climatic conditions in the Terai are humid, with significant rainfall, contributing to its marshy characteristics.

• The Terai serves as an important wildlife habitat, home to species like the Bengal tiger, rhinoceros, and elephants, particularly in areas like the Terai Arc Landscape.

• It is a transitional area between the plains and the mountains, and its geographical features play a critical role in the hydrology of northern India.

Additional Information

• Bhabar

• The Bhabar zone lies just above the Terai region, at the foothills of the Himalayas.

• It is characterized by a porous and rocky terrain, which causes rivers to disappear underground.

• The soil in this region is less fertile, and agriculture is limited.

• Bhangar

• Bhangar refers to the older alluvial soil found in the Great Indian Plains.

• This area is slightly elevated and less fertile compared to the newer alluvial soil (Khadar).

• It is primarily used for pasture and settlement rather than intensive agriculture.

• Delta

• The Delta region is located at the mouths of major rivers like the Ganga and Brahmaputra.

• It is characterized by extremely fertile soil, making it one of the most productive agricultural zones in India.

• This region often experiences flooding and is rich in biodiversity.

Q70. Answer: (c) 27

Shortcut Trick

For two numbers a and b, the third proportional is given by b^2/a.

Given: a = 81, b = Z, and Third Proportional = 9.

=> $Z^2 / 81 = 9$

=> $Z^2 = 81 \times 9 = 729$

=> $Z = \sqrt{729} = 27$

Therefore The correct answer is 27.

Alternate Method

Given: First number = 81, Second number = Z, Third proportional = 9.

Formula Used: If a, b, c are in continued proportion, then a : b = b : c, where c is the third proportional.

=> 81 : Z = Z : 9

=> 81 / Z = Z / 9

=> Z × Z = 81 × 9

=> $Z^2 = 729$

=> Z = √729

=> Z = 27

Therefore The correct answer is 27.

Additional Information

Mean Proportional

The mean proportional between two numbers a and b is √(a × b).

Fourth Proportional

If a : b = c : d, then d is the fourth proportional, calculated as d = (b × c) / a.

Continued Proportion

Three numbers a, b, c are in continued proportion if a/b = b/c, which implies $b^2 = ac$.

Q71. Answer: (d) Puducherry

The correct answer is Puducherry.

Key Points

• The Fourteenth Amendment Act of 1962 enabled the integration of the Union Territory of Puducherry (formerly known as Pondicherry) into India.

• Puducherry was a former French colony, and its integration into India was formalized through a treaty between India and France signed in 1956.

• The treaty was ratified by the French Parliament, and Puducherry officially became part of India on 16th August 1962.

• The Union Territory of Puducherry includes four regions: Pondicherry, Karaikal, Mahe, and Yanam, which are geographically separated but collectively administered.

• Puducherry's inclusion in India was a significant step towards consolidating the country's territorial integrity post-independence.

• The region is known for its unique French heritage, architecture, and culture, which continue to influence its identity.

• Puducherry is governed under the provisions of Article 239 of the Indian Constitution, which deals with the administration of Union Territories.

Additional Information

• Goa

• Goa was annexed by India from Portuguese control in 1961 through a military operation called Operation Vijay.

• It became a Union Territory initially but achieved statehood on 30th May 1987.

• Daman and Diu

• Daman and Diu were also liberated from Portuguese control in 1961, along with Goa.

• It remained a Union Territory until it was merged with Dadra and Nagar Haveli to form a new Union Territory in 2020.

• Lakshadweep

• Lakshadweep is a group of islands in the Arabian Sea, which became a Union Territory of India in 1956.

• The islands are known for their biodiversity, coral reefs, and tourism potential.

Q72. Answer: (a) JI -15

The logic followed here is:

GF 7 is related to EA -10

UG 14 is related to SB -3

Similarly,

LN 2 is related to ?

Hence, the correct answer is "Option 1".

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Q73. Answer: (b) # = EGK, % = XZD

Given:

: IKO :: TVZ : %

Option 1) # = EGK, % = YZD

For # (EGK) to IKO

The pattern derived from EGK to IKO is: (+4, +4, +4).

For TVZ to % (YZD)

The pattern derived from TVZ to YZD is: (+5, +4, +4).

Since the patterns do not match, Option 1 is incorrect.

Option 2) # = EGK, % = XZD

For # (EGK) to IKO

The pattern derived from EGK to IKO is: (+4, +4, +4).

