RRB NTPC Graduate Level CBT-I Official Paper (Held On: 10 Jun, 2025 Shift 2) (Previous Year Paper)

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

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Scan the QR code or click the link to open it.

Q1. What was the poverty rate in India in 2019-21, according to the India National Multidimensional Poverty Index, 2023?

(a) 14.96%
(b) 24.58%
(c) 22.67%
(d) 16.23%

Q2. Which city hosted the QS Higher Ed Summit: Middle East in April 2025?

(a) Dubai, UAE
(b) Riyadh, Saudi Arabia
(c) Kuwait City, Kuwait
(d) Doha, Qatar

Q3. Two pipes can fill a cistern, individually, in 98 min and 28 min, respectively. There is a pipe located at the bottom of the cistern to empty it. If all the three pipes are opened simultaneously, then the empty cistern gets filled in 42 min. How long will the pipe at the bottom of the cistern take to empty the completely filled cistern if no other pipe is then open?

(a) 606/13 min
(b) 588/13 min
(c) 577/13 min
(d) 583/13 min

Q4. This question is based on the five, three-digit numbers given below

(Left) 611 733 279 265 370 (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) 6
(b) 4
(c) 8
(d) 5

Q5. Gopal gets a 2% increase in his sale amount in the first year and a 20% increase in the second year, and with that his present sale is Rs. 1,83,600. What was his sale (in Rs.) two years ago?

(a) 1,30,000
(b) 1,50,000
(c) 1,53,000
(d) 1,80,000

Q6. The equivalent fraction of 2.777... is:

(a) 28/11
(b) 25/9
(c) 21/2

(d) 29/3

Q7. If 2 is added to each odd digit and 1 is subtracted from each even digit in the number 7481652, what will be the difference between the first digit from the left and the first digit from the right in the new number thus formed?

(a) 4
(b) 2
(c) 6
(d) 8

Q8. The simplified value of 118 - 5 × (10 + 20) + 55 is:

(a) 33
(b) 17
(c) 20
(d) 23

Q9. In the context of India's population distribution, the term physiological density refers to population per _____.

(a) hospital bed
(b) doctor
(c) unit of arable land
(d) household

Q10. Which tree is commonly found throughout the plains of the Thar Desert?

(a) Khejri
(b) Teak
(c) Neem
(d) Sal

Q11. Standard base pairing in DNA occurs due to which type of bonding?

(a) Ionic bonding
(b) Van Der Waals interactions
(c) Covalent bonding
(d) Hydrogen bonding

Q12. In March 2025, who became the first Indian to receive the Ramsar Award for 'Wetland Wise Use'?

(a) Medha Patkar
(b) Jayshree Vencatesan
(c) Sunita Narain
(d) Vandana Shiva

Q13. This question is based on the five, three-digit numbers given below.

(Left) 388 739 783 483 785 (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 first digit of the highest number is subtracted from the third digit of the lowest number?

(a) 0
(b) 4
(c) 2
(d) 1

Q14. In a certain code language, 'BORN' is coded as '2468' and 'NEST' is coded as '1327'. What is the code for 'N' in the given code language?

(a) 1
(b) 8
(c) 2

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(d) 7

Q15. Which tier of the Panchayati Raj system in India is involved in governing the entire district?

(a) Village Panchayat
(b) Gram Sabha
(c) Block Samiti
(d) Zila Parishad

Q16. What will come in the place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

173 ÷ 3 − 135 × 5 + 17 = ?

(a) 528
(b) 527
(c) 529
(d) 530

Q17. Which tab in MS Word 365 contains options to change page margins, orientation and size?

(a) Layout
(b) Review
(c) Home
(d) Insert

Q18. P is any point inside the rectangle ABCD. If PA = 69 cm, PB = 27 cm and PC = 38 cm, then the length of PD (in cm) is:

(a) 74
(b) 72
(c) 70
(d) 78

Q19. According to the 6^(th) Annual Employment-Unemployment Survey conducted by the Labour Bureau, what was the employment rate for women with vocational training?

(a) 36.2%
(b) 52.6%
(c) 41.1%
(d) 46.3%

Q20. A compound has an empirical formula CH2 and a molar mass of 56 g/mol. Its molecular formula is:

(a) CH2
(b) C3H6
(c) C2H4
(d) C4H8

Q21. 5 is related to 35 following a certain logic. Following the same logic, 2 is related to 14. To which of the following is 9 related, following the same logic?

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

(a) 63
(b) 67
(c) 65
(d) 61

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Q22. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

FCA HEC JGE LIG ?

(a) NLI
(b) NKI
(c) NLJ
(d) NKJ

Q23. Select the triad that follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

FB-ID-KM

JF-MH-OQ

(a) MI-PK-RU
(b) NI-PK-RU
(c) NI-PL-RU
(d) MI-PK-RT

Q24. Which of the following companies built Fort St George in Chennai in the 1640s and later established the Madras Presidency in 1684?

(a) Genoese East India Company
(b) British East India Company
(c) Portuguese East India Company
(d) Spanish East India Company

Q25. Who among the following was an old zamindar from Bihar who joined the rebel sepoys during the Revolt of 1857 and battled with the British for many months?

(a) Kunwar Singh
(b) Bakht Khan
(c) Tantia Tope
(d) Ahmadullah Shah

Q26. O, P, Q, R, S, T and X are sitting around a circular table facing the centre of the table. Only one person sits between Q and X when counted from the left of X. P sits third to the right of R. O sits third to the left of T. P sits to the immediate right of O. S is not an immediate neighbour of O. How many people sit between S and X when counted from the right of S?

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

Q27. Which region is NOT part of the outer boundary of the Peninsular Plateau?

(a) Rajmahal Hills
(b) Himalayas
(c) Delhi Ridge
(d) Gir Range

Q28. In December 2024, which nationwide movement was launched to promote cycling as a sustainable and inclusive fitness activity?

(a) Cycle for Bharat Campaign
(b) Ride for Health India
(c) Fit India Pedal Mission
(d) Fit India Sundays on Cycle

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Q29. Which body primarily exercises the powers delegated through Article 243W of the Indian Constitution?

(a) Municipal Corporations
(b) Parliament of India
(c) Panchayati Raj Institutions
(d) State Legislature

Q30. Each of J, K, L, M, N, O and P has an exam on a different day of a week starting from Monday and ending on Sunday of the same week. Only two people have exams before P. Only one person has an exam after L. Only three people have exams between P and J. Only one person has an exam between K and L. O has an exam immediately after M. How many people have exams between M and N?

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

Q31. 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) KI−FD
(b) BZ−WU
(c) YW−TR
(d) MK−GH

Q32. If sin A = 3/4, then calculate (2 cos A)/√7.

(a) √7/2
(b) 1/4
(c) 1/2
(d) √7/4

Q33. A group of numbers and symbols is coded using letter codes as per the codes given below and the conditions that follow. Study the given codes and conditions and answer the question that follows.

Note: If none of the conditions apply, then codes for the respective number/symbol are to be followed directly as given in the table.

Letter	L	M	E	P	A	U	X	R
Code	7	$	@	9	2	%	6	4

Conditions:

1. If the 1^(st) letter is a vowel and the last letter is a consonant, their codes are to be interchanged.
2. If the 2^(nd) letter is a vowel and the last letter is a consonant, both are to be coded as ‘W’.
3. If the 3^(rd) and 4^(th) letters are consonants, both are to be coded as the code for the 3^(rd) letter.
4. If the 1^(st) and 2^(nd) letters are vowels, then both are to be coded as ‘Q’.

What will be the code for the following group?

APUXR

(a) 2 9 % 6 4
(b) 4 9 % 6 2
(c) 2 9 % 6 2
(d) Q 9 % 6 Q

Q34. Which of the following statements about the National Mission on Natural Farming (NMNF), launched in 2024, is/are correct?

1. The total approved outlay of NMNF till 2025-26 is Rs. 1,000 crore.
2. The mission supports the establishment of Bio-input Resource Centres for providing Natural Farming inputs

(a) Only 1
(b) Neither 1 nor 2

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(c) Only 2
(d) Both 1 and 2

Q35. 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) GO-KF
(b) BJ-FZ
(c) TB-XR
(d) HP-LF

Q36. What should come in place of the question mark (?) in the given series?

502 500 496 490 482 ?

(a) 469
(b) 471
(c) 468
(d) 472

Q37. Which of the following letter-number-clusters will replace the question mark (?) in the given series to make it logically complete?

CJL 11, DKM 15, ELN 19, FMO 23, ?

(a) QNO 27
(b) GNP 27
(c) TXU 26
(d) TUY 26

Q38. The median of the observations 49, 91, 24, 46, 90, 20, 21, 14, 66, 32 and 92 is:

(a) 49
(b) 32
(c) 24
(d) 46

Q39. What will the amount after 1 year be, if Rs. 2,400 is invested at 20% compound interest per annum, compounded half-yearly?

(a) Rs. 2,460
(b) Rs. 3,071
(c) Rs. 2,950
(d) Rs. 2,904

Q40. Three persons X, Y, and Z started a business with their shares in the ratio 13 : 20 : 15. After 7 months, Y withdrew his 33% share, while Z withdrew his 24% share 5 months prior to the completion of the year. If the total profit at the end of year is Rs. 16,100, find the share of Z (in Rs.) in the profit.

(a) 4,888
(b) 5,063
(c) 4,968
(d) 5,250

Q41. 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 cars are old.

Some old are new.

Some new are red.

Conclusions:

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(I) All old are cars.

(II) Some new are old.

(a) Only conclusion (I) follows.
(b) Only conclusion (II) follows.
(c) Both conclusions (I) and (II) follow.
(d) Neither conclusion (I) nor (II) follows

Q42. A person who spends 33% of his monthly income is able to save Rs. 6,298 per month. His monthly expenses (in Rs.) are:

(a) 3,102
(b) 3,024
(c) 3,083
(d) 3,195

Q43. Which of the following best encapsulates the fundamental difference between the von Neumann and Harvard architectures in computer systems?

(a) The Harvard architecture allows simultaneous fetching of instructions and data, potentially improving performance, while the von Neumann architecture typically fetches them sequentially from the same memory space.
(b) The von Neumann architecture utilises separate address spaces for instructions and data, while the Harvard architecture uses a single address space.
(c) The von Neumann architecture is primarily used in modern microcontrollers, while the Harvard architecture is prevalent in general-purpose computers.
(d) The Harvard architecture employs a more complex control unit compared to the von Neumann architecture.

Q44. Find the value of $3\sqrt{((8a^2 - 4a + 1))} + 17a$, when $a = 2$

(a) 46
(b) 49
(c) 53
(d) 42

Q45. In which year was the World Trade Organization, which has promoted globalisation across nations, established?

(a) 1995
(b) 2001
(c) 2000
(d) 1991

Q46. 3 years ago from now, the age of father was 14 years more than twice his son's age. After how many years, from now, will he be twice his son's age?

(a) 11
(b) 14
(c) 12
(d) 8

Q47. Which Indian state has the largest number of tribal communities classified under Particularly Vulnerable Tribal Groups (PVTGs) as of December 2022?

(a) Madhya Pradesh
(b) Chhattisgarh
(c) Jharkhand
(d) Odisha

Q48. A man covers distances of 100 km, 408 km, and 1460 km at the speeds of 20 km/hr, x km/hr, and 20 km/hr, respectively. If his average speed for the whole journey is 20 km/hr, then what is the value of x?

(a) 22
(b) 20
(c) 15

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(d) 25

Q49. 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 :: ?

: VSQ :: OLJ : %

(a) # = UZT, % = QMG
(b) # = IQT, % = VCG
(c) = YVT, % = LIG
(d) # = YOZ, % = LOQ

Q50. Which of the following is a key reason for judicial review in India?

(a) To allow the judiciary to make laws
(b) To maintain federal balance between Centre and States
(c) To ensure the supremacy of the Parliament
(d) To protect the supremacy of the Constitution and fundamental rights

Q51. A tangent is drawn from point P to a circle with centre O. The radius of the circle is 7 cm, and the distance from point P to the centre O is 25 cm. What is the length of the tangent from point P to the point of tangency?

(a) 21 cm
(b) 27 cm
(c) 31 cm
(d) 24 cm

Q52. CSVG is related to GOZC in a certain way based on the English alphabetical order. In the same way, KKDY is related to OGHU. To which of the given options is SCLQ related, following the same logic?

(a) VZPL
(b) WZOL
(c) WYPM
(d) XYQN

Q53. Mr. I starts from Point M and drives 5 km towards the south. He then takes a right turn, drives 8 km, turns left and drives 7 km. He then takes a left turn and drives 12 km. He takes a final left turn, drives 12 km and stops at Point N. How far (shortest distance) and towards which direction should he drive in order to reach Point M again? (All turns are 90 degree turns only unless specified.)

(a) 12 km towards the north
(b) 4 km towards the west
(c) 5 km towards the south
(d) 4 km towards the east

Q54. How much of OECD sovereign debt is set to mature by 2027, according to the Global Debt Report 2025?

(a) 65%
(b) 55%
(c) 45%
(d) 50%

Q55. A group of numbers and symbols is coded using letter codes as per the codes given below and the conditions that follow. Study the given codes and conditions and answer the question that follows.

Note: If none of the conditions apply, then codes for the respective number/symbol are to be followed directly as given in the table.

Number/symbol	**2**	**@**	**9**	**5**	**$**	**&**	**3**	**%**	**#**	**7**	**•**	**4**	**8**	**6**
Code	D	B	A	M	L	E	C	Q	D	P	R	B	U	K

Conditions:

If the first element is a symbol and the last a number, the codes for these two (the first and the last elements) are to be interchanged. If the first element is an odd number and the last an even number, the first and last elements are to be coded as ©. If both second and third elements are perfect squares, the third element is to be coded as the code for the second element. What will be the code for the following group?

@ 3 5 7

(a) B C C P
(b) B C M P
(c) B M M P
(d) P C M B

Q56. What should come in place of the question mark (?) in the given series?

42 57 72 87 102 ?

(a) 121
(b) 115
(c) 117
(d) 108

Q57. By selling an article for Rs. 112, a man loses 20%. At what price (in Rs.) should he sell it to gain 50%?

(a) 220
(b) 200
(c) 230
(d) 210

Q58. What is the primary objective of the Railways (Amendment) Bill, 2024?

(a) To introduce high-speed bullet trains across India
(b) To establish a new ministry for railway operations
(c) To privatise the Indian Railways
(d) To merge the Indian Railway Board Act, 1905 into the Railways Act, 1989

Q59. In a certain code language,

'A + B' means 'A is the mother of B',
'A – B' means 'A is the brother of B',
'A × B' means 'A is the wife of B' and
'A ÷ B' means 'A is the father of B'.
Based on the above, how is M related to Q if 'M – N × O ÷ P + Q'?

(a) Father's Father
(b) Father's Brother
(c) Mother's Mother's Brother
(d) Mother's Father

Q60. Which principle of citizenship did India start following more strictly after the 2003 Amendment?

(a) Jus soli (by birth)
(b) Jus sanguinis (by blood)
(c) Dual citizenship
(d) Universal citizenship

Q61. What is the primary objective of the Shri S Ramakrishnan Centre of Excellence in Fluid and Thermal Science Research 2025, at IIT Madras?

(a) To develop advanced propulsion systems for launch vehicles
(b) To enhance India's capabilities in satellite navigation systems
(c) To tackle complex thermal challenges in space applications
(d) To establish a research hub for space-related medical research

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Q62. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) 3 € $ 1 6 8 6 6 € $ # % # * 3 8 3 1 € 6 @ 3 (Right)

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

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

Q63. One pipe can fill the tank in 8 minutes while another pipe can empty the completely filled tank in 11 minutes. If both the pipes are operated together on empty tank, how long (in minutes) will it take to fill three-fourth of the tank?

(a) 23
(b) 45
(c) 44
(d) 22

Q64. Which bank of India has been awarded the Digital Transformation Award 2025 for digital initiatives—Pravaah and Sarthi by Central Banking, London, United Kingdom?

(a) Punjab National Bank
(b) State Bank of India
(c) Reserve Bank of India
(d) Bandhan Bank

Q65. The mean and the mode of a data set are 51.5 and 61.7, respectively. Find the median of the data set, using the empirical formula.

(a) 55.4
(b) 54.9
(c) 56.1
(d) 54.3

Q66. The downstream speed is 22 km/hr and the upstream speed is 5.5 km/hr. It takes a boat a total of 8 hours to go to a place and come back. What is the total distance travelled by the boat?

(a) 366/5 km
(b) 176/5 km
(c) 352/5 km
(d) 172/6 km

Q67. Find the simple interest (in Rs.) on Rs. 1,200 at an interest rate of 3% per month in 1 month.

(a) 36
(b) 23
(c) 6
(d) 3

Q68. Which of the following was NOT a tribal revolt?

(a) Farazi Movement
(b) Kherwar Movement
(c) Tamar Revolts
(d) Santhal Revolt

Q69. Who won the 2024 Nobel Peace Prize for their significant contributions to global peace and disarmament efforts?

(a) Antonio Guterres
(b) Nihon Hidankyo
(c) Al Gore
(d) Greta Thunberg

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Q70. Two numbers are respectively 30% and 18% more than a third number. The ratio of the two numbers is:

(a) 55 : 64
(b) 65 : 59
(c) 58 : 63
(d) 73 : 74

Q71. If $x + 1/x = 4$, then the value of $x^3 + 1/(x^3)$ is :

(a) 134
(b) 52
(c) 151
(d) 30

Q72. Seven people, I, J, K, L, O, P and Q are sitting in a row, facing north. Only three people sit to the left of P. Only I sits to the right of Q. Only three people sit between Q and K. L sits at some place to the left of J but at some place to the right of O. How many people sit between O and J?

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

Q73. Rajesh ranked 17^(th) from the top and 44^(th) from the bottom in his class. How many students are there in his class?

(a) 61
(b) 62
(c) 59
(d) 60

Q74. What type of shrine is the Neeramankara Temple located in Nemam, Kerala, in India known to be?

(a) Sandhara type
(b) Sarvatobhadra type
(c) Mandapa type
(d) Nirandhara type

Q75. If the ratio of two numbers is 18 : 5 and the product of their LCM and their HCF is 360, then the sum of the reciprocals of the LCM and the HCF is:

(a) 91/180
(b) 91/204
(c) 91/193
(d) 91/185

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

87 × 3 ÷ 4 + 12 – 30 = ?