For TVZ to % (XZD)

The pattern derived from TVZ to XZD is: (+4, +4, +4).

Since the patterns for both pairs match, Option 2 is the correct answer.

Option 3) # = ELK, % = XZD

For # (ELK) to IKO

The pattern derived from ELK to IKO is: (+4, -1, +4).

For TVZ to % (XZD)

The pattern derived from TVZ to XZD is: (+4, +4, +4).

Since the patterns do not match, Option 3 is incorrect.

Option 4) # = FGK, % = XZD

For # (FGK) to IKO

The pattern derived from FGK to IKO is: (+3, +4, +4).

For TVZ to % (XZD)

The pattern derived from TVZ to XZD is: (+4, +4, +4).

Since the patterns do not match, Option 4 is incorrect.

Thus, # = EGK, % = XZD

Hence, the correct answer is "Option 2".

Q74. Answer: (b) 814

Given interchange rules:

• '+' and '−' are interchanged.

• '×' and '÷' are interchanged.

The given equation is:

117 ÷ 7 + 426 × 6 − 66 = ?

After applying the interchange rules, the equation becomes:

117 × 7 − 426 ÷ 6 + 66 = ?

Now, we solve the equation following the BODMAS rule:

= 117 × 7 − 426 ÷ 6 + 66

= 819 − 71 + 66

= 748 + 66

= 814

Hence, the correct answer is "Option 2".

Q75. Answer: (b) It defines the proportions of the slide displayed on the screen, influencing how the content is laid out an...

The Correct answer is It defines the proportions of the slide displayed on the screen, influencing how the content is laid out and how it appears on different display devices.

Key Points

• The aspect ratio refers to the proportional relationship between the width and height of a slide.

• Common aspect ratios include 16:9 (widescreen) and 4:3 (standard).

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• It ensures that the slide content is displayed correctly on different devices and screens, such as projectors, monitors, and TVs.

• The aspect ratio directly affects how the content layout appears on the screen, ensuring it doesn't stretch or distort.

• The 16:9 aspect ratio is widely used for modern widescreen displays, while 4:3 is commonly used for older monitors and projectors.

• Setting the correct aspect ratio is crucial for professional presentations, especially when using multimedia elements like videos and images.

• Choosing the right aspect ratio helps prevent issues like cropping or blank spaces around slides when displayed on incompatible screens.

Additional Information

• Option 1: It sets the default font size and style for all text boxes in the presentation.

• This option refers to the default font settings that can be adjusted separately in PowerPoint under the Master Slide or formatting options.

• Aspect ratio does not control the font size or style; it focuses on the dimensions of the slide.

• Option 3: It determines the file size of the saved presentation.

• The file size of a presentation is influenced by elements such as embedded media, images, animations, and custom fonts.

• Aspect ratio settings do not directly affect the file size.

• Option 4: It controls the number of slides that can be included in the presentation.

• The number of slides in a presentation is determined by the content of the presentation, not the aspect ratio.

• Aspect ratio settings only affect the visual layout of individual slides, not their quantity.

Q76. Answer: (b) Himachal Pradesh

The Correct answer is Himachal Pradesh.

Key Points

• Gaddi Nati is a traditional folk dance of Himachal Pradesh.

• This dance form is predominantly performed by the Gaddi tribe, which is a nomadic tribal community residing in the Kangra, Chamba, and Kullu districts of Himachal Pradesh.

• Gaddi Nati is performed during festivals, fairs, and social gatherings.

• The dance is characterized by its graceful movements, often depicting stories of mythology, daily life, and cultural traditions.

• The performers usually wear traditional attire, including embroidered woolen garments and headgear, reflecting the local culture and climate.

• It is accompanied by folk music played on instruments such as the dhol, nagara, and flute.

• In 2015, Gaddi Nati was recognized as one of the longest folk dances to be performed in a single stretch, showcasing its cultural significance.

Additional Information

• Madhya Pradesh

• Madhya Pradesh is known for its rich cultural heritage and folk dances such as Tertali, Jawara, and Matki, but it is not associated with the Gaddi Nati dance.

• Uttar Pradesh

• Uttar Pradesh is famous for its folk dances like Ras Leela and Charkula, which are rooted in the region's connection to the life of Lord Krishna.

• Andhra Pradesh

• Andhra Pradesh features traditional dances such as Kuchipudi (a classical dance form) and folk dances like Veeranatyam, but it has no relation to Gaddi Nati.