(a) 145
(b) 122
(c) 134
(d) 144

Q77. Which revolution in India is associated with the growth of the fishing industry?

(a) White Revolution
(b) Green Revolution
(c) Yellow Revolution
(d) Blue Revolution

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Q78. You have applied a specific character style to several instances of a product name throughout a lengthy MS Word document. If you need to change the font and color of all these instances, what is the most efficient method?

(a) Using the 'Find and Replace' function with formatting options
(b) Modifying the definition of the character style
(c) Manually selecting each instance and applying the new formatting
(d) Copying the formatting from one instance using the 'Format Painter' and applying it to others

Q79. Anil bought the first pen for Rs. 100 and the second pen for Rs. 160, respectively. He sells the first pen at 15% of the profit but the buyer bargains for the price, and he has to offer a 29% discount and the second pen at 58% of the profit. Find the total profit he had in this transaction (correct to two decimal places).

(a) Rs. 77.75
(b) Rs. 74.45
(c) Rs. 72.91
(d) Rs. 74.26

Q80. If ‘A’ stands for ‘÷’, ‘B’ stands for ‘×’, ‘C’ stands for ‘+’ and ‘D’ stands for ‘−’, then the resultant of which of the following would be 77?

(a) 42 D 6 A 38 B 18 C 6
(b) 42 A 6 D 38 C 18 B 6
(c) 42 C 6 B 38 A 18 D 6
(d) 42 B 6 C 38 D 18 A 6

Q81. Town A is to the south of Town B. Town C is to the east of Town B. Town D is to the west of Town C. Town E is to the north of Town D. Town A is to the south-east of Town E. What is the position of Town B with respect to Town D?

(a) West
(b) South
(c) North
(d) East

Q82. Effective Revenue Deficit was introduced in the government budgeting during which year?

(a) 2011-12
(b) 2003-04
(c) 2015-16
(d) 2008-09

Q83. If α and β are the roots of the quadratic equation $y^2 - 9y + 8 = 0$, then find the value of $\alpha + \beta - \alpha\beta$.

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

Q84. What happens if a user tries to rename a file to the same name as an existing file in the same folder?

(a) The file extension is automatically changed.
(b) Windows displays an error: "A file with this name already exists."
(c) Windows appends a number to the new filename (e.g., Document (2).txt).
(d) Windows merges the contents of both files.

Q85. Which Article of the Constitution of India states about the directive for states to make provision for public assistance in cases of unemployment?

(a) Article 39
(b) Article 42
(c) Article 41
(d) Article 40

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Q86. Which of the following best describes the 'Gutter' margin in MS Word 2019?

(a) Extra space added for document binding
(b) The blank space on all four sides of the page
(c) A margin applied only to odd-numbered pages
(d) The space at the top of the page for a header

Q87. C is the third proportional of 44 and B. If B is the sum of the first three even natural numbers, then find the value of C. (Round off your answer to two decimal places)

(a) 0.98
(b) 4.58
(c) 3.27
(d) 1.98

Q88. A cube of side 10 cm is cut into cubes of side 2 cm. Calculate the total surface area (in cm^2) of all the small cubes:

(a) 3002
(b) 3008
(c) 3000
(d) 3010

Q89. Which of the following architectures has been built in the 'Charbagh' style?

(a) Taj Mahal
(b) Gumbaj of Bijapur
(c) Quwwat-ul-Islam mosque
(d) Qutub Minar

Q90. WR 21 is related to ZS 6 in a certain way. In the same way, GV 11 is related to JW −4. To which of the given options is UE 5 related, following the same logic?

(a) FV −6
(b) NM −7
(c) VW −9
(d) XF −10

Q91. Who among the following won the gold medal in the compound mixed team event at the Archery World Cup 2025 Stage 1?

(a) Jyothi Surekha Vennam and Abhishek Verma
(b) Jyothi Surekha Vennam and Rishabh Yadav
(c) Deepika Kumari and Atanu Das
(d) Rishabh Yadav and Ankita Bhakat

Q92. The average height of 15 boys out of a class of 50 is 163 cm. If the average height of the remaining boys is 165 cm, the average height (in cm) of all the boys of the class is:

(a) 165.4
(b) 164.4
(c) 165
(d) 164

Q93. The average of three numbers is 23. If two of them are 11 and 26, the third number is:

(a) 33
(b) 32
(c) 31
(d) 34

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Q94. Which statement is correct with reference to Neptunium?

(a) . It is non-reactive element
(b) It is stable element.
(c) It was known during Mendeleev's time.
(d) It is a naturally occurring element found in pitchblende.

Q95. As of 28 March 2025, approximately how many farmer IDs have been generated under the Digital Agriculture Mission in India?

(a) 1.25 crore
(b) 4.10 crore
(c) 4.85 crore
(d) 3.50 crore

Q96. A retailer offers the following discount schemes for buyers on an article.

I. Two successive discounts of 27%.
II. A discount of 36% followed by a discount of 45%.
III. Successive discounts of 19% and 32%.
IV. A discount of 34% followed by a discount of 7%.
Which scheme will fetch the maximum selling price?

(a) II
(b) III
(c) IV
(d) I

Q97. A large number of terracotta toys were found at which site of the Indus Valley Civilization?

(a) Rakhigarhi
(b) Kalibangan
(c) Lothal
(d) Mohenjodaro

Q98. Chandragupta Maurya is said to have converted to:

(a) Buddhism
(b) Zoroastrianism
(c) Jainism
(d) Christianity

Q99. Seven boxes, A, B, C, D, E, F and G, are kept one over the other but not necessarily in the same order. Only three boxes are kept above G. Only one box is kept between F and G. Only three boxes are kept between F and B. B is kept in some place above G. E is kept immediately below B. A is kept in one of the places above D. C is not kept immediately above or below F. How many boxes are kept below A?

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

Q100. If a hemisphere of radius 3 cm is fully fitted inside a cuboid and then water is filled inside the cuboid, the amount of water (in cm^3) present in the cuboid is:

(Take $\pi = 3.14$)

(a) 49.81
(b) 55.28
(c) 57.64
(d) 51.48

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) 14.96%

The Correct answer is 14.96%.

Key Points

• The India National Multidimensional Poverty Index (MPI) 2023 was developed to measure poverty comprehensively, going beyond income-based measures.

• According to the MPI 2023, the poverty rate in India for the period 2019-21 was 0.1496, representing a significant milestone in the country's efforts to alleviate poverty.

• The index uses three broad dimensions—Health, Education, and Living Standards—each with specific indicators to evaluate multidimensional poverty.

• The Health dimension includes indicators such as nutrition, child mortality, and maternal health.

• For the Education dimension, indicators like years of schooling and school attendance are considered.

• The Living Standards dimension covers areas such as electricity access, drinking water, sanitation, housing, cooking fuel, and asset ownership.

• The reduction in poverty, as indicated by the MPI 2023, highlights India's progress in improving living conditions, particularly in rural areas.

• This report aligns with the goals of the Sustainable Development Goals (SDGs), particularly Goal 1, which aims to end poverty in all its forms everywhere.

• The methodology of the MPI was developed by the Oxford Poverty and Human Development Initiative (OPHI) and the United Nations Development Programme (UNDP).

• The poverty reduction achievements are attributed to several government schemes such as Pradhan Mantri Awas Yojana (PMAY), Ujjwala Yojana, Swachh Bharat Mission, and rural employment programs.

Additional Information

• India National Multidimensional Poverty Index

• The MPI measures poverty based on a set of deprivations that households face in their daily lives.

• The MPI framework is considered more comprehensive than traditional income-based measures of poverty.

• This index is particularly important for targeting policy interventions and addressing the multifaceted challenges of poverty.

• The MPI is also used to monitor progress toward achieving the SDGs, especially in developing nations.

• Government Schemes Contributing to Poverty Reduction

• Pradhan Mantri Awas Yojana (PMAY): Focuses on providing affordable housing to the urban and rural poor.

• Swachh Bharat Mission: Aims to improve sanitation and eliminate open defecation.

• Ujjwala Yojana: Promotes the use of cleaner cooking fuel by providing subsidized LPG connections to poor households.

• Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA): Ensures employment opportunities in rural areas to enhance livelihood security.

• Relevance of MPI for Policy

• The MPI helps governments identify specific areas of deprivation that require immediate attention.

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• It offers valuable insights into the effectiveness of policies aimed at poverty alleviation.

• The index also promotes comparative analysis between different regions and demographic groups within a country.

Q2. Answer: (c) Kuwait City, Kuwait

The Correct answer is Kuwait City, Kuwait.

Key Points

• The QS Higher Ed Summit: Middle East is an event organized by QS Quacquarelli Symonds, a global higher education consultancy.

• In April 2025, the summit was hosted in Kuwait City, Kuwait, one of the leading hubs for education and innovation in the Middle East.

• Kuwait City is the capital of Kuwait and is known for its modern architecture, robust infrastructure, and commitment to advancing educational policies.

• The summit focuses on fostering collaboration between universities, policymakers, and industry leaders to enhance higher education practices in the region.

• Kuwait City has been increasingly investing in academic infrastructure and promoting global partnerships to strengthen its position as an educational hub.

• The summit served as a platform to discuss key topics such as digital transformation, research innovation, and strategies for improving the quality of higher education.

• Participants included representatives from renowned universities, government officials, and leaders from the private sector, emphasizing the importance of collaboration in driving progress in the higher education sector.

Additional Information

• Dubai, UAE

• Dubai is known for hosting numerous international events, including educational summits and global conferences.

• It is home to several prestigious universities and institutions such as the University of Dubai and the American University in Dubai.

• Dubai has a strong focus on technology-driven education and innovation, making it a popular venue for such summits.

• Riyadh, Saudi Arabia

• Riyadh is the capital of Saudi Arabia and a rapidly growing center for higher education and research.

• It is home to prominent institutions such as King Saud University and Princess Nourah Bint Abdulrahman University.

• The country's Vision 2030 initiative has prioritized investment in education and innovation.

• Doha, Qatar

• Doha is a major educational hub in the Middle East, featuring world-class universities such as Qatar University and institutions in Education City.

• It has hosted various educational conferences and events, focusing on research excellence and global collaboration.

Q3. Answer: (b) 588/13 min

Shortcut Trick

Total Capacity (LCM of 98, 28, 42) = 588 units.

Efficiency of Pipe 1 = 588 ÷ 98 = 6 units/min.

Efficiency of Pipe 2 = 588 ÷ 28 = 21 units/min.

Combined Efficiency (All 3 pipes) = 588 ÷ 42 = 14 units/min.

Efficiency of Emptying Pipe = (6 + 21) − 14 = 13 units/min.

Time to empty = 588 ÷ 13 min.

Therefore The correct answer is 588/13 min.

Alternate Method

Given: Time taken by Inlet A = 98 min, Inlet B = 28 min, Combined (A+B−C) = 42 min.

Pipe	Time (min)	Total Capacity	Efficiency
Pipe A (+)	98	588	6
Pipe B (+)	28	21	
A + B − C	42	14	

=> Total positive efficiency (A + B) = 6 + 21 = 27 units/min

=> Net efficiency with outlet pipe = 14 units/min

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=> Efficiency of Outlet Pipe C = (A + B) − Net efficiency
=> Efficiency of Pipe C = 27 − 14 = 13 units/min
=> Time taken by Outlet Pipe C alone = Total Capacity ÷ Efficiency
=> Time = 588 ÷ 13 min
Therefore The correct answer is 588/13 min.
Additional Information
Pipes and Cisterns Convention
Inlet pipes are treated as positive work (+) and outlet/leakage pipes are treated as negative work (−).
Total Work Formula
Total Work (Capacity) = Time taken × Efficiency. For multiple pipes, Net Efficiency = ∑(Individual Efficiencies).
Unitary Method for Time
If a pipe fills in 'x' hours and another empties in 'y' hours, net work in 1 hour = (1/x − 1/y).

Q4. Answer: (d) 5

Given Numbers: 611, 733, 279, 265, 370
Let's identify the highest and lowest numbers from the given set:
• Highest number: Among 611, 733, 279, 265, 370, the highest number is 733.
• Lowest number: Among 611, 733, 279, 265, 370, the lowest number is 265.
Now, let's extract the required digits:
• The second digit of the highest number (733) is 3.
• The first digit of the lowest number (265) is 2.
Finally, we need to find the resultant if the second digit of the highest number is added to the first digit of the lowest number:
→ 3 + 2 = 5.
The resultant is 5.
Hence, the correct answer is "Option 4".

Q5. Answer: (b) 1,50,000

Shortcut Trick
Let the initial sale be 100%.
Effective Multiplier = 1.02 × 1.20 = 1.224
Initial Sale = Present Sale ÷ 1.224
Initial Sale = 1,83,600 ÷ 1.224 = 1,50,000
Therefore The correct answer is Rs. 1,50,000.
Alternate Method
Given:
Increase in 1^(st) year = 2%
Increase in 2^(nd) year = 20%
Present Sale = Rs. 1,83,600
Formula Used:
Final Value = Initial Value × (1 + R1/100) × (1 + R2/100)
Calculations:
Let the sale 2 years ago be X.
=> X × (1 + 2/100) × (1 + 20/100) = 1,83,600
=> X × (102/100) × (120/100) = 1,83,600
=> X × (51/50) × (6/5) = 1,83,600
=> X × 306 / 250 = 1,83,600
=> X = (1,83,600 × 250) / 306
=> X = 600 × 250
=> X = 1,50,000
Therefore The correct answer is Rs. 1,50,000.
Additional Information
Successive Percentage Change

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When a value changes by a% and then by b%, the net change is given by (a + b + ab/100)%.

Base Change Rule

To find the initial value from the final value after an increase of r%, use Initial = Final ÷ (1 + r/100).

Multiplication Factor

An increase of x% corresponds to a multiplying factor of (1 + x/100). For 20%, the factor is 1.2.

Q6. Answer: (b) 25/9

Given:

The repeating decimal is: 2.777...

Formula used:

Let x = 2.777... (a repeating decimal)

Multiply both sides by 10^n (where n is the number of repeating digits) to eliminate the repeating part.

Then solve for x.

Calculations:

Let x = 2.777...

Multiply by 10 (since 1 digit is repeating):

=> 10x = 27.777...

Now subtract the original equation (x = 2.777...) from this:

=> 10x - x = 27.777... - 2.777...

=> 9x = 25

=> x = 25/9

Therefore The equivalent fraction of 2.777... is (25/9), and the correct answer is option (2).

Q7. Answer: (d) 8

Given number: 7481652

Applying the Rules:

Original Digit	**7**	**4**	**8**	**1**	**6**	**5**	**2**
Type (Odd/Even)	Odd	Even	Even	Odd	Even	Odd	Even
Rule Applied	Add 2 (7 + 2)	Subtract 1 (4 - 1)	Subtract 1 (8 - 1)	Add 2 (1 + 2)	Subtract 1 (6 - 1)	Add 2 (5 + 2)	Subtract 1 (2 - 1)
New Digit	9	3	7	3	5	7	1

The new number formed after applying the rules is 9373571.

The first digit from the left in the new number is 9.

The first digit from the right in the new number is 1.

Now,

Difference = First digit from the left - First digit from the right

Difference = 9 - 1 = 8

Hence, the correct answer is "Option 4".

Q8. Answer: (d) 23

Given:

Expression: 118 - 5 × (10 + 20) + 55

Formula used:

Follow BODMAS rule: Brackets → Orders → Division → Multiplication → Addition → Subtraction

Calculation:

118 - 5 × (10 + 20) + 55

=> 118 - 5 × 30 + 55

=> 118 - 150 + 55

=> (118 + 55) - 150

=> 173 - 150

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=> 23

Therefore The correct answer is option (4).

Q9. Answer: (c) unit of arable land

The Correct answer is unit of arable land.

Key Points

• Physiological density is defined as the number of people per unit of arable land, rather than per unit of total land area.

• The term is particularly useful in understanding the relationship between a nation's population and its ability to produce sufficient food.

• In countries with high physiological density, the pressure on arable land is significant, which can lead to challenges in food security and sustainable land management.

• This metric is especially relevant for countries like India, where a large proportion of the population depends on agriculture for their livelihood.

• Arable land is land that is capable of being ploughed and used to grow crops. It excludes barren land, forests, and urban areas.

• Physiological density highlights the potential strain on agricultural resources, allowing policymakers to develop strategies for rural development, land use planning, and food production.

• This measure contrasts with arithmetic density, which calculates population per unit area of total land, and is less indicative of agricultural or food production capabilities.

Additional Information

• Hospital Bed

• The number of people per hospital bed is an indicator of a country's healthcare infrastructure and accessibility.

• It is used to measure the availability of medical resources relative to the population.

• Countries with a high population per hospital bed often face challenges in providing adequate healthcare services.

• Doctor

• The population per doctor is another healthcare-related metric, reflecting the availability of medical professionals.

• For instance, the World Health Organization (WHO) recommends a doctor-to-population ratio of 1:1000.

• This metric helps assess the quality of healthcare services in a region.

• Household

• Population per household refers to the average number of people living in a single household unit.

• This metric is used in studies related to housing, family structure, and urban planning.

• It is not directly related to agricultural or food production capabilities.

Q10. Answer: (a) Khejri

The Correct answer is Khejri.

Key Points

• The Khejri tree, also known as Prosopis cineraria, is a native species of the Thar Desert in India.

• It is commonly found across the plains and arid regions of the Thar Desert, which spans areas in Rajasthan, Gujarat, Punjab, and Haryana.

• The Khejri tree is highly adapted to arid and semi-arid climates, thriving in conditions with minimal rainfall and extreme temperatures.

• This tree plays a vital role in the ecology of the desert, as it helps in preventing soil erosion, acts as a windbreak, and supports the survival of other vegetation.

• Khejri is also culturally and economically significant. It is referred to as the "Kalpavriksha of the Desert" because of its multiple uses, including as a source of fodder, firewood, and timber.

• The tree is highly valued in Rajasthan for its pods, which are used to prepare a traditional dish called "Sangri."

• It is also associated with the Chipko Movement and Bishnoi community, which historically protected the Khejri tree for its ecological importance.

• Due to its resilience and benefits, the Khejri tree is considered a symbol of sustainability in desert ecosystems.

Additional Information

• Teak

• Teak trees are primarily found in tropical deciduous forests and are not suited for arid regions like the Thar Desert.

• They are native to countries like India, Myanmar, Thailand, and Indonesia.

• The wood of teak is highly valued for its durability, water resistance, and use in furniture and shipbuilding.

• In India, teak forests are prominent in states like Madhya Pradesh, Maharashtra, and Karnataka.

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• Neem
• The Neem tree (Azadirachta indica) is a tropical evergreen tree native to India.
• It thrives in arid and semi-arid climates but is more commonly found in plains and tropical regions.
• Neem is known for its medicinal properties and is widely used in traditional medicine, pesticides, and skincare products.
• The tree is also used for reforestation projects and as a natural air purifier.
• Sal
• Sal trees (Shorea robusta) are native to moist deciduous forests and thrive in areas with a high amount of rainfall.
• They are found in the Himalayan foothills and regions like Jharkhand, Odisha, West Bengal, and Madhya Pradesh.
• The wood of Sal is known for its strength and durability, making it popular in construction and furniture-making.
• Sal does not grow in arid regions like the Thar Desert.

Q11. Answer: (d) Hydrogen bonding

The Correct answer is Hydrogen bonding.

Key Points

• In DNA, the two complementary strands are held together by hydrogen bonds between the nitrogenous bases.
• Adenine (A) always pairs with Thymine (T) through two hydrogen bonds, while Guanine (G) pairs with Cytosine (C) using three hydrogen bonds.
• This specific pairing is known as complementary base pairing, which is essential for the accurate replication of genetic material.
• Hydrogen bonds are weak, non-covalent interactions that allow the double helix structure of DNA to unzip during replication and transcription.
• Although individually weak, the cumulative effect of a large number of hydrogen bonds provides structural stability to the DNA double helix.
• The double helix model of DNA was first proposed by James Watson and Francis Crick, and their discovery highlighted the role of hydrogen bonding in maintaining DNA's structural integrity.
• These bonds ensure that mutations are minimized by enabling specificity in base pairing during DNA replication.
• Hydrogen bonding occurs due to the difference in electronegativity between the hydrogen atom and the electronegative atoms (e.g., oxygen or nitrogen) involved in the base pairs.

Additional Information

• Ionic bonding
• Ionic bonds occur due to the electrostatic attraction between oppositely charged ions, which is not relevant in the context of DNA base pairing.
• Examples of ionic bonding are typically found in compounds like sodium chloride (NaCl).
• In DNA, ionic interactions are involved in the stabilization of the double helix through interactions between the negatively charged phosphate backbone and positively charged ions, but they are not responsible for base pairing.
• Van Der Waals interactions
• Van Der Waals forces are weak, short-range forces that arise from fluctuating dipoles, contributing to DNA's overall structural stability.
• These interactions are present between stacked bases in the DNA double helix, known as base stacking interactions, but they do not play a direct role in base pairing.
• Covalent bonding
• Covalent bonds involve the sharing of electron pairs between atoms, and they are responsible for the formation of the sugar-phosphate backbone in DNA.
• These bonds are much stronger than hydrogen bonds and provide the primary structure of DNA, but they do not mediate base pairing.

Q12. Answer: (b) Jayshree Vencatesan

The correct answer is Jayshree Vencatesan.

Key Points

• Jayshree Vencatesan became the first Indian to receive the prestigious Ramsar Award for 'Wetland Wise Use' in March 2025.
• The Ramsar Award is an international recognition given by the Ramsar Convention, which focuses on the conservation and sustainable use of wetlands globally.
• She is a renowned environmentalist and wetland conservationist with extensive contributions to sustainable wetland management in India.
• Her efforts have led to increased awareness about the importance of wetlands in maintaining ecological balance and supporting biodiversity.

• Jayshree Vencatesan has worked on projects related to the protection of wetlands, such as marshlands, estuaries, and mangroves in India, ensuring their wise use for future generations.

• She actively engages with policymakers and local communities to promote wetland preservation while integrating sustainable development practices.

• The Ramsar Convention, established in 1971, aims to conserve and use wetlands sustainably, and Jayshree's work aligns with its goals.

• This recognition highlights her contributions to wetland conservation and India's growing role in global environmental sustainability.

Additional Information

• Medha Patkar

• Medha Patkar is a prominent Indian social activist known for her work in the Narmada Bachao Andolan, which focused on the displacement caused by dam construction along the Narmada River.

• While she has been a vocal advocate for environmental and human rights, her work has primarily revolved around issues related to large-scale development projects rather than wetland conservation.

• Sunita Narain

• Sunita Narain is an Indian environmentalist and director of the Centre for Science and Environment (CSE).

• She is known for her work on climate change, water management, and pollution control. Her advocacy has significantly influenced environmental policy in India.

• While her work overlaps with wetland conservation in terms of water resource management, she is not specifically recognized for efforts in wetland-wise use.

• Vandana Shiva

• Vandana Shiva is an Indian scholar and environmental activist known for her work in ecological agriculture and the protection of biodiversity.

• She has contributed significantly to the movement against genetically modified organisms (GMOs) and industrial agriculture.

• Her work is more focused on agriculture and food systems rather than the conservation of wetlands.

Q13. Answer: (d) 1

Given: (Left) 388 739 783 483 785 (Right)

The highest number is: 785

The first digit of the highest number is: 7 (785)

And,

The lowest number is: 388

The third digit of the lowest number is: 8 (388)

So, the resultant if the first digit of the highest number is subtracted from the third digit of the lowest number is:

→ 8 - 7 = 1.

The correct answer is "1".

Hence, the correct answer is "Option 4".

Q14. Answer: (c) 2

The given code language is:

Thus, 'N' is coded as '2'.

Hence, the correct answer is "Option 3".

Q15. Answer: (d) Zila Parishad

The Correct answer is Zila Parishad.

Key Points

• Zila Parishad is the apex or third tier in the Panchayati Raj system in India.

• It is responsible for governing the entire district level administration.

• The Zila Parishad acts as the coordinating body between the Gram Panchayats and the Block Samitis.

• It oversees developmental activities such as health, education, agriculture, irrigation, and rural development at the district level.

• The members of Zila Parishad are elected representatives from the constituencies in the district.

• The Chairperson of the Zila Parishad is usually elected from among the elected members.

• The Chief Executive Officer (CEO), typically a senior government official, implements the policies and programs decided by the Zila Parishad.

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• Zila Parishad plays a crucial role in the planning and execution of programs like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and other government schemes.

• It serves as the link between the state government and the lower tiers of Panchayati Raj, ensuring the smooth implementation of policies.

• Functions also include allocation and monitoring of funds received from the state and central governments.

Additional Information

• Village Panchayat

• Village Panchayat is the lowest tier in the Panchayati Raj system.

• It is responsible for governance at the village level, addressing local issues like sanitation, drinking water, and small-scale development activities.

• The Village Panchayat is headed by the Sarpanch, who is an elected leader.

• It is directly linked to the Gram Sabha, which consists of all the adult members of the village.

• Gram Sabha

• Gram Sabha refers to the general body of villagers who are eligible voters.

• It serves as the foundation of the Panchayati Raj system and is responsible for approving plans and programs proposed by the Village Panchayat.

• It provides a platform for the villagers to voice their opinions and concerns.

• Decisions taken in the Gram Sabha are binding on the Village Panchayat.

• Block Samiti

• Block Samiti, also known as Panchayat Samiti, is the second tier of the Panchayati Raj system.

• It operates at the block level, which is a subdivision of a district.

• It coordinates between the Village Panchayats and the Zila Parishad.

• Block Samiti is responsible for implementing various developmental schemes and programs within the block.

• The members of Block Samiti are elected from the constituencies within the block and include representatives from Village Panchayats.

Q16. Answer: (c) 529

Given interchange rules:

• '+' and '−' are interchanged.

• '×' and '÷' are interchanged.

The given equation is:

173 ÷ 3 − 135 × 5 + 17 = ?

Replace the operators with their corresponding new meanings:

173 × 3 + 135 ÷ 5 − 17 = ?

Now, we solve the equation following the BODMAS/PEMDAS rule (Brackets, Orders, Division/Multiplication from left to right, Addition/Subtraction from left to right):

= 173 × 3 + 135 ÷ 5 − 17

= 519 + 27 − 17

= 546 − 17

= 529

Therefore, the value of the question mark (?) is 529.

Hence, the correct answer is "Option 3".

Q17. Answer: (a) Layout

The Correct answer is Layout.

Key Points

• The Layout tab in MS Word 365 is designed to handle various aspects of the page formatting.

• It contains options to adjust the page margins, which define the space between the text and the edge of the page.

• The tab also provides tools to change the orientation of the document, allowing users to switch between portrait and landscape modes.

• Users can select the page size (e.g., A4, Letter, Legal, etc.) depending on their printing or presentation needs.

• The Page Setup group within the Layout tab also includes options for columns, line numbers, and hyphenation, which help in structuring the text layout.

• This tab is especially useful for creating documents that require professional formatting, such as reports, books, or brochures.

• It allows for customization of the entire document or specific sections, enabling flexibility in document design.

Additional Information

• Review

• The Review tab focuses on proofreading and collaboration tools.

• It includes options such as spelling and grammar check, comments, and track changes, which help in editing and reviewing documents.

• This tab also provides access to tools for comparing documents and protecting the document from unauthorized edits.

• It is commonly used for teamwork and editing purposes rather than for formatting the document.

• Home

• The Home tab is the default tab in MS Word and focuses on basic text formatting.

• It includes options for font styles, size, color, and alignment of text.

• Other features include bullets, numbering, line spacing, and styles for quick text formatting.

• This tab is essential for modifying the appearance of the text, but it does not handle page-level formatting.

• Insert

• The Insert tab is used to add content to the document, such as tables, pictures, shapes, charts, and headers/footers.

• This tab also provides access to tools for inserting hyperlinks, page numbers, and cover pages.

• While it enhances the content of a document, it does not cater to layout or page setup requirements.

Q18. Answer: (a) 74

Shortcut Trick

According to the British Flag Theorem, for any point P inside a rectangle ABCD:

$PA^2 + PC^2 = PB^2 + PD^2$

$69^2 + 38^2 = 27^2 + PD^2$

$4761 + 1444 = 729 + PD^2$

$6205 - 729 = PD^2 \Rightarrow PD^2 = 5476$

$PD = \sqrt{5476} = 74$ cm

Therefore The correct answer is 74 cm.

Alternate Method

Given: PA = 69 cm, PB = 27 cm, PC = 38 cm.

Formula Used: $PA^2 + PC^2 = PB^2 + PD^2$ (British Flag Theorem).

=>

Q19. Answer: (a) 36.2%

The Correct answer is 36.2%.

Key Points

• The 6th Annual Employment-Unemployment Survey conducted by the Labour Bureau provides insights into the employment scenario in India, including data on employment rates across various demographics.

• The employment rate of 0.362 for women with vocational training indicates that only about 36.2% of women who have undergone vocational training were employed during the survey period.

• Vocational training refers to job-specific skill development programs that prepare individuals for specific trades or professions, such as carpentry, IT, healthcare, or tailoring.

• Despite the emphasis on skill development through initiatives like Skill India Mission, the employment rate for women with vocational training remains low, highlighting the need for better job opportunities and gender-inclusive employment policies.

• The survey emphasizes the importance of vocational education as a tool for improving employment prospects, especially in sectors requiring specific skills.

• This data also reflects challenges such as gender disparity in employment opportunities and barriers faced by women in joining or remaining in the workforce.

• The survey acts as a critical benchmark for policymakers to address gaps in employment and skill utilization among women in India.

Additional Information

• Vocational Training

• Vocational training includes skill-based education, designed to prepare individuals for specific trades or professions.

• Examples of industries where vocational training is prominent include healthcare, IT, automobile, textiles, and construction.

• Vocational education in India is promoted through initiatives like the National Skill Development Mission and institutions like

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Industrial Training Institutes (ITIs).

• Challenges in vocational training include limited access for women, lack of awareness, and underutilization of skills in the job market.

• Labour Bureau Surveys

• The Labour Bureau, under the Ministry of Labour and Employment, conducts surveys to assess the employment and unemployment situation in India.

• These surveys provide critical insights into labour force participation rates, skill development, and employment trends across various demographics.

• Findings from these surveys are used for formulating policies like the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) to bridge the gap between skills and employment opportunities.

Q20. Answer: (d) C4H8

The Correct answer is C4H8.

Key Points

• The question asks us to determine the molecular formula of a compound with an empirical formula CH2 and a molar mass of 56 g/mol.

• The empirical formula represents the simplest ratio of atoms in a compound. In this case, CH2 indicates there is 1 carbon atom for every 2 hydrogen atoms.

• The molar mass of CH2 is calculated as follows:

• Carbon (C): Atomic mass = 12 g/mol.

• Hydrogen (H): Atomic mass = 1 g/mol (for 2 hydrogen atoms, total = 2 g/mol).

• Total molar mass of CH2 = 12 + 2 = 14 g/mol.

• To find the molecular formula, divide the molar mass of the compound (56 g/mol) by the molar mass of the empirical formula (14 g/mol):

• 56 ÷ 14 = 4.

• This means the molecular formula is 4 times the empirical formula.

• Multiply CH2 by 4 to get the molecular formula:

• Carbon atoms: 1 × 4 = 4.

• Hydrogen atoms: 2 × 4 = 8.

• Molecular formula = C4H8.

• Thus, the correct molecular formula of the compound is C4H8.

Additional Information

• Empirical Formula

• The empirical formula represents the simplest whole-number ratio of atoms in a compound.

• For example, CH2 means that for every 1 carbon atom, there are 2 hydrogen atoms.

• It does not provide the exact number of atoms in the molecule, which is determined by the molecular formula.

• Molecular Formula

• The molecular formula gives the actual number of atoms of each element in a molecule.

• It is a multiple of the empirical formula, determined by dividing the compound's molar mass by the empirical formula mass.

• For example, if the empirical formula is CH2 and the molar mass is 56 g/mol, the molecular formula is C4H8.

• Incorrect Options

• CH2: This is the empirical formula, not the molecular formula.

• C3H6: While this follows a similar ratio (1:2), its molar mass is 42 g/mol, which does not match the given molar mass of 56 g/mol.

• C2H4: This also follows the 1:2 ratio, but its molar mass is only 28 g/mol, which is incorrect.

Q21. Answer: (a) 63

The logic followed is that the first number is multiplied by 7 to get the second number.

For 5 : 35,

→ 5 × 7 = 35.

For 2 : 14,

→ 2 × 7 = 14.

Following the same logic for 9 : ?

→ 9 × 7 = 63.

Therefore, 9 is related to 63.

Hence, the correct answer is "Option 1".

Q22. Answer: (b) NKI

The logic followed here is:

Thus, 'NKI' will be the next in the series.

Hence, the correct answer is "Option 2".

Q23. Answer: (d) MI-PK-RT

The logic followed here is,

For, FB-ID-KM

Also for, JF-MH-OQ

Similarly, option 4 follows the same logic.

MI-PK-RT

Hence, the correct answer is "Option 4".

Q24. Answer: (b) British East India Company

The Correct answer is British East India Company.

Key Points

• The British East India Company established Fort St George in Chennai (formerly Madras) in the 1640s.

• Fort St George became the foundation of the colonial city of Madras, now known as Chennai.

• It was the first English fortress built in India and served as a trading post and administrative center for the British East India Company.

• In 1684, the British East India Company established the Madras Presidency, which became one of the major administrative divisions under British rule in India.

• The fort played a significant role in the company's expansion and administration in South India.

• The construction of Fort St George marked the beginning of British influence and colonial rule in the region, which eventually led to the consolidation of British power in India.

• The British East India Company was originally formed in 1600 as a trading company and later transformed into a major colonial power.

• Fort St George remains a historical landmark and currently houses the Tamil Nadu state legislature and other administrative buildings.

Additional Information

• Genoese East India Company

• The Genoese East India Company is not historically associated with India. Genoa, a city-state in Italy, was primarily involved in Mediterranean trade rather than colonial ventures in Asia.

• During the colonial era, Genoese traders focused on European trade routes and had limited involvement in the Indian subcontinent.

• Portuguese East India Company

• The Portuguese were among the first Europeans to establish trading posts and colonies in India, beginning with their arrival in Calicut in 1498.

• They set up major colonies in places like Goa, Daman, and Diu, but they did not build Fort St George or establish the Madras Presidency.

• The Portuguese influence in India was primarily centered in western coastal regions rather than southern India.

• Spanish East India Company

• The Spanish were primarily focused on their colonial ventures in the Americas and the Philippines, rather than India.

• Spain did not have significant involvement in establishing trading posts or presidencies in India during the colonial era.

Q25. Answer: (a) Kunwar Singh

The Correct answer is Kunwar Singh.

Key Points

• Kunwar Singh was a prominent leader of the Indian Revolt of 1857, also known as the First War of Indian Independence.

• He was an aged zamindar from the state of Jagdishpur in Bihar and belonged to the Rajput community.

• Despite being in his 80s, Kunwar Singh demonstrated remarkable bravery and leadership during the revolt.

• He led the rebel sepoys in Bihar and fought against British colonial forces for several months.

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• Kunwar Singh strategically retreated and waged a guerrilla war, which proved to be a significant challenge for the British.
• He is remembered for his resilience and his role in uniting the locals against British rule in the region.
• His efforts made him one of the most notable figures of the 1857 rebellion, earning him the title of a freedom fighter.
• Kunwar Singh is commemorated as a symbol of patriotism and resistance against colonial oppression in Indian history.

Additional Information

• Bakht Khan
• Bakht Khan was a key leader in the Revolt of 1857 and served as the Commander-in-Chief of the rebel forces in Delhi.
• He was a subedar in the British East India Company's army before joining the rebellion.
• Bakht Khan is known for his leadership in coordinating the rebel forces and establishing an administrative system in Delhi under the nominal leadership of Bahadur Shah Zafar.
• Tantia Tope
• Tantia Tope was another significant leader of the Revolt of 1857 and a close associate of Rani Lakshmibai.
• He is known for his guerrilla warfare tactics, which caused significant challenges for the British forces.
• Tantia Tope was instrumental in the rebellion in the region of Central India.
• Ahmadullah Shah
• Ahmadullah Shah, also known as the Maulavi of Faizabad, was a key leader during the 1857 revolt.
• He was a religious leader and played a significant role in mobilizing people against British rule in the Awadh region.
• He is remembered for his efforts to unite Hindus and Muslims to fight against the colonial powers.

Q26. Answer: (a) Three

Given, O, P, Q, R, S, T and X are sitting around a circular table facing the centre of the table.

P sits third to the right of R.

P sits to the immediate right of O.

O sits third to the left of T.

Only one person sits between Q and X when counted from the left of X.

S is not an immediate neighbour of O.