Q77. Answer: (b) 2

Given series:

(Left) & # 9 % 6 4 % © @ & 6 4 6 7 © 9 8 5 % 9 © 7 (Right)

Condition to be checked:

Symbol → Number → Symbol

& # 9 % 6 4 % © @ & 6 4 6 7 © 9 8 5 % 9 © 7

There is one such number in the above arrangement (# 9 % and % 9 ©).

Hence, the correct answer is "Option 2".

Q78. Answer: (b) 2

Given: Seven boxes, A, B, C, D, E, F and G, are kept one over the other. The lowermost box is numbered 1 and the topmost is numbered 7.

1) Only E is kept above C.

7	E
6	C
5	
4	
3	
2	
1	

2) Only four boxes are kept between C and D.

Since C is on Position 6, and four boxes are between C and D, D must be on Position 1 (Positions 5, 4, 3, 2 are between them).

7	E
6	C
5	
4	
3	
2	
1	D

3) Only two boxes are kept between F and A. G is kept immediately above B. A is not kept immediately above G.

The remaining empty positions are 5, 4, 3, 2. The pairs (F,A) and (G,B) must occupy these positions.

Let's consider the possible positions for F and A (with two boxes between them):

7	E
6	C
5	F
4	G
3	B
2	A
1	D

From the final arrangement, F is on Position 5. The boxes kept above F are C (on Position 6) and E (on Position 7).

Therefore, Two boxes are kept above F.

Hence, the correct answer is "Option 2".

Q79. Answer: (b) 3,648

Shortcut Trick

Savings percentage = 100% − 32% = 68%

68% of Income = Rs. 7,752

Monthly Expenses (32%) = (7,752 ÷ 68) × 32

=> 114 × 32 = Rs. 3,648

Therefore The correct answer is Rs. 3,648.

Alternate Method

Given:

Spending = 32% of Monthly Income

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Monthly Savings = Rs. 7,752

Formula Used:

Income = Expenses + Savings

Calculations:

=> Let Total Income be Rs. x.

=> Savings % = 100% − 32% = 68%

=> 68% of x = 7,752

=> (68 ÷ 100) × x = 7,752

=> x = (7,752 × 100) ÷ 68

=> x = 114 × 100 = Rs. 11,400 (Monthly Income)

=> Monthly Expenses = 32% of 11,400

=> Monthly Expenses = (32 ÷ 100) × 11,400

=> Monthly Expenses = 32 × 114 = Rs. 3,648

Therefore The correct answer is Rs. 3,648.

Additional Information

Percentage Base Change

When calculating values from a partial percentage, always identify the 100% base first. Value = (Given Amount ÷ Given %) × Target %.

Income-Expenditure Relation

Savings = Income − Expenditure. If expenditure increases by x% and income is constant, savings decrease by that absolute amount.

Ratio Method

Express percentages as fractions: 32% = 8/25. If Income is 25 units, Expense is 8 units and Savings is 17 units (25 − 8). 17 units = 7,752.

Q80. Answer: (c) Rs. 2,000

Shortcut Trick

Let C and T represent the cost of a chair and a table respectively.

From the second equation: 16C + 12T = 5,000 => 8C + 6T = 2,500 (Dividing by 2).

To find T: 4 × (4C + 14T = 4,000) − (16C + 12T = 5,000) => 44T = 11,000 => T = 250.

Required cost (8C + 4T) = (8C + 6T) − 2T = 2,500 − 2(250) = 2,000.

Therefore The correct answer is Rs. 2,000.

Alternate Method

Given:

Cost of 4 chairs and 14 tables = Rs. 4,000

Cost of 16 chairs and 12 tables = Rs. 5,000

Formula Used:

Elimination Method for Linear Equations: ax + by = c

Calculations:

=> Let cost of 1 chair = C and 1 table = T.

=> 4C + 14T = 4000 −−− (i)

=> 16C + 12T = 5000 −−− (ii)

=> Multiply (i) by 4: 16C + 56T = 16000 −−− (iii)

=> Subtract (ii) from (iii): (16C + 56T) − (16C + 12T) = 16000 − 5000

=> 44T = 11000 => T = 11000 ÷ 44 = 250

=> Substitute T = 250 in (i): 4C + 14(250) = 4000 => 4C + 3500 = 4000

=> 4C = 500 => C = 125

=> Cost of 8 chairs and 4 tables = 8(125) + 4(250)

=> Total Cost = 1000 + 1000 = 2000

Therefore The correct answer is Rs. 2,000.

Additional Information

Linear Equations in Two Variables

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Equations of the form ax + by + c = 0 where a, b, and c are real numbers and a, b ≠ 0.

Elimination Method

A process of solving a system of equations by adding or subtracting them to eliminate one variable.

Substitution Method

Solving for one variable in terms of the other from one equation and substituting it into the second equation.

Q81. Answer: (b) Both conclusions (I) and (II) follow.

The least possible venn diagram is given:

Conclusions:

(1) Some omnivores are reptiles - True(because, all birds are omnivores and some birds are reptiles, it implies that some omnivores are reptiles).

(1) Some reptiles are lions - True(because, all birds are omnivores and all omnivores are lions and some birds are reptiles, it implies that some reptiles are lions).

Thus, Both conclusions (I) and (II) follow.

Hence, the correct answer is "Option 2".

Q82. Answer: (b) Marseille

The Correct answer is Marseille.

Key Points

• Marseille is a significant port city located in southern France along the Mediterranean coast.

• It is the second-largest city in France after Paris and is known for its rich history, vibrant culture, and diverse population.

• The city holds strategic importance due to its position as one of the largest commercial ports in the Mediterranean region, facilitating trade and commerce.

• The inauguration of the new Indian consulate in Marseille highlights the strengthening of India-France diplomatic relations, emphasizing the importance of cultural and economic cooperation.

• This move aligns with India's efforts to enhance its presence and connectivity in Europe by establishing consulates in key cities.

• Marseille's multicultural environment and economic significance make it an ideal location for an Indian consulate, fostering bilateral trade, tourism, and cultural exchanges.

• The event reflects the commitment of Prime Minister Narendra Modi and President Emmanuel Macron to deepen ties between India and France.

Additional Information

• Baku

• Baku is the capital city of Azerbaijan, located along the Caspian Sea.

• It is known for its modern architecture, historical landmarks, and energy sector.

• Baku is a major hub for oil and gas production, contributing to Azerbaijan's economy.

• Lyon

• Lyon is a city in central France known for its gastronomy and historical heritage.

• The city is recognized as a UNESCO World Heritage Site due to its well-preserved architecture and cultural importance.

• Lyon is also a prominent center for banking, chemical, and pharmaceutical industries.

• Toulouse

• Toulouse is located in southern France and is known as the aerospace capital of Europe.

• The city hosts major aerospace companies like Airbus, making it a hub for innovation and technology.

• Toulouse also has a rich history and is famous for its unique pink terracotta architecture.

Q83. Answer: (c) Two

Given: A, B, C, D, E, F, and G are sitting around a circular table facing the centre.

A sits to the immediate left of G. D sits to the immediate left of B.

B sits second to the left of F. E sits third to the left of G.

Thus, Only two people sit between C and F when counted from the left of C.

Hence, the correct answer is "Option 3".

Q84. Answer: (c) 61

Shortcut Trick

Let the HCF be H.

The numbers are 3H, 2H, and 13H.

LCM of (3, 2, 13) × H = 4758

78 × H = 4758

H = 4758 ÷ 78 = 61

Therefore The correct answer is 61.

Alternate Method

Given:

Ratio of numbers = 3 : 2 : 13

LCM of numbers = 4758

Let the Highest Common Factor (HCF) be x.

=> The numbers are 3x, 2x, and 13x.

=> Since 3, 2, and 13 are prime numbers relative to each other (co-prime), their LCM is their product multiplied by the HCF.

=> LCM = 3 × 2 × 13 × x

=> 4758 = 78x

=> x = 4758 ÷ 78

=> x = 61

Therefore The correct answer is 61.

Additional Information

LCM and HCF Relationship

For two numbers a and b, Product of numbers = HCF × LCM. For more than two numbers, this direct product rule does not apply simply.

Ratio and HCF

If the ratio of numbers is a:b:c and their HCF is H, the numbers are aH, bH, and cH. Their LCM is H × LCM(a, b, c).

Co-prime Numbers

If numbers are co-prime, their HCF is 1 and their LCM is simply the product of the numbers.

Q85. Answer: (b) 42

Shortcut Trick

Total Work = LCM(13, 52) = 52 units.

Efficiency of A = 4 units/day, Efficiency of B = 1 unit/day.

Work done in 2 days = (4 + 1) × 2 = 10 units.

Remaining work = 52 − 10 = 42 units.

Time taken by B for remaining work = 42 ÷ 1 = 42 days.