Three people sit between S and X when counted from the right of S.

Hence, the correct answer is "Option 1".

Q27. Answer: (b) Himalayas

The Correct answer is Himalayas.

Key Points

• The Himalayas are not part of the outer boundary of the Peninsular Plateau. The Peninsular Plateau is primarily confined to the southern part of India, while the Himalayas are located in the northern region.
• The Peninsular Plateau is a massive landmass that includes the Deccan Plateau, Malwa Plateau, and the Chota Nagpur Plateau.
• The Himalayas are young fold mountains formed due to the collision of the Indian Plate with the Eurasian Plate. They are geologically distinct from the Peninsular Plateau, which is considered one of the oldest landforms of India.
• The Peninsular Plateau is characterized by its stable geological structure, being part of the Indian Shield, whereas the Himalayas are tectonically active.
• The Himalayas act as a natural barrier between the Indian subcontinent and the rest of Asia. They are known for their high peaks, including Mount Everest, which is the highest peak in the world.
• Unlike the Peninsular Plateau, which is surrounded by rivers like the Godavari and Krishna, the Himalayas give rise to major perennial rivers such as the Ganges, Brahmaputra, and Indus.

Additional Information

• Rajmahal Hills
• The Rajmahal Hills are located in the northeastern part of the Indian subcontinent, specifically in the state of Jharkhand.
• These hills are part of the Chota Nagpur Plateau, which is a constituent of the Peninsular Plateau.
• The region is known for its rich basaltic rocks, formed due to volcanic activity during the Cretaceous period.
• Delhi Ridge
• The Delhi Ridge is the northernmost extension of the Aravalli Range.
• It is an integral part of the Peninsular Plateau and acts as a green lung for the city of Delhi.
• The ridge is significant for its ecological importance, helping maintain biodiversity and offering a natural barrier against desertification.

• Gir Range

• The Gir Range is located in the state of Gujarat, forming part of the western region of the Peninsular Plateau.

• It is home to the Gir National Park, which is the only habitat of the Asiatic lions.

• Geologically, it is composed of ancient rocks and is surrounded by the Saurashtra Plateau.

Q28. Answer: (d) Fit India Sundays on Cycle

The correct answer is Fit India Sundays on Cycle.

Key Points

• Fit India Sundays on Cycle was launched in December 2024 as part of the Fit India Movement, an initiative by the Government of India to promote healthy living and fitness among citizens.

• The primary aim of this campaign was to encourage cycling as a sustainable mode of transportation and a way to promote physical fitness.

• Cycling is widely recognized as an eco-friendly and cost-effective activity that contributes to reducing carbon emissions and improving public health.

• Fit India Sundays on Cycle encouraged communities to dedicate their Sundays to cycling activities, fostering a culture of fitness and environmental sustainability.

• The initiative also emphasized inclusivity, allowing citizens of all age groups and backgrounds to participate in cycling events and activities.

• This program was supported by various local governments, cycling clubs, and non-profit organizations, ensuring its widespread reach and accessibility.

• The campaign aligns with the United Nations Sustainable Development Goals (SDGs), particularly those related to climate action, health and well-being, and sustainable cities and communities.

Additional Information

• Cycle for Bharat Campaign

• This campaign title suggests a movement to promote cycling across India, but it is not the correct answer to the December 2024 initiative.

• While similar in its aim to encourage cycling, it does not have the specific focus on Sundays or inclusivity as emphasized by Fit India Sundays on Cycle.

• Ride for Health India

• This option highlights a campaign promoting cycling for health benefits, but it is not associated with the Fit India Movement or the December 2024 initiative.

• Such campaigns generally focus on individual fitness rather than community-wide initiatives.

• Fit India Pedal Mission

• Although the name aligns with the Fit India Movement, this is not the correct initiative launched in December 2024.

• It might represent a specific campaign for cycling under the larger Fit India umbrella, but lacks the focus on Sundays or sustainable practices.

Q29. Answer: (a) Municipal Corporations

The Correct answer is Municipal Corporations.

Key Points

• Article 243W of the Indian Constitution provides for the functional responsibilities and powers of Municipalities, which include Municipal Corporations, Municipal Councils, and Nagar Panchayats.

• The article is part of the 74th Constitutional Amendment Act, which introduced the concept of urban local governance in India.

• The functions under Article 243W include the preparation of plans for economic development and social justice, implementation of schemes, and responsibilities related to urban infrastructure and services, such as water supply, sanitation, and urban planning.

• Municipal Corporations are established in larger cities and are responsible for urban development, governance, and providing essential services such as roads, education, health care, waste management, and street lighting.

• The powers and responsibilities delegated to Municipal Corporations are outlined in the 12th Schedule of the Constitution, which includes 18 functional areas, such as urban planning, regulation of land use, slum improvement, public health, and more.

• The State Legislature is responsible for defining the powers, authority, and responsibilities of Municipalities under Article 243W.

• Municipal Corporations ensure the implementation of policies and schemes at the urban level, contributing to decentralized governance as envisaged by the Constitution.

Additional Information

• Parliament of India

• The Parliament of India is the supreme legislative body in the country and consists of the Lok Sabha and the Rajya Sabha.

• Its role is to enact laws and policies, including constitutional amendments such as the 73rd and 74th Amendments, which introduced Panchayati Raj and urban local bodies.

• While the Parliament provides a framework for governance, it does not directly exercise powers under Article 243W; these are delegated to urban local bodies like Municipal Corporations.

• Panchayati Raj Institutions

• Panchayati Raj Institutions (PRIs) are responsible for rural governance and exercise powers under Article 243G, not Article 243W.

• PRIs operate at three levels: Gram Panchayat, Panchayat Samiti, and Zila Parishad, focusing on rural development and decentralized governance.

• They handle functions related to agriculture, rural infrastructure, and poverty alleviation, as outlined in the 11th Schedule of the Constitution.

• State Legislature

• The State Legislature plays a critical role in defining the powers, authority, and responsibilities of Municipal Corporations and other urban local bodies under Article 243W.

• It establishes laws and frameworks for governance at the urban level, including the enactment of state-specific Municipal Acts.

• However, it does not directly exercise the powers delegated under Article 243W; it delegates these to the urban local bodies.

Q30. Answer: (b) Three

Let's arrange the exam schedule based on the given clues:

There are 7 people (J, K, L, M, N, O, P) and 7 days (Monday to Sunday).

1. Only two people have exams before P.

This means P has the exam on the 3rd day. So, P is on Wednesday.

Day	Person
Monday	
Tuesday	
Wednesday	P
Thursday	
Friday	
Saturday	
Sunday	

2. Only one person has an exam after L.

This means L has the exam on Saturday (6th day, with only Sunday after it).

Day	Person
Monday	
Tuesday	
Wednesday	P
Thursday	
Friday	
Saturday	L
Sunday	

3. Only three people have exams between P and J.

If P is on Wednesday, and there are three people between P and J, then J must be on Sunday.

Day	Person
Monday	
Tuesday	
Wednesday	P

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Thursday	
Friday	
Saturday	L
Sunday	J

4. Only one person has an exam between K and L.

Since L is on Saturday, and there's one person between K and L, K must be on Thursday.

Day	Person
Monday	
Tuesday	
Wednesday	P
Thursday	K
Friday	
Saturday	L
Sunday	J

5. O has an exam immediately after M.

This means M and O are in consecutive slots (M-O). The only remaining consecutive slots are Monday and Tuesday.

So, M is on Monday and O is on Tuesday.

Day	Person
Monday	M
Tuesday	O
Wednesday	P
Thursday	K
Friday	
Saturday	L
Sunday	J

The only remaining person is N, and the only remaining slot is Friday.

Final Arrangement:

Day	Person
Monday	M
Tuesday	O
Wednesday	P
Thursday	K
Friday	N
Saturday	L
Sunday	J

There are 3 people (O, P, K) between M and N.

Hence, the correct answer is "Option 2".

Q31. Answer: (d) MK−GH

The logic followed here is.

Option (1) 'KI-FD':

Option (2) 'BZ-WU':
Option (3) 'YW-TR':
Option (4) 'MK-GH':
Does not follow the same logic.
Hence, the correct answer is "Option 4".

Q32. Answer: (c) 1/2

Shortcut Trick
Given sin A = 3/4 (Perpendicular/Hypotenuse).
Using Pythagorean triplet logic: Base = √(4² − 3²) = √(16 − 9) = √7.
Then cos A = Base/Hypotenuse = √7/4.
Value required = (2 × √7/4) ÷ √7 = 2/4 = 1/2.
Therefore The correct answer is 1/2.
Alternate Method
Given: sin A = 3/4
Formula Used: cos²A = 1 − sin²A
=> cos²A = 1 − (3/4)²
=> cos²A = 1 − 9/16 = 7/16
=> cos A = √7/4
=> Target Expression = (2 × cos A) / √7
=> Target Expression = (2 × (√7 / 4)) / √7
=> Target Expression = (2√7) / (4√7)
=> Target Expression = 2/4 = 1/2
Therefore The correct answer is 1/2.
Additional Information
Trigonometric Ratios
For any angle A, sin A = Perpendicular/Hypotenuse, cos A = Base/Hypotenuse, and tan A = Perpendicular/Base.
Pythagorean Identity
The fundamental identity is sin²A + cos²A = 1. This allows finding one ratio if the other is known.
Pythagoras Theorem
In a right-angled triangle, Hypotenuse² = Base² + Perpendicular².

Q33. Answer: (b) 4 9 % 6 2

Given Letter and Code Table:

Letter	L	M	E	P	A	U	X	R
Code	7	$	@	9	2	%	6	4

Given Conditions:
1. If the 1^(st) letter is a vowel and the last letter is a consonant, their codes are to be interchanged.
2. If the 2^(nd) letter is a vowel and the last letter is a consonant, both are to be coded as ‘W’.
3. If the 3^(rd) and 4^(th) letters are consonants, both are to be coded as the code for the 3^(rd) letter.
4. If the 1^(st) and 2^(nd) letters are vowels, then both are to be coded as ‘Q’.
Group to be coded: APUXR
Analysis of the group APUXR:
• 1^(st) letter: A (Vowel)
• 2^(nd) letter: P (Consonant)
• 3^(rd) letter: U (Vowel)
• 4^(th) letter: X (Consonant)
• 5^(th) letter (last): R (Consonant)
Checking the conditions:
• Condition 1: "If the 1^(st) letter is a vowel and the last letter is a consonant, their codes are to be interchanged."
Here, 1^(st) letter 'A' is a vowel and the last letter 'R' is a consonant. This condition applies.

• Condition 2: "If the 2^(nd) letter is a vowel and the last letter is a consonant, both are to be coded as ‘W’."

Here, the 2^(nd) letter 'P' is a consonant, not a vowel. This condition does not apply.

• Condition 3: "If the 3^(rd) and 4^(th) letters are consonants, both are to be coded as the code for the 3^(rd) letter."

Here, the 3^(rd) letter 'U' is a vowel, not a consonant. This condition does not apply.

• Condition 4: "If the 1^(st) and 2^(nd) letters are vowels, then both are to be coded as ‘Q’."

Here, the 2^(nd) letter 'P' is a consonant, not a vowel. This condition does not apply.

Applying Condition 1:

The codes for the 1^(st) letter (A) and the last letter (R) are to be interchanged.

Original codes:

• A = 2

• P = 9

• U = %

• X = 6

• R = 4

After interchanging the codes for A and R:

• A's new code will be R's original code, which is 4.

• R's new code will be A's original code, which is 2.

Final Code for APUXR:

• A becomes 4

• P remains 9

• U remains %

• X remains 6

• R becomes 2

Therefore, the code for APUXR is 4 9 % 6 2.

Hence, the correct answer is "Option 2".

Q34. Answer: (c) Only 2

The Correct answer is Only 2.

Key Points

• The National Mission on Natural Farming (NMNF) was launched to promote sustainable and eco-friendly farming practices in India.

• The mission emphasizes the adoption of Natural Farming methods, which involve the use of bio-based inputs instead of synthetic chemicals.

• One of the key components of the NMNF is the establishment of Bio-input Resource Centres to provide farmers with inputs for Natural Farming. These inputs include bio-fertilisers, bio-pesticides, and other organic resources.

• These Bio-input Resource Centres will help reduce dependency on chemical fertilizers and promote the use of naturally available materials, thus ensuring soil health, environmental sustainability, and cost-effective farming practices.

• While the mission supports these initiatives, the total approved outlay for the NMNF is not Rs. 1,000 crore as mentioned in the first statement, making the first statement incorrect.

• The NMNF also aims to improve the livelihoods of farmers by reducing the cost of cultivation and increasing productivity through natural methods.

Additional Information

• Incorrect Statement 1:

• The first statement mentioned that the total approved outlay of NMNF till 2025-26 is Rs. 1,000 crore. This is factually incorrect as the actual approved outlay is different and not Rs. 1,000 crore.

• It is important to note that the financial allocation for NMNF is determined based on the requirements of the implementation plan, and the exact figures may vary based on the government’s budgetary approvals.

• Natural Farming Practices:

• Natural Farming is a chemical-free and climate-resilient method of farming.

• It uses cow dung, cow urine, and other natural substances to prepare Jeevamrit (liquid bio-fertiliser) and other bio-inputs.

• It avoids the use of synthetic fertilizers and pesticides, focusing instead on soil health improvement and the use of locally available resources.

• This approach is aligned with the principles of sustainability and aims to reduce input costs for farmers.

• Relevance of Bio-input Resource Centres:

• These centres act as hubs for preparing and distributing bio-inputs to farmers.

• They play a critical role in ensuring the availability of natural farming inputs in remote areas where farmers may lack access to such resources.

• By promoting the use of bio-inputs, these centres contribute to organic certification and market linkages, ensuring better incomes for farmers adopting natural farming methods.

Q35. Answer: (a) GO-KF

The logic followed here is.

Option (1) 'GO-KF':

Does not follow the same logic.

Option (2) 'BJ-FZ':

Option (3) 'TB-XR':

Option (4) 'HP-LF':

Hence, the correct answer is "Option 1".

Q36. Answer: (d) 472

The logic followed here is,

Hence, the correct answer is "Option 4".

Q37. Answer: (b) GNP 27

The logic followed here is:

Thus, 'GNP 27' will be the next term in the series.

Hence, the correct answer is "Option 2".

Q38. Answer: (d) 46

Shortcut Trick

Count the total number of observations, n = 11 (which is odd).

Arrange the data in ascending order: 14, 20, 21, 24, 32, 46, 49, 66, 90, 91, 92.

For odd n, the Median is the ((n + 1) / 2)^(th) term.

Median = (11 + 1) / 2 = 6^(th) term.

Therefore The correct answer is 46.

Alternate Method

Given: Observations = 49, 91, 24, 46, 90, 20, 21, 14, 66, 32, 92

Formula Used: Median = ((n + 1) / 2)^(th) term (when n is odd)

14

20

21

24

32

Median

46

49

66

90

Q39. Answer: (d) Rs. 2,904

Shortcut Trick

For half-yearly compounding, the rate becomes half (20% ÷ 2 = 10%) and time becomes double (1 year × 2 = 2 periods).

Effective Rate for 2 periods at 10% = 10 + 10 + (10 × 10)/100 = 21%.

Amount = Principal × (100 + Effective Rate)% = 2400 × 121%

Amount = 24 × 121 = 2904

Therefore The correct answer is Rs. 2,904.

Alternate Method

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Given:
Principal (P) = Rs. 2,400
Annual Rate (R) = 20%
Time (T) = 1 year
Compounding: Half-yearly
Formula Used:
Amount (A) = $P(1 + r/100)^n$
Where r = Half-yearly rate and n = Number of half-years.
Calculations:
=> r = R ÷ 2 = 20% ÷ 2 = 10%
=> n = T × 2 = 1 × 2 = 2 half-years
=> $A = 2400(1 + 10/100)^2$
=> $A = 2400(11/10)^2$
=> A = 2400 × (121/100)
=> A = 24 × 121
=> A = 2904
Therefore The correct answer is Rs. 2,904.
Additional Information
Compounding Half-Yearly
When interest is compounded semi-annually, the nominal annual rate is divided by 2, and the number of years is multiplied by 2.
Effective Annual Rate (EAR)
The actual interest earned in a year. Formula: $EAR = (1 + r/n)^n - 1$, where n is the number of compounding periods per year.
CI vs SI Difference for 2 Periods
The difference between Compound Interest and Simple Interest for two periods is given by $P(r/100)^2$.

Q40. Answer: (c) 4,968

Shortcut Trick
Ratio of Profit is based on Investment × Time.
Ratio of Investment X : Y : Z = 13 : 20 : 15.
X's share = 13 × 12 = 156.
Y's share = (20 × 7) + (20 × 0.67 × 5) = 140 + 67 = 207.
Z's share = (15 × 7) + (15 × 0.76 × 5) = 105 + 57 = 162.
Ratio X : Y : Z = 156 : 207 : 162 = 52 : 69 : 54.
Total units = 52 + 69 + 54 = 175. Share of Z = (54 ÷ 175) × 16100 = 54 × 92 = 4968.
Therefore The correct answer is Rs. 4,968.
Alternate Method
Given → Initial investment ratio 13 : 20 : 15. Time period = 12 months.
Formulas: Profit Share = Investment × Time | Total Profit = Sum of individual shares.
=> X's Profit units = 13 × 12 = 156 units.
=> Y's Profit units: Y withdrew 33% of 20 = 6.6. Remaining = 20 − 6.6 = 13.4.
=> Y = (20 × 7) + (13.4 × 5) = 140 + 67 = 207 units.
=> Z's Profit units: Z withdrew 24% of 15 = 3.6. Remaining = 15 − 3.6 = 11.4.
=> Z = (15 × 7) + (11.4 × 5) = 105 + 57 = 162 units.
=> Ratio of Profit = 156 : 207 : 162 = 52 : 69 : 54.
=> Total Profit units = 52 + 69 + 54 = 175.
=> 175 units = Rs. 16,100 => 1 unit = 16100 ÷ 175 = 92.
=> Z's share = 54 × 92 = Rs. 4,968.
Therefore The correct answer is Rs. 4,968.
Additional Information
Partnership Basics
In a partnership, the profit is distributed in the ratio of the product of the capital invested and the time duration for which it was invested.

Variable Investment

If a partner changes their investment during the period, calculate the equivalent capital by summing (Investment × Months) for each interval.

Q41. Answer: (b) Only conclusion (II) follows.