Therefore The correct answer is 42 days.

Alternate Method

Given: Time taken by A = 13 days, Time taken by B = 52 days.

Person	Days	Total Work	Efficiency
A	13	52	4
B	52	1	

=> Total efficiency of (A + B) = 4 + 1 = 5 units/day.

=> Work completed in 2 days = 5 × 2 = 10 units.

=> Remaining work = 52 − 10 = 42 units.

=> Time taken by B to complete remaining work = Remaining Work ÷ Efficiency of B

=> Time = 42 ÷ 1 = 42 days.

Therefore The correct answer is 42 days.

Additional Information

Work and Efficiency

Efficiency is inversely proportional to the time taken to complete a task. Total Work = Efficiency × Time.

Pipes and Cisterns

This concept is similar to time and work where filling a tank is positive work and emptying it (leakage) is negative work.

Work and Wages

Wages are always distributed in the ratio of the total work done by each individual or their efficiencies if they work for the same duration.

Q86. Answer: (d) ZGD

The given series is: RCX, TDS, VEN, XFI, ?

The logic followed here is:

Thus, the missing letter in the series is ZGD.

Hence, the correct answer is "Option 4".

Q87. Answer: (b) 3

The logic followed here is:

The code for "N" is 3.

Hence, the correct answer is "Option 2".

Q88. Answer: (b) 8004

The solution is in Hindi. Read it online.

Q89. Answer: (d) -11

Shortcut Trick

Factorize the first equation $6x^2 - 7x - 20 = 0$ to find its roots.

The roots are $x = 5/2$ and $x = -4/3$ by splitting the middle term (−15, 8).

Substitute $x = 5/2$ into the second equation $6x^2 + bx - 10 = 0$.

$6(5/2)^2 + b(5/2) - 10 = 0 \Rightarrow 37.5 + 2.5b - 10 = 0 \Rightarrow 2.5b = -27.5 \Rightarrow b = -11$.

Therefore The correct answer is -11.

Alternate Method

Given:

Quadratic equations $6x^2 - 7x - 20 = 0$ and $6x^2 + bx - 10 = 0$ have one common root.

Formula Used:

For a quadratic equation $ax^2 + bx + c = 0$, roots can be found by factorization.

Calculations:

First, solving $6x^2 - 7x - 20 = 0$:

$\Rightarrow 6x^2 - 15x + 8x - 20 = 0$

$\Rightarrow 3x(2x - 5) + 4(2x - 5) = 0$

$\Rightarrow (3x + 4)(2x - 5) = 0$

$\Rightarrow x = 5/2$ or $x = -4/3$

Since the equations have one root in common, we test these values in the second equation $6x^2 + bx - 10 = 0$.

Case 1: Let the common root be $x = 5/2$.

$\Rightarrow 6(5/2)^2 + b(5/2) - 10 = 0$

$\Rightarrow 6 \times (25/4) + 2.5b - 10 = 0$

$\Rightarrow 1.5 \times 25 + 2.5b - 10 = 0$

$\Rightarrow 37.5 + 2.5b - 10 = 0$

$\Rightarrow 27.5 + 2.5b = 0$

$\Rightarrow 2.5b = -27.5$

$\Rightarrow b = -11$

Case 2: Let the common root be $x = -4/3$.

$\Rightarrow 6(-4/3)^2 + b(-4/3) - 10 = 0 \Rightarrow 6(16/9) - 4b/3 - 10 = 0$

$\Rightarrow 32/3 - 4b/3 - 10 = 0 \Rightarrow 2 - 4b = 0 \Rightarrow b = 0.5$ (Not in options).

Therefore The correct answer is -11.

Additional Information

Condition for One Common Root

For equations $a1x^2 + b1x + c1 = 0$ and $a2x^2 + b2x + c2 = 0$, if α is the common root, then $(a1c2 - a2c1)^2 = (b1c2 - b2c1)(a1b2 - a2b1)$.

Sum and Product of Roots

For any quadratic equation $ax^2 + bx + c = 0$, the sum of roots is $-b/a$ and the product of roots is c/a.

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Discriminant and Nature of Roots

The nature of roots is determined by $D = b^2 - 4ac$. If $D \geq 0$, roots are real; if $D < 0$, roots are imaginary.

Q90. Answer: (d) NH4^+ and NH3

The Correct answer is NH4^+ and NH3.

Key Points

• An acid-base conjugate pair consists of two chemical species that differ by a single proton (H^+).

• NH4^+ (ammonium ion) acts as an acid because it can donate a proton (H^+).

• NH3 (ammonia) acts as a base because it can accept a proton.

• When NH4^+ loses a proton, it becomes NH3, and when NH3 gains a proton, it becomes NH4^+.

• This reversible exchange of a proton makes them an ideal acid-base conjugate pair.

• Such pairs are critical in understanding the behavior of acids and bases in chemical reactions, particularly in the context of the Brønsted-Lowry theory.

Additional Information

• H^+ and O²^-

• This is not an acid-base conjugate pair because H^+ is a proton, and O²^- is an oxide ion. They do not differ by a single proton.

• However, oxide ions (O²^-) can act as a strong base and react with protons (H^+) to form water.

• H2O and H2O2

• H2O (water) and H2O2 (hydrogen peroxide) are not an acid-base conjugate pair because they differ by more than one atom or structure rather than by a single proton.

• H2O2 is a strong oxidizing agent and has different chemical properties compared to H2O.

• HCl and Cl2

• HCl (hydrogen chloride) is a strong acid, but Cl2 (chlorine gas) is a diatomic molecule and does not act as a base in this context.

• These two species are not related by the gain or loss of a single proton.

• HCl is commonly used in various industrial and laboratory applications, including pH adjustment and chemical synthesis.

Q91. Answer: (d) 4

Shortcut Trick

For a tangent and a secant drawn from an external point to a circle, the square of the tangent length is equal to the product of the external secant segment and the total secant length.

$TQ^2 = TP \times TX$

$6^2 = y \times (y + 5)$

$36 = y^2 + 5y$

By inspection, if $y = 4$, then $4 \times (4 + 5) = 4 \times 9 = 36$.

Therefore The correct answer is 4 cm.

Alternate Method

Given:

Length of tangent TQ = 6 cm

External part of secant TP = y cm

Internal part of secant PX = 5 cm

Formula Used:

According to the Tangent-Secant Theorem, if a tangent segment and a secant segment are drawn to a circle from an exterior point, then the square of the measure of the tangent segment is equal to the product of the measures of the secant segment and its external secant segment.

$TQ^2 = TP \times TX$

T

Q

P

X

O

6 cm

Q92. Answer: (b) 65

Shortcut Trick

For numbers in proportion, the product of extremes equals the product of means.

Ratio of first two terms = 12 : 60 = 1 : 5.

To maintain proportion, 13 : y must also be 1 : 5.

=> y = 13 × 5 = 65.

Therefore The correct answer is 65.

Alternate Method

Given: Numbers 12, 60, 13, and y are in proportion.

Formula Used: If a, b, c, d are in proportion, then a/b = c/d.

=> 12 / 60 = 13 / y

=> 1 / 5 = 13 / y

=> y = 13 × 5

=> y = 65

Therefore The correct answer is 65.

Additional Information

Mean Proportional

The mean proportional between two numbers a and b is given by √(a × b).

Third Proportional

If a, b, and c are in continued proportion, then c is the third proportional and $c = b^2 / a$.

Fourth Proportional

If a, b, c, and d are in proportion, then d is the fourth proportional where d = (b × c) / a.

Q93. Answer: (b) 3

Given:

2 is added to each odd digit and 1 is subtracted from each even digit in the number 5634812.

Given	5	6	3	4	8	1	2
Operation	+2	-1	+2	-1	-1	+2	-1
New number	7	5	5	3	7	3	1

The new number formed is 7553731.

The digits 7, 5, and 3 appear more than once.

Thus, three digits appear more than once.

Hence, the correct answer is "Option 2".

Q94. Answer: (c) 45 km towards the east

Given:

Fenil starts from Point Y and drives 19 km towards the west.

He then takes a left turn, drives 49 km, turns left and drives 12 km.

He then takes a left turn and drives 28 km.

He takes a left turn and drives 38 km.

He then turns right and drives 21 km to stop at Point Z.

Thus, he should drive 45 km towards the east in order to reach Point Y again.

Hence, the correct answer is "Option 3".

Q95. Answer: (a) Mixed farming

The Correct answer is Mixed farming.

Key Points

• Mixed farming refers to a type of farming system where both crop cultivation and livestock rearing are practiced simultaneously.

• This farming approach ensures diversification of agricultural activities, providing multiple sources of income for farmers.

• It helps in effective utilization of farm resources, as livestock waste can be used as manure for crops, and crop residues can serve as feed for livestock.