Given Statements:

1. All cars are old.

2. Some old are new.

3. Some new are red.

The least possible Venn diagram for the given statements is shown below.

Conclusions:

I. All old are cars. → False (The statement "All cars are old" means that cars are a subset of old things. It does not mean that all old things are necessarily cars. There can be other old things that are not cars.)

II. Some new are old. → True (The statement "Some old are new" directly implies that there is an overlap between the category 'old' and 'new'. If some members of 'old' are also 'new', then it logically follows that those same members of 'new' are also 'old'.)

Therefore, only conclusion II follows.

Hence, the correct answer is "Option 2".

Q42. Answer: (a) 3,102

Shortcut Trick

Saving % = 100% − 33% = 67%

Given, 67% = Rs. 6,298

Expenses (33%) = (6,298 ÷ 67) × 33

Expenses = 94 × 33 = Rs. 3,102

Therefore The correct answer is Rs. 3,102.

Alternate Method

Given:

Monthly Expenses percentage = 33%

Monthly Savings = Rs. 6,298

Formula Used:

Income = Expenses + Savings

Calculations:

=> Savings % = 100% − 33% = 67%

=> 67% of Income = Rs. 6,298

=> 1% of Income = 6,298 ÷ 67

=> 1% of Income = 94

=> Monthly Expenses (33%) = 33 × 94

=> Monthly Expenses = Rs. 3,102

Therefore The correct answer is Rs. 3,102.

Additional Information

Percentage Change

Percentage change is calculated as (Change ÷ Original Value) × 100.

Income-Expenditure Relation

Income is always considered the base (100%) when calculating percentage savings or expenditure unless stated otherwise.

Successive Percentage

If income increases by x% and then y%, the net change is [x + y + (xy ÷ 100)]%.

Q43. Answer: (a) The Harvard architecture allows simultaneous fetching of instructions and data, potentially improving perfo...

The Correct answer is Option 1.

Key Points

• The von Neumann architecture uses a single memory space for both instructions and data, meaning the CPU fetches them sequentially. This can lead to a bottleneck known as the von Neumann bottleneck, where the CPU waits for instructions or data due to limited bandwidth.

• In contrast, the Harvard architecture separates memory for instructions and data, allowing them to be accessed simultaneously. This separation can significantly improve performance, especially in systems requiring high-speed processing.

• The Harvard architecture is particularly useful in embedded systems and real-time applications, where deterministic performance is critical.

• The von Neumann architecture is widely used in general-purpose computers, as it simplifies the design and programming model by using a single memory space.

• The separation of memory in the Harvard architecture often requires more complex hardware, but it provides better throughput for specific tasks.

• Both architectures are foundational to modern computing, with hybrid systems often combining features of both to balance simplicity and performance.

Additional Information

• The von Neumann Architecture

• Proposed by John von Neumann in the 1940s, this architecture forms the basis of most modern computers.

• It uses a single memory space where both program instructions and data are stored.

• The single memory architecture leads to what is called the von Neumann bottleneck, where the CPU waits for data or instructions due to limited memory bandwidth.

• Examples of devices using von Neumann architecture include desktop computers, laptops, and other general-purpose systems.

• The Harvard Architecture

• This architecture was first used in the Harvard Mark I computer.

• It has separate memory spaces for instructions and data, allowing parallel access and higher performance.

• Commonly found in microcontrollers and digital signal processors (DSPs).

• Examples of devices using Harvard architecture include embedded systems, such as those in automotive applications or industrial control systems.

• Hybrid Architectures

• Many modern processors combine features of both architectures to leverage the benefits of each.

• For instance, they may use a Harvard-like architecture internally for instruction and data caches while maintaining a von Neumann-like unified main memory.

• This hybrid approach is common in modern CPUs and GPUs.

Q44. Answer: (b) 49

The solution is in Hindi. Read it online.

Q45. Answer: (a) 1995

The Correct answer is 1995.

Key Points

• The World Trade Organization (WTO) was established in the year 1995.

• It replaced the General Agreement on Tariffs and Trade (GATT), which was created in 1947 to oversee international trade and reduce trade barriers.

• The WTO is headquartered in Geneva, Switzerland.

• It is an international organization that regulates global trade and ensures that trade flows as smoothly, predictably, and freely as possible.

• The WTO has 164 member countries, accounting for over 98% of global trade.

• Its main functions include administering trade agreements, settling trade disputes, and serving as a forum for trade negotiations.

• The WTO focuses on promoting free and fair trade by eliminating trade barriers such as tariffs, quotas, and subsidies.

• It also provides a platform for member countries to discuss trade issues and resolve disputes through its Dispute Settlement Mechanism.

• The establishment of the WTO marked a significant milestone in the process of globalisation, as it facilitated international trade and economic integration.

Q46. Answer: (a) 11

Shortcut Trick

Let the son's age 3 years ago be x.

Father's age 3 years ago = 2x + 14.

Difference between their ages = (2x + 14) − x = x + 14.

The age difference remains constant; when the father is twice the son's age, the son's age must equal the difference (x + 14).

Future age of son = x + 14. Present age of son = x + 3.

Years from now = (x + 14) − (x + 3) = 11 years.

Therefore The correct answer is 11 years.

Alternate Method

Given:

Let the present age of father be F and son be S.

Calculations:

=> 3 years ago: (F − 3) = 2(S − 3) + 14

=> F − 3 = 2S − 6 + 14

=> F − 2S = 11 .....(i)

Let the father be twice his son's age after n years from now.

=> (F + n) = 2(S + n)

=> F + n = 2S + 2n

=> F − 2S = n .....(ii)

Equating (i) and (ii):

=> n = 11

Therefore The correct answer is 11 years.

Additional Information

Constant Age Difference

The difference between the ages of two people remains constant regardless of the number of years that pass.

Ratio of Ages

If the ratio of ages is given for two different time periods, use the cross-multiplication method or equate the difference in ratio units.

Twice Age Rule

When person A is twice the age of person B, the age of person B at that moment is exactly equal to the difference in their ages.

Q47. Answer: (d) Odisha

The Correct answer is Odisha.

Key Points

• Odisha has the highest number of Particularly Vulnerable Tribal Groups (PVTGs) among Indian states as of December 2022.

• The state is home to 13 PVTGs, which include tribes such as the Bonda, Didayi, Dongria Kondh, and Juang.

• Particularly Vulnerable Tribal Groups (PVTGs) are a subgroup of Scheduled Tribes that are identified based on certain criteria such as pre-agricultural level of technology, low literacy rates, and declining or stagnant population.

• The identification of PVTGs is guided by the Ministry of Tribal Affairs, Government of India, under the Development of PVTGs scheme.

• Odisha's diverse geography, including forests, hills, and river valleys, provides a habitat conducive to the sustenance of these tribal communities.

• The state government, along with the central government, implements various developmental programs for PVTGs, such as health care, education, and housing, while preserving their culture and traditions.

• The PVTGs in Odisha are concentrated in the southern and western districts like Malkangiri, Rayagada, Koraput, and Kandhamal, which are known for their rich tribal heritage.

• These groups are considered the most marginalized within the tribal population, and special attention is given to their socio-economic development under the Fifth Schedule of the Indian Constitution.

Additional Information

• Madhya Pradesh

• Madhya Pradesh is known as the "Heart of India" and has a significant tribal population, including tribes like the Gond, Bhil, and Baiga.

• It has a large number of Scheduled Tribes, but it has fewer PVTGs compared to Odisha.

• The state implements several tribal development programs under the Tribal Sub-Plan (TSP).

• Chhattisgarh

• Chhattisgarh is rich in mineral resources and forests, making it a home to tribes like the Maria, Muria, and Halba.

• The state has 5 identified PVTGs, including the Abujhmaria and Kamar.

• It is heavily focused on the development of its tribal areas, particularly through initiatives like the Van Dhan Vikas Kendra.

• Jharkhand

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• Jharkhand is known for its tribal culture and is home to tribes such as the Santhal, Munda, and Oraon.
• It has 9 PVTGs, including the Asur and Birhor.
• The state has a significant focus on tribal welfare, including schemes for their education, employment, and health.

Q48. Answer: (b) 20

Shortcut Trick
Since overall Average Speed = Total Distance ÷ Total Time:
=> (D1 + D2 + D3) ÷ 20 = (D1 ÷ 20) + (D2 ÷ x) + (D3 ÷ 20)
=> (D1 ÷ 20) + (D2 ÷ 20) + (D3 ÷ 20) = (D1 ÷ 20) + (D2 ÷ x) + (D3 ÷ 20)
=> D2 ÷ 20 = D2 ÷ x => x = 20
Therefore The correct answer is 20 km/hr.
Alternate Method
100 km
408 km
1460 km
20 km/hr
x km/hr
20 km/hr
Overall Average Speed = 20 km/hr
Given:
Distances: D1 = 100 km, D2 = 408 km, D3 = 1460 km
Speeds: S1 = 20 km/hr, S2 = x km/hr, S3 = 20 km/hr
Average speed = 20 km/hr
Formula Used:
Average Speed = Total Distance ÷ Total Time
Time = Distance ÷ Speed
Calculations:
=> Total Distance = 100 + 408 + 1460 = 1968 km
=> Total Time = (100 ÷ 20) + (408 ÷ x) + (1460 ÷ 20)
=> Total Time = 5 + (408 ÷ x) + 73 = 78 + (408 ÷ x) hours
=> Average Speed = 1968 ÷ [78 + (408 ÷ x)]
=> 20 = 1968 ÷ [78 + (408 ÷ x)]
=> 78 + (408 ÷ x) = 1968 ÷ 20
=> 78 + (408 ÷ x) = 98.4
=> 408 ÷ x = 98.4 − 78 = 20.4
=> x = 408 ÷ 20.4 = 4080 ÷ 204 = 20
Therefore The correct answer is 20 km/hr.
Additional Information
Average Speed Concept
Average speed is the measure of the total distance traveled completely over the total time elapsed. It accounts for speed variations across the trip. Formula: Average Speed = Total Distance ÷ Total Time.
Equal Distances Average Speed
When a person travels two equal parts of a journey at speeds x and y, the average speed for the whole journey reduces to exactly 2xy ÷ (x + y).
Relative Speed
For two objects moving in the same direction at speeds a and b (where a > b), their relative speed is (a − b). If they move in opposite directions, it is (a + b).

Q49. Answer: (c) = YVT, % = LIG

The logic followed here is
Given
: VSQ :: OLJ : %
Option 1) # = UZT, % = QMG

Does not follow the same pattern.

Option 2) # = IQT, % = VCG

Does not follow the same pattern.

Option 3) # = YVT, % = LIG

Follow the same pattern.

Option 4) # = YOZ, % = LOQ

Does not follow the same pattern.

Hence, the correct answer is "Option 3".

Q50. Answer: (d) To protect the supremacy of the Constitution and fundamental rights

The Correct answer is To protect the supremacy of the Constitution and fundamental rights.

Key Points

• Judicial review in India ensures the protection of the supremacy of the Constitution, which is the highest law of the land.

• It is a mechanism for safeguarding fundamental rights, as guaranteed under Part III of the Indian Constitution, against legislative and executive actions.

• The judiciary has the authority to review the actions and decisions of the legislature and executive to ensure they do not violate the Constitutional provisions.

• Judicial review enables the courts to declare laws or actions null and void if they are inconsistent with the Constitution.

• It upholds the principle of constitutional morality, ensuring that all laws and policies align with the values and principles enshrined in the Constitution.

• This process helps maintain the balance between the various organs of the government, preventing any one organ from exceeding its powers.

• Judicial review is crucial in a democracy like India, where the judiciary acts as the guardian of the Constitution and the rights of citizens.

• The concept finds its roots in Articles 13, 32, and 226 of the Indian Constitution, which empower the judiciary to review laws and protect fundamental rights.

• It is especially significant in cases involving the violation of rights such as freedom of speech, equality, and personal liberty.

Additional Information

• To allow the judiciary to make laws

• The judiciary does not have the power to legislate; its role is limited to interpreting and applying the law as per the Constitution.

• Law-making is the exclusive domain of the legislature in India, as per the separation of powers principle.

• Judicial review does not involve creating laws but reviewing them for Constitutional validity.

• To maintain federal balance between Centre and States

• While judicial review does play a role in resolving disputes between the Centre and States, this is not its primary purpose.

• Federal balance is maintained through mechanisms like the Finance Commission and specific provisions in the Constitution, such as Article 246, detailing the division of legislative powers.

• To ensure the supremacy of the Parliament

• In India, the Constitution, not the Parliament, is supreme, unlike in the UK where parliamentary sovereignty exists.

• The judiciary reviews parliamentary laws to ensure they align with the Constitutional framework.

• Judicial review acts as a check on parliamentary supremacy, ensuring that laws do not violate fundamental rights.

Q51. Answer: (d) 24 cm

Shortcut Trick

The radius, tangent, and distance from the center form a right-angled triangle where the distance from the center is the hypotenuse.

Using the Pythagorean triplet (7, 24, 25):

Tangent length = $\sqrt{(25^2 - 7^2)} = \sqrt{(625 - 49)} = \sqrt{576} = 24$ cm.

Therefore The correct answer is 24 cm.

Alternate Method

Given:

Radius of the circle (OT) = 7 cm

Distance from point P to center O (OP) = 25 cm

Formula Used:

In a circle, the tangent is perpendicular to the radius at the point of tangency. Thus, ΔOTP is a right-angled triangle at T.

By Pythagoras Theorem: $PT^2 + OT^2 = OP^2$

Calculations:

=> $PT^2 + 7^2 = 25^2$

=> $PT^2 + 49 = 625$

=> $PT^2 = 625 - 49$

Q52. Answer: (c) WYPM

Here is the alphabetical place value for each letter:

The logic followed in this pattern is an alternating alphabetical shift of +4 and -4 for each letter.

For 'CSVG' related to 'GOZC':

For 'KKDY' related to 'OGHU':

Applying the same logic to 'SCLQ':

Thus, SCLQ is related to WYPM.

Hence, the correct answer is "Option 3".

Q53. Answer: (b) 4 km towards the west

Given,

Mr. I starts from Point M and drives 5 km towards the south.

He then takes a right turn, drives 8 km, turns left and drives 7 km.

He then takes a left turn and drives 12 km.

He takes a final left turn, drives 12 km and stops at Point N.

So, Point N is 4 km East of Point M.

To reach Point M from Point N, Mr. I needs to drive 4 km towards the West.

Hence, the correct answer is "Option 2".

Q54. Answer: (c) 45%

The Correct answer is 45%.

Key Points

• The Global Debt Report 2025 highlights significant concerns about the maturity of sovereign debt across various countries.

• According to the report, approximately 45% (or 0.45) of sovereign debt from OECD (Organisation for Economic Co-operation and Development) countries is expected to mature by the year 2027.

• The OECD is a group of developed countries that collaborate to promote economic growth and trade, and they collectively hold substantial levels of debt.

• The maturity of such a large portion of debt creates challenges for these countries, as they will need to refinance or repay this debt within the stipulated timeline.

• This scenario could lead to potential risks such as higher interest rates, increased debt burdens, and pressure on national budgets.

• Global economic uncertainties, such as inflation and geopolitical tensions, further compound these debt-related challenges for the OECD nations.

• The report serves as a warning for countries to adopt prudent fiscal policies and prepare strategies to manage this maturing debt effectively.

Additional Information

• OECD and Sovereign Debt

• The OECD consists of 38 member countries, including nations like the United States, Germany, France, Japan, and the United Kingdom.

• Sovereign debt refers to the borrowings of a country's government, often issued as bonds.

• OECD countries have accumulated significant debt due to economic stimulus measures, especially during crises like the COVID-19 pandemic.

• Challenges of Debt Maturity

• When a large percentage of debt matures within a short period, governments face liquidity risks.

• Refinancing this debt might require issuing new bonds at higher interest rates, increasing the cost of borrowing.

• Failure to address these challenges could lead to debt distress or even default in extreme cases.

• Global Debt Report

• The Global Debt Report is a comprehensive analysis that provides insights into global debt levels, trends, and risks.

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• It is used by policymakers, economists, and financial institutions to understand and manage debt-related challenges.

Q55. Answer: (d) P C M B

Given:

Number/symbol	**2**	**@**	**9**	**5**	**$**	**&**	**3**	**%**	**#**	**7**	**•**	**4**	**8**	**6**
Code	D	B	A	M	L	E	C	Q	D	P	R	B	U	K

Conditions	**Description**
1. If the first element is a symbol and the last a number	Codes for these two (the first and the last elements) are to be interchanged.
2. If the first element is an odd number and the last an even number	First and last elements are to be coded as ©.
3. If both second and third elements are perfect squares	The third element is to be coded as the code for the second element.

Now, the group of numbers and symbols is: @ 3 5 7

Let's analyze the elements of the group:

• First element: '@' (Symbol)

• Second element: '3' (Odd number, not a perfect square)

• Third element: '5' (Odd number, not a perfect square)

• Last element: '7' (Odd number)

Checking the conditions:

• Condition 1: "If the first element is a symbol and the last a number, the codes for these two (the first and the last elements) are to be interchanged."

• The first element ('@') is a symbol. (True)

• The last element ('7') is a number. (True)

• Condition 1 applies. The codes for '@' and '7' will be interchanged.

• Condition 2: "If the first element is an odd number and the last an even number, the first and last elements are to be coded as ©."

• The first element ('@') is not an odd number. (False)

• Condition 2 does not apply.

• Condition 3: "If both second and third elements are perfect squares, the third element is to be coded as the code for the second element."

• The second element ('3') is not a perfect square. (False)

• The third element ('5') is not a perfect square. (False)

• Condition 3 does not apply.

Applying the applicable condition:

Only Condition 1 applies. We will interchange the codes for the first and last elements.

• Original code for '@' is 'B'.

• Original code for '7' is 'P'.

After interchange:

• New code for '@' will be 'P'.

• New code for '7' will be 'B'.

The codes for '3' and '5' remain as per the table, as no other conditions apply to them.

• Code for '3' is 'C'.

• Code for '5' is 'M'.

Therefore, the code for '@ 3 5 7' is → 'P C M B'.

Hence, the correct answer is "Option 4".

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Q56. Answer: (c) 117

The logic followed here is,

Hence, the correct answer is "Option 3".

Q57. Answer: (d) 210

Shortcut Trick

Loss of 20% means SP1 is 80% of CP.

Gain of 50% means SP2 is 150% of CP.

Ratio of SPs = 80 : 150 = 8 : 15.

Given 8 units = Rs. 112 => 1 unit = 112 ÷ 8 = Rs. 14.