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• Farmers practicing mixed farming benefit from risk reduction, as losses in one activity (e.g., crop failure) can be offset by gains in another (e.g., livestock).

• This system is most commonly practiced in regions where both agriculture and animal husbandry are integral to the local economy.

• It contributes to sustainable farming, as it enhances soil fertility, reduces dependence on chemical fertilizers, and promotes biodiversity.

• Examples of livestock raised in mixed farming include cattle, sheep, goats, poultry, and pigs, while crops can range from grains, vegetables, and fruits to cash crops.

• Mixed farming is prevalent in countries like India, the United States, and European nations where agricultural practices are diverse.

Additional Information

• Terrace agriculture

• Terrace farming is a method of cultivation practiced on hilly or mountainous terrains, where the land is carved into step-like structures.

• This technique helps in preventing soil erosion, conserving water, and making slopes suitable for farming.

• It is commonly practiced in regions like the Himalayas, Andes, and Southeast Asia.

• Crops like rice, maize, and tea are often grown using this method.

• Plantation farming

• Plantation farming involves cultivating a single crop over a large area for commercial purposes.

• Common crops include tea, coffee, rubber, sugarcane, and cotton.

• This type of farming is prominent in tropical and subtropical regions, such as India, Sri Lanka, and Malaysia.

• It relies heavily on labor-intensive practices and is often linked with export-oriented production.

• Subsistence farming

• Subsistence farming is characterized by farmers growing crops and raising livestock primarily to meet their family's needs, rather than for commercial sale.

• This practice is common in developing countries, where small landholdings are used for mixed cropping.

• Crops such as millets, maize, and vegetables are typically grown in subsistence farming.

• It ensures food security but often lacks surplus production for economic growth.

Q96. Answer: (d) 22

Shortcut Trick

Since Distance is constant, Speed is inversely proportional to Time (S prop. to 1/T).

Time ratio (Initial : New) = 20 : 15 = 4 : 3

Speed ratio (Initial : New) = 3 : 4

Given initial speed 3 units = 66 km/hr → 1 unit = 22 km/hr.

Speed increase = New − Initial = 4 − 3 = 1 unit = 22 km/hr.

Therefore The correct answer is 22 km/hr.

Alternate Method

Given:

Initial Speed (S1) = 66 km/hr, Initial Time (T1) = 20 hours, New Time (T2) = 15 hours.

Formula Used:

Distance (D) = Speed × Time

Calculations:

=> Distance = S1 × T1

=> Distance = 66 × 20 = 1320 km

=> Required New Speed (S2) = Distance ÷ T2

=> S2 = 1320 ÷ 15 = 88 km/hr

=> Increase in speed = S2 − S1

=> Increase = 88 − 66 = 22 km/hr

Therefore The correct answer is 22 km/hr.

Additional Information

Inverse Variation in Speed and Time

When the distance to be covered is constant, the ratio of speeds is the reciprocal of the ratio of time taken: S1/S2 = T2/T1.

Average Speed Formula

For a round trip or same distance covered at two different speeds x and y, Average Speed = 2xy ÷ (x + y).

Unit Conversion

To convert km/hr to m/s, multiply by 5/18. To convert m/s to km/hr, multiply by 18/5.

Q97. Answer: (a) 7/12

Shortcut Trick

Given sin A = 3/4 (Perpendicular/Hypotenuse)

Base = $\sqrt{(4^2 - 3^2)} = \sqrt{(16 - 9)} = \sqrt{7}$

cos A = Base/Hypotenuse = $\sqrt{7}/4$

cot A = Base/Perpendicular = $\sqrt{7}/3$

cos A × cot A = $(\sqrt{7}/4) \times (\sqrt{7}/3) = 7/12$

Therefore The correct answer is 7/12.

Alternate Method

Given: sin A = 3/4

Formula Used: sin A = P/H, cos A = B/H, cot A = B/P, $B = \sqrt{(H^2 - P^2)}$

=> P = 3, H = 4

=> $B = \sqrt{(4^2 - 3^2)} = \sqrt{(16 - 9)} = \sqrt{7}$

=> cos A = B/H = $\sqrt{7}/4$

=> cot A = B/P = $\sqrt{7}/3$

=> Product = cos A × cot A = $(\sqrt{7}/4) \times (\sqrt{7}/3)$

=> Product = 7/12

Therefore The correct answer is 7/12.

Additional Information

Trigonometric Identities

Fundamental identity: $\sin^2A + \cos^2A = 1$. Therefore, $\cos A = \sqrt{(1 - \sin^2A)}$.