New Selling Price (15 units) = 15 × 14 = Rs. 210.

Therefore The correct answer is Rs. 210.

Alternate Method

Given → Initial SP = Rs. 112, Loss = 20%, Desired Gain = 50%.

Formulas: CP = SP × 100 ÷ (100 − Loss%) | New SP = CP × (100 + Gain%) ÷ 100.

=> Step 1: Find Cost Price (CP) = 112 × 100 ÷ (100 − 20) = 112 × 100 ÷ 80 = Rs. 140.

=> Step 2: Find New SP for 50% gain = 140 × (100 + 50) ÷ 100.

=> New SP = 140 × 150 ÷ 100 = 14 × 15 = Rs. 210.

Therefore The correct answer is Rs. 210.

Additional Information

Cost Price and Selling Price

The price at which an article is purchased is CP, and the price it is sold at is SP. If SP > CP, it is a Profit; if SP < CP, it is a Loss.

Direct Relation Formula

To find new SP when old SP and percentages are known: New SP = (Old SP ÷ (100 − L%)) × (100 + G%).

Q58. Answer: (d) To merge the Indian Railway Board Act, 1905 into the Railways Act, 1989

The Correct answer is To merge the Indian Railway Board Act, 1905 into the Railways Act, 1989.

Key Points

• The Railways (Amendment) Bill, 2024 aims to streamline the legal framework governing the Indian Railways by merging the Indian Railway Board Act, 1905 into the Railways Act, 1989.

• This amendment seeks to eliminate redundancy and modernize the administration of railways in India.

• The Railways Act, 1989 is the comprehensive legislation that regulates railway operations, safety, and management, while the Indian Railway Board Act, 1905 provided a framework for the establishment and functioning of the Railway Board.

• By merging these acts, the government intends to unify the governance of railways under one umbrella law, making operations more efficient and legally consistent.

• The amendment is part of the larger push for legislative simplification, aligning with the government's efforts to reduce outdated provisions and improve ease of doing business in railway management.

• This consolidation supports the vision of creating a more integrated and modern railway system that aligns with current technological and operational needs.

• The bill also aims to ensure better coordination among various departments and stakeholders involved in railway operations.

• It is expected to enhance the efficiency and effectiveness of decision-making within the Indian Railways.

Additional Information

• To introduce high-speed bullet trains across India

• High-speed bullet trains are part of the National High-Speed Rail Corporation Limited (NHSRCL) project, which is a separate initiative aimed at developing bullet train corridors.

• India's first bullet train is planned between Ahmedabad and Mumbai, under the Shinkansen technology from Japan.

• The introduction of bullet trains is primarily aimed at modernizing travel infrastructure, reducing travel time, and boosting economic growth, but this is not the primary focus of the Railways (Amendment) Bill, 2024.

• To establish a new ministry for railway operations

• The operations of the Indian Railways are already managed under the Ministry of Railways, which oversees all aspects of rail transportation, policy-making, and infrastructure development.

• No proposal for creating a new ministry has been mentioned in the Railways (Amendment) Bill, 2024.

• To privatise the Indian Railways

• Privatisation of Indian Railways refers to the inclusion of private players in managing and operating certain services, like modern

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trains such as Vande Bharat Express and private train operators.

• However, the Railways (Amendment) Bill, 2024 does not aim at complete privatisation but focuses on legal consolidation.

• Privatisation efforts are part of separate initiatives like PPP models in railway operations.

Q59. Answer: (c) Mother's Mother's Brother

Decoding the Symbols:

Symbol	•	•	x	÷
Meaning	Mother	Brother	Wife	Father

Given: M – N × O ÷ P + Q

Let's break down the relationships:

• M – N: M is the brother of N.

• N × O: N is the wife of O.

• O ÷ P: O is the father of P.

• P + Q: P is the mother of Q.

Combining these, we have:

So, M is the mother's mother's brother of Q.

Hence, the correct answer is "Option 3".

Q60. Answer: (b) Jus sanguinis (by blood)

The Correct answer is Jus sanguinis (by blood).

Key Points

• After the 2003 Amendment to the Citizenship Act, 1955, India shifted from the principle of jus soli (citizenship by birth) to a stricter application of jus sanguinis (citizenship by descent).

• The amendment introduced stricter conditions for acquiring Indian citizenship, especially for children born in India to foreign nationals.

• The focus was shifted to emphasize ancestral ties, meaning citizenship was granted based on the nationality of the parents rather than the place of birth.

• Under the revised law, a person born in India after December 3, 2004, can only claim Indian citizenship if at least one parent is an Indian citizen and the other parent is not an illegal migrant.

• The amendment aimed to address concerns over illegal immigration and its impact on demography and national security, especially in border states.

• The principle of jus sanguinis aligns with the concept of maintaining a closer connection to the nation through family lineage.

• This change brought India's citizenship laws more in line with countries that prioritize descent-based citizenship, such as Germany and Japan.

Additional Information

• Jus soli (by birth)

• The principle of jus soli grants citizenship to anyone born within a country's territory, regardless of their parents' nationality.

• Prior to the 2003 Amendment, India followed this principle for granting citizenship. For example, anyone born in India between 1950 and 1987 was automatically considered an Indian citizen.

• However, concerns over illegal immigration led to restrictions on this principle starting from 1987, and it was further curtailed in the 2003 Amendment.

• Countries like the United States still follow the principle of jus soli, granting automatic citizenship to anyone born on their soil.

• Dual citizenship

• India does not allow dual citizenship. The Citizenship Act, 1955 mandates that Indian citizens must renounce their citizenship if they acquire the citizenship of another country.

• However, India allows individuals of Indian origin living abroad to obtain an Overseas Citizen of India (OCI) card, which provides certain privileges without granting full citizenship.

• Dual citizenship is practiced in some countries like Canada and the United Kingdom, allowing individuals to hold citizenship in more than one country simultaneously.

• Universal citizenship

• The concept of universal citizenship refers to the idea that all individuals belong to a global community and should have equal rights and opportunities regardless of their country of origin.

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• This concept is more philosophical and is not implemented by any country in its legal framework.

• It contrasts with the traditional notions of citizenship, which are tied to national borders and sovereignty.

Q61. Answer: (c) To tackle complex thermal challenges in space applications

The Correct answer is To tackle complex thermal challenges in space applications.

Key Points

• The Shri S Ramakrishnan Centre of Excellence in Fluid and Thermal Science Research 2025 at IIT Madras has been established with the primary objective of addressing thermal challenges in space applications.

• Space missions often face extreme thermal conditions, which require advanced research to develop materials and systems that can withstand these conditions.

• The center focuses on fluid dynamics and heat transfer mechanisms, which are critical for spacecraft design and operation.

• It supports the development of technologies for thermal management systems, ensuring the safety and efficiency of equipment used in satellites and launch vehicles.

• This initiative contributes to India's space exploration goals by advancing research in cryogenics, propulsion systems, and microgravity fluid dynamics.

• The center is named after Shri S Ramakrishnan, a renowned scientist who significantly contributed to India's space program, particularly in the field of rocket propulsion.

• By addressing thermal challenges, the center aims to enhance the durability, reliability, and performance of space systems, which are vital for long-term missions.

Q62. Answer: (a) 2

Given series:

3 € $ 1 6 8 6 6 € $ # % # * 3 8 3 1 € 6 @ 3

Condition to be checked:

A symbol that is immediately preceded by a number and immediately followed by a symbol.

Number → Symbol → Symbol

Let's scan the series:

3 € $ 1 6 8 6 6 € $ # % # * 3 8 3 1 € 6 @ 3

The patterns matching the condition are:

• 3 € $

• 6 € $

Thus, there are 2 such symbols each of which is immediately preceded by a number and also immediately followed by a symbol.

Hence, the correct answer is "Option 1".

Q63. Answer: (d) 22

Shortcut Trick

Net filling efficiency per minute = (1/8 − 1/11) = 3/88 of the tank.

Time to fill full tank = 88/3 minutes.

Time to fill 3/4th tank = (88/3) × (3/4) = 22 minutes.

Therefore The correct answer is 22 minutes.

Alternate Method

Given: Filling pipe time = 8 min, Emptying pipe time = 11 min.

Formula Used: Total Work = LCM of time taken; Efficiency = Work ÷ Time.

Pipe Type Time (min) Total Capacity (LCM) Efficiency Inlet Pipe (+) 8 88 units +11 Outlet Pipe (−) 11 −8

=> Combined efficiency of both pipes = 11 − 8 = 3 units/min.

=> Required work = 3/4 of Total Capacity = 3/4 × 88 = 66 units.

=> Time required = Required work ÷ Combined efficiency

=> Time = 66 ÷ 3 = 22 minutes.

Therefore The correct answer is 22 minutes.

Additional Information

Pipes and Cisterns Convention

Inlet pipes that fill the tank are taken as positive efficiency, while outlet pipes that empty the tank are taken as negative efficiency.

Net Time Formula

If pipe A fills in x hours and pipe B empties in y hours (y > x), net time to fill the tank = (xy) ÷ (y − x).

Work and Time Relationship

Total Work = Efficiency × Time. For a constant work, efficiency is inversely proportional to time taken.

Q64. Answer: (c) Reserve Bank of India

The Correct answer is Reserve Bank of India.

Key Points

• The Reserve Bank of India (RBI) has been honored with the prestigious Digital Transformation Award 2025 by Central Banking Publications, London.

• This recognition was given for the innovative digital initiatives Pravaah and Sarthi, which have been instrumental in enhancing the operational efficiency and service delivery of the RBI.

• Pravaah is a centralized web-based application that enables the seamless flow of information and decision-making within the RBI, streamlining processes and reducing delays.

• Sarthi, on the other hand, is a chatbot-based platform designed to improve communication and accessibility for various stakeholders, including the general public, government entities, and financial institutions.

• The award underscores the RBI's efforts to embrace digital transformation and leverage technology to maintain its leadership in the evolving financial landscape.

• The RBI plays a pivotal role in India's financial system as the central bank, responsible for formulating monetary policy, regulating banks, and ensuring financial stability.

• This recognition aligns with the RBI's commitment to fostering innovation and creating a resilient and inclusive financial ecosystem in the country.

Additional Information

• Punjab National Bank

• Punjab National Bank (PNB) is one of India's largest public sector banks, headquartered in New Delhi.

• It offers a wide range of financial products and services, including retail banking, corporate banking, and asset management.

• The bank has been actively working on digitization and customer-centric initiatives but has not received the mentioned award.

• State Bank of India

• The State Bank of India (SBI) is the largest public sector bank in India, headquartered in Mumbai.

• It has a significant presence in both domestic and international markets and is known for its extensive digital banking services.

• Although SBI has implemented various digital initiatives, this particular award was given to the RBI.

• Bandhan Bank

• Bandhan Bank is a private sector bank headquartered in Kolkata, primarily focused on serving the underbanked population.

• It started as a microfinance institution and transitioned into a full-fledged bank in 2015.

• While Bandhan Bank has made efforts to enhance its digital infrastructure, it was not the recipient of the given award.

Q65. Answer: (b) 54.9

Shortcut Trick

Apply the Empirical Formula: 3 × Median = Mode + 2 × Mean.

3 × Median = 61.7 + 2 × 51.5

3 × Median = 61.7 + 103 = 164.7

Median = 164.7 ÷ 3 = 54.9

Therefore The correct answer is 54.9.

Alternate Method

Given: Mean = 51.5, Mode = 61.7

Formula Used: Mode = 3 × Median − 2 × Mean

=> 61.7 = 3 × Median − 2 × 51.5

=> 61.7 = 3 × Median − 103

=> 3 × Median = 61.7 + 103

=> 3 × Median = 164.7

=> Median = 164.7 ÷ 3

=> Median = 54.9

Therefore The correct answer is 54.9.

Additional Information

Empirical Relationship

For a moderately skewed distribution, the relationship between central tendencies is Mode = 3 × Median − 2 × Mean.

Symmetric Distribution

In a perfectly symmetrical distribution (like a Normal Distribution), the Mean, Median, and Mode are all identical.

Skewness and Central Tendency

In positively skewed data, Mean > Median > Mode. In negatively skewed data, Mode > Median > Mean.

Q66. Answer: (c) 352/5 km

Shortcut Trick

Ratio of Downstream Speed to Upstream Speed = 22 : 5.5 = 4 : 1.

Since Distance is constant for one way, Time ratio = Inverse of speed ratio = 1 : 4.

Total time units = 1 + 4 = 5 units → 8 hours. So, 1 unit = 8/5 hours.

One-way distance = Speed × Time = 22 × (8/5) = 176/5 km.

Total distance (Round trip) = 2 × (176/5) = 352/5 km.

Therefore The correct answer is 352/5 km.

Alternate Method

Given:

Downstream speed (D) = 22 km/hr

Upstream speed (U) = 5.5 km/hr

Total time (T) = 8 hours

Formula Used:

Total Time = (Distance / Downstream Speed) + (Distance / Upstream Speed)

Calculations:

=> Let the one-way distance be d.

=> (d / 22) + (d / 5.5) = 8

=> (d / 22) + (2d / 11) = 8

=> (d + 4d) / 22 = 8

=> 5d / 22 = 8

=> 5d = 176

=> d = 176/5 km

=> Total distance travelled = 2 × d = 2 × (176/5) = 352/5 km

Therefore The correct answer is 352/5 km.

Additional Information

Speed in Still Water and Current

Speed of boat in still water (u) = (D + U) / 2 and speed of current (v) = (D − U) / 2.

Average Speed for Round Trip

Average speed for the entire journey = (2 × D × U) / (D + U). Total Distance = Average Speed × Total Time.

Relative Speed Concept

Downstream speed includes the velocity of the stream helping the boat, whereas upstream speed is against the stream.

Q67. Answer: (a) 36

Shortcut Trick

Interest for 1 month is simply the percentage of the principal for that period.

Simple Interest (SI) = 3% of Rs. 1,200

SI = (3 ÷ 100) × 1,200

SI = 3 × 12 = 36

Therefore The correct answer is Rs. 36.

Alternate Method

Given:

Principal (P) = Rs. 1,200

Rate of interest (R) = 3% per month

Time (T) = 1 month

Formula Used:

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

Calculations:

=> SI = (1,200 × 3 × 1) ÷ 100

=> SI = (3,600) ÷ 100

=> SI = 36

Therefore The correct answer is Rs. 36.

Additional Information

Total Amount Formula

The total amount (A) after interest is the sum of the principal and simple interest: A = P + SI.

Annual vs Monthly Rate

If the rate is given annually and time in months, divide the annual rate by 12 or convert time to years (T/12).

Simple Interest Nature

Simple interest remains constant for every equal time period as it is always calculated on the original principal.

Q68. Answer: (a) Farazi Movement

The Correct answer is Farazi Movement.

Key Points

• The Farazi Movement was a 19th-century Islamic reform movement in Bengal, initiated by Haji Shariatullah.

• The movement aimed at advocating for the purification of Islam, strict adherence to Islamic law, and the eradication of un-Islamic practices.

• It primarily focused on religious and social reforms rather than a direct challenge to colonial rule, thus distinguishing it from tribal revolts.

• The movement gained traction among the rural Muslim peasants, addressing issues like exploitation by landlords and British indigo planters.

• The Farazis resisted the oppression of the zamindars, but their resistance was largely non-violent and religious in nature.

• Its main objective was to restore the purity of Islam and to create an ideal Islamic society.

• Unlike tribal revolts, the Farazi Movement was not led by tribal communities or aimed at preserving tribal autonomy or culture.

Additional Information

• Kherwar Movement

• The Kherwar Movement was a tribal uprising led by the Santhal community in the late 19th century.

• This movement was initiated under the leadership of Bhagirath Majhi and aimed at establishing Santhal self-rule and reclaiming their traditional rights over land.

• It was deeply rooted in the socio-religious beliefs of the Santhals and sought to challenge the dominance of zamindars and British officials.

• The movement had elements of both socio-religious reform and political resistance, making it a tribal revolt.

• Tamar Revolts

• The Tamar Revolts were a series of uprisings by the Munda tribe in the Tamar region of present-day Jharkhand.

• The revolts were led by tribal leaders like Birsa Munda and were aimed at resisting the exploitation and oppression of the Mundas by landlords (dikus) and British officials.

• It was a classic example of a tribal revolt, focusing on the restoration of tribal autonomy and rights over forest and agricultural lands.

• Santhal Revolt

• The Santhal Revolt (1855–1856) was a major tribal uprising led by the Santhal community in present-day Jharkhand and West Bengal.

• This rebellion was led by the Murmu brothers (Sidhu and Kanhu) and was directed against the exploitation by zamindars, moneylenders, and the British administration.

• The Santhals sought to establish a self-governed state free from external interference and oppression.

• The revolt was characterized by its intensity and the mobilization of a large number of tribal people.

Q69. Answer: (b) Nihon Hidankyo

The Correct answer is Nihon Hidankyo

Key Points

• Nihon Hidankyo, also known as the Japan Confederation of A- and H-Bomb Sufferers Organizations, is a prominent organization representing survivors of the atomic bombings of Hiroshima and Nagasaki.

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• Established in 1956, Nihon Hidankyo is dedicated to advocating for global nuclear disarmament and ensuring the voices of atomic bomb survivors, known as Hibakusha, are heard internationally.

• The organization works tirelessly to bring awareness to the devastating effects of nuclear weapons and promote peace by lobbying governments, participating in international forums, and organizing campaigns.

• Nihon Hidankyo has played a critical role in pushing for the adoption of treaties such as the Treaty on the Prohibition of Nuclear Weapons (TPNW).

• Its efforts have also included documenting the stories of atomic bomb survivors to preserve history and prevent future tragedies.

• The organization's work aligns with the objectives of the Nobel Peace Prize, which recognizes contributions to peace and disarmament.

• By highlighting the human cost of nuclear warfare, Nihon Hidankyo has inspired global action toward a world free of nuclear weapons.

Additional Information

• Antonio Guterres

• Antonio Guterres is the Secretary-General of the United Nations, serving since 2017.

• He is known for advocating for climate action, human rights, and international peace.

• While his efforts have been significant, he did not receive the 2024 Nobel Peace Prize.

• Al Gore

• Al Gore is a former Vice President of the United States and an environmental activist.

• He is well-known for his work on climate change and received the Nobel Peace Prize in 2007.

• However, he was not associated with the award in 2024.

• Greta Thunberg

• Greta Thunberg is a young Swedish climate activist who has gained international recognition for her efforts to combat climate change.