Pythagorean Triplet

For any right-angled triangle, $(\text{Perpendicular})^2 + (\text{Base})^2 = (\text{Hypotenuse})^2$.

Ratio Relation

cot A can also be expressed as cos A / sin A. Thus, cos A × cot A = $\cos^2A$ / sin A.

Q98. Answer: (a) 40,000

Shortcut Trick

Let the cost of production be x.

Retail price = x × (110 ÷ 100) × (116 ÷ 100) × (125 ÷ 100) = 63,800.

x × (11 ÷ 10) × (29 ÷ 25) × (5 ÷ 4) = 63,800.

x × (1595 ÷ 1000) = 63,800.

x = (63,800 × 1,000) ÷ 1,595 = 40,000.

Therefore The correct answer is Rs. 40,000.

Alternate Method

Given → Manufacturer Gain = 10%, Wholesaler Gain = 16%, Retailer Gain = 25%, Final Retail Price = Rs. 63,800.

Formulas: SP = CP × (100 + P%) ÷ 100 | Successive CP Calculation.

=> Price before Retailer = 63,800 × (100 ÷ 125) = 63,800 × (4 ÷ 5) = Rs. 51,040.

=> Price before Wholesaler = 51,040 × (100 ÷ 116) = Rs. 44,000.

=> Price before Manufacturer (Production Cost) = 44,000 × (100 ÷ 110) = Rs. 40,000.

Therefore The correct answer is Rs. 40,000.

Additional Information

Chain of Profit

When a product passes through multiple hands, the Selling Price of one becomes the Cost Price for the next. The final price is calculated using successive percentage increases.

Successive Percentage Formula

Net Increase = a + b + (a × b ÷ 100). This can be extended to three or more stages to find the overall markup from production to customer.

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Q99. Answer: (a) TRK : RQI

Logic followed here is

Pair 1: HKO : FJM

Pair 2: DPY : BOW

Option 1: TRK : RQI

This pair follows the correct (-2, -1, -2) pattern. This is the correct answer.

Option 2: WGO : SCJ

This pair follows a pattern of (-4, -4, -5), which does not match the required logic.

Option 3: BPS : AKI

This pair follows a pattern of (-1, -5, -10), which does not match the required logic.

Option 4: BZI : WVD

This pair follows a pattern of (-5, -4, -5), which does not match the required logic.

Hence, the correct answer is "Option 1".

Q100. Answer: (a) Rajasthan, Madhya Pradesh, Maharashtra

The Correct answer is Rajasthan, Madhya Pradesh, Maharashtra.

Key Points

• The CITI-CDRA project, as of March 2025, is implemented in the Indian states of Rajasthan, Madhya Pradesh, and Maharashtra.

• This project primarily focuses on the development of sustainable textile and apparel manufacturing practices.

• It aims to enhance the competitiveness of the Indian textile industry while addressing environmental and social challenges.

• Rajasthan, Madhya Pradesh, and Maharashtra are key states for the textile industry due to their rich resources, skilled labor, and infrastructure.

• Rajasthan is known for its production of cotton, wool, and silk textiles, with major hubs like Jaipur and Jodhpur.

• Madhya Pradesh is renowned for its handloom and traditional textile practices, such as Chanderi and Maheshwari fabrics.

• Maharashtra holds a significant position in the textile sector, particularly for cotton production and processing, with hubs like Mumbai and Nagpur.

• The CITI-CDRA project in these states is aligned with India's goal of achieving sustainable economic growth through the textile sector.

Additional Information

• Gujarat, Haryana, Punjab

• Gujarat is known as the, especially for its production of cotton and denim.

• Haryana is prominent for its hosiery and woolen textiles production, particularly in Panipat.

• Punjab is recognized for its textile exports and woolen industry, with Ludhiana being a major textile center.

• Tamil Nadu, Karnataka, Kerala

• Tamil Nadu is a major player in the textile industry, especially in spinning mills and garment exports.

• Karnataka is known for its silk production, particularly in Mysuru.

• Kerala has a thriving handloom sector, producing traditional fabrics like Kasavu sarees.

• Odisha, West Bengal, Assam

• Odisha is recognized for its handloom sector and traditional Ikat weaving.

• West Bengal is known for its jute production and traditional textile practices like Baluchari and Kantha embroidery.

• Assam is famous for its Muga silk and other unique handwoven textiles.

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