• She has inspired global movements such as Fridays for Future, but her focus is primarily on environmental issues rather than nuclear disarmament.

• While she has been nominated for the Nobel Peace Prize in the past, she did not win the award in 2024.

Q70. Answer: (b) 65 : 59

Shortcut Trick

Assume the third number is 100.

First number = 100 + 30% of 100 = 130.

Second number = 100 + 18% of 100 = 118.

Ratio = 130 : 118 = 65 : 59.

Therefore The correct answer is 65 : 59.

Alternate Method

Given: First number is 30% more than the third. Second number is 18% more than the third.

Let the third number be x.

=> First number = x + 0.30x = 1.30x

=> Second number = x + 0.18x = 1.18x

=> Ratio = First number ÷ Second number

=> Ratio = 1.30x ÷ 1.18x

=> Ratio = 130 / 118

=> Ratio = 65 / 59

Therefore The correct answer is 65 : 59.

Additional Information

Percentage Increase

If a value increases by r%, the new value is (1 + r/100) × Original Value.

Ratio Comparison

A ratio a : b can be expressed as a fraction a/b and simplified by dividing both terms by their HCF.

Base Value Selection

In percentage problems comparing multiple items to one common item, assume the common item (base) as 100 for easier calculation.

Q71. Answer: (b) 52

Shortcut Trick

If $x + 1/x = k$, then $x^3 + 1/x^3 = k^3 - 3k$.

Given: $x + 1/x = 4 \Rightarrow k = 4$.

$\Rightarrow x^3 + 1/x^3 = 4^3 - 3 \times 4$

$\Rightarrow 64 - 12 = 52$.

Therefore The correct answer is 52.

Alternate Method

Given: $x + 1/x = 4$

Formula Used: $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

Let $a = x$ and $b = 1/x$.

$\Rightarrow (x + 1/x)^3 = x^3 + (1/x)^3 + 3 \times x \times (1/x) \times (x + 1/x)$

$\Rightarrow (4)^3 = x^3 + 1/x^3 + 3 \times (x + 1/x)$

$\Rightarrow 64 = x^3 + 1/x^3 + 3 \times 4$

$\Rightarrow 64 = x^3 + 1/x^3 + 12$

$\Rightarrow x^3 + 1/x^3 = 64 - 12$

$\Rightarrow x^3 + 1/x^3 = 52$

Therefore, the value is 52, which corresponds to Option (2).

Therefore The correct answer is 52.

Additional Information

Square of a Sum Identity

If $x + 1/x = k$, then $x^2 + 1/x^2 = k^2 - 2$. This is derived from $(x + 1/x)^2 = x^2 + 1/x^2 + 2$.

Cube of a Difference Identity

If $x - 1/x = k$, then $x^3 - 1/x^3 = k^3 + 3k$. This is derived from $(x - 1/x)^3 = x^3 - 1/x^3 - 3(x - 1/x)$.

Fourth Power Identity

To find $x^4 + 1/x^4$, square the result of $x^2 + 1/x^2$ and subtract 2: $x^4 + 1/x^4 = (x^2 + 1/x^2)^2 - 2$.

Q72. Answer: (d) Three

Given, Seven people, I, J, K, L, O, P and Q are sitting in a row, facing north.

Only three people sit to the left of P.

Only I sits to the right of Q.

Only three people sit between Q and K.

L sits at some place to the left of J but at some place to the right of O.

Three people sit between O and J.

Hence, the correct answer is "Option 4".

Q73. Answer: (d) 60

To find the total number of students in the class, we use the formula:

Total students = (Rank from top) + (Rank from bottom) - 1

Given:

• Rajesh's rank from the top = 17th

• Rajesh's rank from the bottom = 44th

Applying the formula:

Total students = 17 + 44 - 1

Total students = 61 - 1

Total students = 60

Therefore, there are 60 students in Rajesh's class.

Hence, the correct answer is "Option 4".

Q74. Answer: (a) Sandhara type

The Correct answer is Sandhara type.

Key Points

• The Neeramankara Temple, located in Nemam, Kerala, is known to be built in the Sandhara type of shrine architecture.

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• The term Sandhara refers to a type of temple layout in which the structure is enclosed by walls and has a circumambulatory path (pradakshina patha) around the sanctum (garbhagriha).

• Such temples are designed to allow devotees to perform pradakshina (circumambulation) of the deity housed in the sanctum.

• This architectural style is commonly found in Indian temple architecture, particularly in regions where cultural and religious practices emphasize circumambulation as an integral part of worship.

• The Neeramankara Temple reflects the traditional Kerala temple architecture, with its unique wooden carvings, sloped roofs, and intricate design elements.

• The temple is a significant spiritual and cultural center in the region, drawing devotees and architecture enthusiasts alike.

• Sandhara temples often include additional features such as mandapas (pillared halls) and ornamental gateways, enhancing the aesthetic and functional aspects of the shrine.

Additional Information

• Sarvatobhadra type

• The Sarvatobhadra type of temple architecture is characterized by its symmetry and accessibility from all directions.

• This type of temple often has entrances on all four sides, symbolizing the universal accessibility of the deity housed within.

• It is commonly found in North Indian temple architecture.

• Unlike the Sandhara type, it may or may not have a circumambulatory path.

• Mandapa type

• A Mandapa is a pillared hall or pavilion used for religious purposes, particularly in Hindu temples.

• It is typically situated in front of the sanctum and serves as a place for devotees to gather and participate in rituals.

• While Mandapas are part of temple complexes, they are not a standalone architectural style like Sandhara or Sarvatobhadra.

• Nirandhara type

• The Nirandhara type of temple is characterized by the absence of a circumambulatory path around the sanctum.

• It focuses solely on the central sanctum and does not include space for devotees to perform pradakshina.

• These temples are typically smaller and emphasize direct worship of the deity without circumambulation.

Q75. Answer: (a) 91/180

Shortcut Trick

Let HCF = x. Since the ratio of the numbers is 18 : 5, their LCM = 18 × 5 × x = 90x.

Product of LCM and HCF = 90x × x = 90x² = 360 => x² = 4 => x = 2.

So, HCF = 2 and LCM = 180.

Sum of their reciprocals = (1 / 180) + (1 / 2) = (1 + 90) / 180 = 91 / 180.

Therefore The correct answer is 91/180.

Alternate Method

Given:

Ratio of two numbers = 18 : 5

Product of their LCM and HCF = 360

Formula Used:

For two numbers in ratio a : b (where a and b are coprime) with HCF = x, LCM = a × b × x.

Ratio = 18 : 5

Numbers: 18x and 5x

HCF = x

LCM = 18 × 5 × x = 90x

LCM × HCF = 90x² = 360

Calculations:

=> Let the two numbers be 18x and 5x.

=> Since 18 and 5 are coprime to each other, their highest common factor (HCF) is x.

=> The least common multiple (LCM) of 18x and 5x = 18 × 5 × x = 90x.

=> Given, product of LCM and HCF = 360.

=> 90x × x = 360

=> 90x² = 360

=> x² = 360 ÷ 90 = 4

=> x = √4 = 2

=> Therefore, HCF = 2 and LCM = 90 × 2 = 180.

=> Sum of reciprocals of LCM and HCF = (1 / LCM) + (1 / HCF)

=> Sum of reciprocals = (1 / 180) + (1 / 2)

=> Sum of reciprocals = (1 + 90) / 180 = 91 / 180.

Therefore The correct answer is 91/180.

Additional Information

Relationship between HCF, LCM and Product of Numbers

For any two numbers A and B, the product of the numbers is equal to the product of their HCF and LCM. Formula: A × B = HCF × LCM.

Numbers from Ratio

If two numbers are in the ratio a : b, then the numbers can be represented as (a × HCF) and (b × HCF). Here, a and b are strictly co-prime terms.

HCF and LCM of Fractions

HCF of fractions = (HCF of Numerators) ÷ (LCM of Denominators). Similarly, LCM of fractions = (LCM of Numerators) ÷ (HCF of Denominators).

Q76. Answer: (c) 134

Given interchange rules:

• '+' and '−' are interchanged.

• '×' and '÷' are interchanged.

The given equation is:

87 × 3 ÷ 4 + 12 − 30 = ?

Replace the operators with their corresponding new meanings:

87 ÷ 3 × 4 − 12 + 30 = ?

Now, we solve the equation following the BODMAS/PEMDAS rule (Brackets, Orders, Division/Multiplication from left to right, Addition/Subtraction from left to right):

= 87 ÷ 3 × 4 − 12 + 30

= 29 × 4 − 12 + 30

= 116 − 12 + 30 = 134

Therefore, the calculated value for the question mark (?) is 134.

Hence, the correct answer is "Option 3".

Q77. Answer: (d) Blue Revolution

The Correct answer is Blue Revolution.

Key Points

• The Blue Revolution is associated with the growth of the fishing industry in India.

• It refers to the significant increase in the production of fish and marine products through advanced techniques such as aquaculture and better management practices.

• The revolution aimed to improve aquatic resources and ensure better utilization of water bodies for fish farming.

• The Fish Farmers Development Agency (FFDA) and National Fisheries Development Board were key organizations that supported the initiatives under the Blue Revolution.

• The Blue Revolution also focused on enhancing employment opportunities in the fisheries sector, benefitting rural and coastal communities.

• India became one of the world's largest producers of fish due to the initiatives under this revolution, contributing significantly to its food security and export earnings.

• The Blue Revolution is crucial for ensuring sustainable management of aquatic ecosystems while meeting the growing demand for fish and seafood.

• It also included the development of marine fisheries, inland fisheries, and brackish water aquaculture.

Additional Information

• White Revolution

• The White Revolution in India is associated with the production and growth of milk.

• This revolution was spearheaded by Dr. Verghese Kurien, known as the father of the White Revolution.

• It led to India becoming the largest producer of milk in the world and promoted self-sufficiency in dairy production.

• The initiative was implemented through the Operation Flood program launched by the National Dairy Development Board

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(NDDB).

• The White Revolution contributed significantly to improving nutrition levels, enhancing livelihoods, and reducing dependency on imports.

• Green Revolution

• The Green Revolution refers to the significant increase in agricultural production in India during the 1960s and 1970s.

• It focused on the use of high-yield variety (HYV) seeds, chemical fertilizers, and irrigation techniques.

• It transformed India into a nation self-sufficient in food grains, especially wheat and rice.

• This revolution was led by Dr. M.S. Swaminathan, known as the father of the Green Revolution in India.

• The Green Revolution also had a major impact on reducing famine risks and improving food security.

• Yellow Revolution

• The Yellow Revolution in India is associated with the production and growth of edible oil, particularly mustard and sunflower oil.

• It aimed to reduce India's dependence on imported edible oils and achieve self-reliance in oilseed production.

• The revolution focused on improving oilseed cultivation techniques and promoting the use of hybrid varieties.

• The Yellow Revolution also supported rural livelihoods by enhancing oilseed farming opportunities.

Q78. Answer: (b) Modifying the definition of the character style

The Correct answer is Modifying the definition of the character style.

Key Points

• Character styles in MS Word are predefined or custom styles that store formatting information for text, such as font type, size, color, and other attributes.

• When you apply a character style to text, it links the text to that style's definition, allowing you to update the formatting of all instances by modifying the style definition.

• This method is highly efficient for lengthy documents with multiple instances of formatted text, as it eliminates the need for manual updates.

• By modifying the style, you can change the font, color, alignment, or other formatting attributes globally across the document.

• The process involves navigating to the Styles pane, right-clicking on the relevant style, selecting Modify, and updating the formatting as needed.

• This approach ensures consistency in formatting throughout the document and minimizes errors.

• It is particularly useful for documents like reports, books, or manuals where specific terms or phrases need consistent presentation.

Q79. Answer: (b) Rs. 74.45

Shortcut Trick

For Pen 1: MP = 100 × 1.15 = 115. SP = 115 × (1 − 0.29) = 115 × 0.71 = 81.65.

Profit/Loss 1 = 81.65 − 100 = −18.35.

For Pen 2: Profit 2 = 160 × 58% = 160 × 0.58 = 92.80.

Total Profit = 92.80 − 18.35 = 74.45.

Therefore The correct answer is Rs. 74.45.

Alternate Method

Given: CP1 = Rs. 100, Profit% applied for MP = 15%, Discount = 29%, CP2 = Rs. 160, Profit%2 = 58%.

Formulas: SP = CP × (100 + P%)/100 | Final SP = MP × (100 − D%)/100 | Profit = Total SP − Total CP.

=> Step 1: Calculate marked price for the first pen. MP1 = 100 + (15% of 100) = Rs. 115.

=> Step 2: Calculate selling price for the first pen after discount. SP1 = 115 − (29% of 115) = 115 − 33.35 = Rs. 81.65.

=> Step 3: Calculate selling price for the second pen. SP2 = 160 + (58% of 160) = 160 + 92.8 = Rs. 252.8.

=> Step 4: Calculate total Cost Price and total Selling Price. Total CP = 100 + 160 = Rs. 260. Total SP = 81.65 + 252.8 = Rs. 334.45.

=> Step 5: Calculate total Profit. Profit = 334.45 − 260 = Rs. 74.45.

Therefore The correct answer is Rs. 74.45.

Additional Information

Marked Price and Discount

Marked Price is the price listed by the seller. Discount is always calculated on the Marked Price to arrive at the Selling Price: SP = MP × (100 − Discount%)/100.

Profit Calculation

Profit is the difference between the Selling Price and the Cost Price. If SP is less than CP, it results in a loss.

Q80. Answer: (b) 42 A 6 D 38 C 18 B 6

Decoding the given information:

Alphabet	A	B	C	D
Meaning	÷	×	•	–

BODMAS Rule:

Checking each option:

Option 1: 42 D 6 A 38 B 18 C 6

=> 42 − 6 ÷ 38 × 18 + 6

=> 42 − 6 ÷ 38 × 18 + 6

=> 42 − 0.1578... × 18 + 6 (This will not result in an integer, so it's not 77)

Option 2: 42 A 6 D 38 C 18 B 6

=> 42 ÷ 6 − 38 + 18 × 6

=> 42 ÷ 6 − 38 + 18 × 6

=> 7 − 38 + 18 × 6

=> 7 − 38 + 108

=> −31 + 108

=> 77

Option 3: 42 C 6 B 38 A 18 D 6

=> 42 + 6 × 38 ÷ 18 − 6

=> 42 + 6 × 38 ÷ 18 − 6

=> 42 + 6 × 2.111... − 6 (This will not result in an integer, so it's not 77)

Option 4: 42 B 6 C 38 D 18 A 6

=> 42 × 6 + 38 − 18 ÷ 6

=> 42 × 6 + 38 − 18 ÷ 6

=> 252 + 38 − 18 ÷ 6

=> 252 + 38 − 3

=> 290 − 3

=> 287

Hence, the correct option is "Option 2".

Q81. Answer: (d) East

Given,

Town A is to the south of Town B.

Town C is to the east of Town B.

Town D is to the west of Town C.

Town E is to the north of Town D.

Town A is to the south-east of Town E.

Then, case II is not possible.

Then position of Town B with respect to Town D is in East.

Hence, the correct answer is "Option 4".

Q82. Answer: (a) 2011-12

The Correct answer is 2011-12.

Key Points

• Effective Revenue Deficit was introduced in 2011-12 during the Union Budget of India.

• The concept was introduced to distinguish between revenue expenditure that creates assets and other types of revenue expenditure.

• It is calculated by subtracting the Grants for Creation of Capital Assets from the Revenue Deficit.

• This measure was introduced to give a clearer picture of the actual deficit that impacts the fiscal position of the government.

• The primary goal of Effective Revenue Deficit is to promote transparency in public finance and encourage capital asset creation.

• It helps in understanding how much of the revenue expenditure is contributing to the creation of assets, which is a long-term

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benefit for the economy.

• This concept aligns with the government's efforts to improve fiscal discipline and ensure efficient allocation of resources.

• It is significant for policymakers and economists as it provides insights into the government's financial health and investment in infrastructure and development projects.

Additional Information

• 2003-04

• The year 2003 is significant in Indian fiscal policy due to the introduction of the Fiscal Responsibility and Budget Management (FRBM) Act.

• The FRBM Act aims to ensure responsible fiscal management and reduce fiscal deficits.

• It laid down targets for reducing the Revenue Deficit and Fiscal Deficit, but it did not include the concept of Effective Revenue Deficit.

• 2015-16

• The year 2015-16 is associated with several fiscal reforms, but the concept of Effective Revenue Deficit was already introduced prior to this period.

• During this time, the government focused on fiscal consolidation and initiatives like Pradhan Mantri Gram Sadak Yojana (PMGSY).

• 2008-09

• The year 2008-09 marked the global financial crisis, which impacted India's economy.

• India launched various fiscal stimulus packages to boost economic growth during this period, but the Effective Revenue Deficit concept was introduced later in 2011-12.

Q83. Answer: (d) 1

Shortcut Trick

For any quadratic equation of the form $y^2 - (\text{Sum of roots})y + (\text{Product of roots}) = 0$, we can directly identify the values.

From the given equation $y^2 - 9y + 8 = 0$, the Sum of roots $(\alpha + \beta)$ is 9 and the Product of roots $(\alpha\beta)$ is 8.

The required value is $(\alpha + \beta) - \alpha\beta \rightarrow 9 - 8 = 1$.

Therefore The correct answer is 1.

Alternate Method

Given: The quadratic equation is $y^2 - 9y + 8 = 0$, where α and β are the roots.

Formula: For a standard quadratic equation $ay^2 + by + c = 0$:

Sum of roots $(\alpha + \beta) = -b/a$

Product of roots $(\alpha\beta) = c/a$

Comparing the given equation with the standard form:

=> a = 1

=> b = −9

=> c = 8

Calculating the sum and product:

=> $\alpha + \beta = -(-9)/1 = 9$

=> $\alpha\beta = 8/1 = 8$

Substituting into the expression $\alpha + \beta - \alpha\beta$:

=> Value = 9 − 8

=> Value = 1

Therefore The correct answer is 1.

Additional Information

Nature of Roots

The nature is determined by the discriminant $D = b^2 - 4ac$. If $D > 0$, roots are real and distinct; if $D = 0$, roots are real and equal; if $D < 0$, roots are imaginary.

Formation of Equation

If roots are known, the equation is formed as: $y^2 - (\text{Sum of roots})y + (\text{Product of roots}) = 0$.

Quadratic Formula

The roots can be found using $y = [-b \pm \sqrt{(b^2 - 4ac)}] / 2a$.

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Q84. Answer: (b) Windows displays an error: "A file with this name already exists."

The Correct answer is Windows displays an error: "A file with this name already exists."

Key Points

• When a user attempts to rename a file to the same name as an existing file in the same folder on Windows, the operating system checks if there is already a file with that name.

• If a file with the same name exists, Windows prevents the renaming action by displaying an error message, which reads: "A file with this name already exists."

• This mechanism ensures that no two files in the same folder have the same name, as it would lead to conflicts in file management.

• File names in Windows are used as unique identifiers within a folder, and duplication is not allowed.

• The error helps maintain the file system integrity and avoids overwriting or unintended data loss.

• To rename a file successfully, users must ensure that the new file name is unique within the folder.

• This feature is applicable to all Windows versions and is a fundamental rule of file management systems.

Q85. Answer: (c) Article 41

The Correct answer is Article 41.

Key Points

• Article 41 of the Constitution of India is a part of the Directive Principles of State Policy (DPSP), which are enshrined in Part IV of the Constitution.

• It directs the state to make effective provisions for securing the right to work, education, and public assistance in cases of unemployment, old age, sickness, and other cases of undeserved want.

• The provision under Article 41 is non-justiciable, meaning it cannot be enforced by courts, but it acts as a guiding principle for the state while formulating policies.

• Article 41 emphasizes the responsibility of the state to consider its economic capacity and development while implementing these provisions.

• The Directive Principles of State Policy aim to promote the welfare of the people by securing a social order informed by justice—social, economic, and political.

• Article 41 is particularly relevant in addressing social and economic inequalities, ensuring that vulnerable sections of society receive adequate support.

• The article complements other provisions like Article 39, which focus on equitable distribution of resources, and Article 42, which deals with just and humane conditions of work.

Additional Information

• Article 39

• Article 39 is also a part of the Directive Principles of State Policy.

• It mandates the state to ensure that the ownership and control of material resources of the community are distributed to serve the common good.

• It also emphasizes preventing the concentration of wealth and means of production to the detriment of the common interest.

• Additionally, Article 39 focuses on providing children with opportunities to develop in a healthy manner and protecting them against exploitation.

• Article 42

• Article 42 directs the state to make provisions for securing just and humane conditions of work and for maternity relief.

• This article aims to improve the quality of labor conditions and is particularly significant for the welfare of women and workers.

• It complements labor laws and policies, ensuring social justice for working individuals.

• Article 40

• Article 40 deals with the organization of village panchayats.

• It directs the state to take steps to organize village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government.

• This article is crucial for strengthening grassroots democracy in India.

Q86. Answer: (a) Extra space added for document binding

The Correct answer is Extra space added for document binding.

Key Points

• The Gutter margin in MS Word is designed to provide extra space on the page margin.

• This space ensures that the content remains readable even after the document is bound.

• The gutter margin is primarily used in documents that require binding, such as books, magazines, or reports.

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• It ensures that the text or graphics do not get hidden due to the binding process.
• The gutter margin can be set on either side of the page, depending on the binding orientation (left or top).
• In MS Word 2019, users can adjust the gutter margin under the Layout tab by selecting the Margins option.
• This feature is especially useful for creating professional-grade documents where proper alignment and readability are crucial.
• The gutter margin is added to the binding edge of the document, such as the left margin for left-bound books.
• It is commonly used in publishing industries to create well-structured and visually appealing layouts.

Additional Information

• The blank space on all four sides of the page
• This refers to the general margins of a document that are applied on the top, bottom, left, and right sides.
• These margins are different from the gutter margin, as they do not account for binding requirements but are primarily for ensuring proper layout and spacing in the document.
• General margins are adjusted under the Layout tab in MS Word.
• A margin applied only to odd-numbered pages
• This refers to a specific type of margin setting in MS Word, often used for documents with mirror margins.
• Mirror margins alternate between odd and even pages to accommodate double-sided printing.
• It is suitable for documents like books where text alignment differs on odd and even pages.
• The space at the top of the page for a header
• This refers to the header section of the document, where users can include titles, page numbers, or other information.
• The header does not affect the margin space or binding requirements.
• Headers are inserted or modified under the Insert tab in MS Word.

Q87. Answer: (c) 3.27

Shortcut Trick

B = 2 + 4 + 6 = 12

For third proportional C of 44 and 12: C = $12^2 \div 44$

C = 144 ÷ 44 = 36 ÷ 11 ≈ 3.27

Therefore The correct answer is 3.27.

Alternate Method

Given: First value = 44, Second value = B, Third proportional = C.

Formula Used: If a, b, c are in continued proportion, then c = $b^2 \div a$.

=> First three even natural numbers are 2, 4, and 6.

=> B = 2 + 4 + 6 = 12

=> 44, 12, C are in continued proportion.

=> 44/12 = 12/C

=> C = (12 × 12) ÷ 44

=> C = 144 ÷ 44 = 3.2727...

=> C ≈ 3.27

Therefore The correct answer is 3.27.

Additional Information

Mean Proportional

The mean proportional between two numbers a and b is given by √(a × b).

Fourth Proportional

If a : b = c : d, then d is the fourth proportional, calculated as d = (b × c) ÷ a.

Sum of First n Even Numbers

The sum of the first n even natural numbers is given by the formula n(n + 1).

Q88. Answer: (c) 3000

Shortcut Trick

Number of small cubes (n^3) = (Side of large cube / Side of small cube)^3

Total Surface Area of all small cubes = $n^3 \times 6 \times$ (small side)^2

=> $(10 / 2)^3 \times 6 \times 2^2 = 5^3 \times 6 \times 4 = 125 \times 24 = 3000$ cm^2

Therefore The correct answer is 3000 cm^2.

Alternate Method

Given: Side of large cube (A) = 10 cm, Side of small cube (a) = 2 cm.

Formula Used: Volume of cube = side^3; Total Surface Area (TSA) = 6 × side^2

=> Volume of large cube = 10^3 = 1000 cm^3

=> Volume of one small cube = 2^3 = 8 cm^3

=> Number of small cubes = 1000 ÷ 8 = 125

=> TSA of one small cube = 6 × 2^2 = 6 × 4 = 24 cm^2

=> Total TSA of 125 cubes = 125 × 24 = 3000 cm^2

Therefore The correct answer is 3000 cm^2.

Additional Information

Cube Mensuration Formulas

Lateral Surface Area (LSA) = 4 × side^2 and the longest diagonal of a cube = √3 × side.

Volume Invariance

When a solid is recast or cut into smaller pieces, the total volume remains constant (Volume_(Large) = n × Volume_(Small)).

Surface Area Change

When a larger object is cut into smaller pieces, the total surface area increases because new faces are exposed.

Q89. Answer: (a) Taj Mahal

The Correct answer is Taj Mahal.

Key Points

• The Taj Mahal is one of the most famous examples of the Charbagh architectural style.

• The Charbagh style is a Persian-inspired garden layout divided into four symmetrical quadrants, representing the Islamic concept of paradise.

• The layout of the Taj Mahal is structured in a perfectly symmetrical design, with the mausoleum at the center surrounded by gardens, water channels, and pathways.

• The gardens are laid out with a grid pattern, dividing them into four parts, each representing a quadrant.

• The Charbagh style was introduced in India during the Mughal period, under the influence of Persian culture.

• The Taj Mahal, located in Agra, Uttar Pradesh, was commissioned by Mughal Emperor Shah Jahan in memory of his wife Mumtaz Mahal.

• This architectural style symbolized spiritual significance, with the water channels representing life and purity.

• The Taj Mahal's Charbagh layout incorporates reflecting pools that mirror the beauty of the structure, enhancing its visual appeal.

• The sandstone pathways and lush greenery in the gardens create a serene and tranquil ambiance, aligning with the concept of paradise.

Additional Information

• Gumbaj of Bijapur

• The Gol Gumbaz in Bijapur, Karnataka, is known for its Deccan architecture rather than the Charbagh style.

• It is famous for its massive dome, which is one of the largest in the world.

• The structure includes a whispering gallery, where even the faintest sound can be heard across the dome.

• The Gol Gumbaz was built during the reign of Mohammed Adil Shah, reflecting Islamic architectural influences.

• Quwwat-ul-Islam Mosque

• The Quwwat-ul-Islam Mosque in Delhi is one of the earliest examples of Islamic architecture in India.

• It was built by Qutb-ud-din Aibak and is part of the Qutub Complex.

• The mosque is famous for its use of spolia, where materials from Hindu and Jain temples were repurposed for construction.

• The mosque does not feature the Charbagh style; instead, it showcases early Islamic architectural elements such as arches and domes.

• Qutub Minar

• The Qutub Minar, located in Delhi, is a UNESCO World Heritage Site and is known for its towering minaret.

• It was commissioned by Qutb-ud-din Aibak and completed by his successor, Iltutmish.

• The structure is an example of Indo-Islamic architecture and does not incorporate the Charbagh style.

• The Qutub Minar served as a symbol of victory and a place for the muezzin to call Muslims for prayer.

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Q90. Answer: (d) XF −10

The logic followed here is,

For, WR 21 is related to ZS 6

GV 11 is related to JW −4

UE 5 related

Thus, following the same logic, UE 5 is related to XF -10.

Hence, the correct answer is Option 4.

Q91. Answer: (b) Jyothi Surekha Vennam and Rishabh Yadav

The Correct answer is Jyothi Surekha Vennam and Rishabh Yadav.

Key Points

• Jyothi Surekha Vennam and Rishabh Yadav achieved this remarkable feat in the compound mixed team event at the Archery World Cup 2025 Stage 1.

• The mixed team event is a format where a male and female archer compete together, showcasing their coordination, precision, and consistency.

• Jyothi Surekha Vennam is a decorated Indian archer known for her expertise in the compound archery discipline. She has previously won numerous medals in World Archery Championships, Asian Championships, and World Cups.

• Rishabh Yadav, a rising talent in Indian archery, has demonstrated exceptional skill and consistency, making him a valuable partner in the mixed team format.

• The duo's victory at the Archery World Cup 2025 Stage 1 signifies the growing dominance of Indian archers on the global stage.

• The Archery World Cup is a prestigious event organized by World Archery Federation, featuring the best archers from across the globe competing in various disciplines.

• India's consistent performance in international archery events highlights the country's strong training programs and infrastructure for nurturing young talent.

Q92. Answer: (b) 164.4

Shortcut Trick

Let the base average of the class be 163 cm.

The remaining 35 boys have an average height of 165 cm, which is +2 cm more than the base average.

Total positive deviation = 35 × 2 = +70 cm.

This excess deviation must be distributed equally among all 50 boys.

Average increase = 70 ÷ 50 = +1.4 cm.

Overall Average = 163 + 1.4 = 164.4 cm.

Therefore The correct answer is 164.4 cm.

Alternate Method

Given:

Total number of boys in the class = 50

Average height of 15 boys = 163 cm

Average height of the remaining boys (50 − 15 = 35) = 165 cm

Formula Used:

Combined Average = (n1x1 + n2x2) ÷ (n1 + n2)

163

15 Boys

(Ratio 3)

165

35 Boys

(Ratio 7)

164.4

Combined Avg

Distance = 7 parts (1.4 cm)

3 parts (0.6 cm)

Calculations:

=> Total sum of heights of 15 boys = 15 × 163 = 2445 cm

=> Total sum of heights of remaining 35 boys = 35 × 165 = 5775 cm

=> Total sum of heights of all 50 boys = 2445 + 5775 = 8220 cm

=> Average height of the entire class = Total Sum ÷ Total Boys

=> Average height = 8220 ÷ 50 = 164.4 cm

Therefore The correct answer is 164.4 cm.

Additional Information

Weighted Average Concept

When groups of different sizes have different averages, the combined average is shifted closer to the average of the larger group. The distance from the individual averages is inversely proportional to their group sizes.

Alligation Method for Averages

Averages can be solved quickly using alligation cross-difference. The ratio of the quantity of the groups is equal to the ratio of the cross differences of their averages from the mean average: (A2 − A_(mean)) : (A_(mean) − A1) = n1 : n2.

Deviation Method

Instead of calculating large sums, assume a base average (usually the smallest value). Find the net deviation for the remaining quantities, and divide by the total number of items to get the average change to apply to the base.

Q93. Answer: (b) 32

Shortcut Trick

Total of three numbers = Average × 3 = 23 × 3 = 69.

Sum of two given numbers = 11 + 26 = 37.

Third number = Total − Sum of two numbers = 69 − 37 = 32.

Therefore The correct answer is 32.

Alternate Method

Given: Average = 23, Number of terms (n) = 3, Number1 = 11, Number2 = 26.

Formula Used: Average = (Sum of all numbers) ÷ (Number of terms)

=> Let the third number be x.

=> Average = (11 + 26 + x) ÷ 3

=> 23 = (37 + x) ÷ 3

=> 23 × 3 = 37 + x

=> 69 = 37 + x

=> x = 69 − 37

=> x = 32

Therefore The correct answer is 32.

Additional Information

Net Deviation Method

In any set of numbers, the sum of deviations from the average is always zero. Deviation = (Number − Average).

Arithmetic Progression (AP) Average

For numbers in AP, the average is simply the middle term (if n is odd) or the average of the first and last terms.

Weighted Average

When combining two groups with averages A1 and A2 and sizes n1 and n2, the combined average is (n1A1 + n2A2) ÷ (n1 + n2).

Q94. Answer: (d) It is a naturally occurring element found in pitchblende.

The Correct answer is It is a naturally occurring element found in pitchblende.

Key Points

• Neptunium is a naturally occurring element that is found in trace amounts in ores like pitchblende, a uranium-rich mineral.

• It is a part of the actinide series in the periodic table and has the atomic number 93.

• Neptunium is formed as a byproduct in the decay chain of uranium and thorium, as well as during the operation of nuclear reactors.

• It was discovered in 1940 by Edwin McMillan and Philip Abelson at the University of California, Berkeley.

• The element is radioactive and has no stable isotopes. The most common isotope of Neptunium is Neptunium-237, which has a half-life of approximately 2.14 million years.

• It is primarily used in nuclear science for research purposes and in the production of plutonium-238, which is used in radioisotope thermoelectric generators (RTGs) for space missions.

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• Pitchblende, also known as uraninite, is a principal ore of uranium and a source of Neptunium due to its trace presence.

• Neptunium is a silvery metal with properties similar to uranium and plutonium.

Additional Information

• It is non-reactive element

• Neptunium is a reactive element. It reacts with oxygen, acids, and halogens, contrary to the statement that it is non-reactive.

• It forms a variety of compounds, including oxides and halides, and shows multiple oxidation states ranging from +3 to +7.

• Its reactivity is one of the reasons for its use in chemical and nuclear research.

• It is stable element

• Neptunium is radioactive and does not have any stable isotopes, making the statement incorrect.

• Its isotopes decay over time through various processes such as alpha decay, beta decay, and spontaneous fission.

• It was known during Mendeleev's time

• Neptunium was not discovered during Mendeleev's time. It was only discovered in 1940, long after Mendeleev developed the periodic table in 1869.

• Mendeleev's periodic table did not include elements beyond uranium (atomic number 92), as transuranic elements like Neptunium were synthesized later.

• General Information on Pitchblende

• Pitchblende, also known as uraninite, is a black or brownish-black mineral that is primarily composed of uranium oxide (UO_2).

• It is an important ore for extracting uranium and contains trace amounts of other elements like radium, thorium, and Neptunium.

• The mineral is found in countries like Canada, Congo, the Czech Republic, and the United States.

Q95. Answer: (c) 4.85 crore

The Correct answer is 4.85 crore.

Key Points

• Under the Digital Agriculture Mission launched in India, various initiatives have been undertaken to leverage technology and data for enhancing agricultural productivity and efficiency.

• The generation of farmer IDs is part of the broader goal to create a centralized database of farmers, enabling targeted delivery of schemes, subsidies, and benefits.

• As of 28 March 2025, approximately 4.85 crore farmer IDs have been generated, showcasing the scale of digitization efforts in the agricultural sector.

• These IDs are linked to the farmers' Aadhaar numbers to ensure transparency and accuracy in identifying beneficiaries.

• The initiative aims to streamline the process of providing benefits under various government schemes such as PM-KISAN, crop insurance, and subsidies.

• This effort is part of India's larger aim to implement data-driven governance in agriculture, which includes the use of AI, IoT, and blockchain technologies.

• The creation of farmer IDs also supports the monitoring of agricultural activities, crop patterns, and productivity at the national level.

• It reflects the government's focus on achieving self-reliance (Atmanirbhar Bharat) in agriculture and empowering farmers with digital tools and resources.

Additional Information

• Digital Agriculture Mission

• The Digital Agriculture Mission was launched by the Government of India to promote the use of advanced technologies in agriculture.

• Its focus is on integrating data platforms, remote sensing, and analytics to improve decision-making and policy formulation.

• The mission emphasizes the adoption of technologies like AI, drones, blockchain, and IoT for better agricultural outcomes.

• It aims to enhance efficiency in resource utilization, reduce wastage, and provide farmers with real-time advisory services.

• The initiative also targets the creation of a Unified Farmer Service Interface (UFSI) for consolidated access to schemes and services.

• Aadhaar Integration in Agriculture

• Aadhaar linkage ensures that subsidies and benefits reach the intended beneficiaries, eliminating duplication and fraud.

• The integration helps in creating a robust database for better policy planning and execution.

• It aligns with the government's vision of implementing Direct Benefit Transfer (DBT) effectively in agriculture.

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Q96. Answer: (c) IV

Shortcut Trick

To obtain the maximum selling price, the total discount percentage must be the minimum.

For two successive discounts a% and b%, the net discount = a + b − (a × b) ÷ 100.

Scheme I: 27 + 27 − 7.29 = 46.71% | Scheme II: 36 + 45 − 16.2 = 64.8%.

Scheme III: 19 + 32 − 6.08 = 44.92% | Scheme IV: 34 + 7 − 2.38 = 38.62%.

The lowest discount is in Scheme IV (38.62%), resulting in the highest Selling Price.

Therefore The correct answer is Scheme IV.

Alternate Method

Given → Four different successive discount schemes. We need to find the one with the maximum SP.

Formulas: Net Discount% = a + b − (ab ÷ 100) | SP = MP × (100 − Net Discount%) ÷ 100.

=> Scheme I: 27 + 27 − (27 × 27 ÷ 100) = 54 − 7.29 = 46.71%.

=> Scheme II: 36 + 45 − (36 × 45 ÷ 100) = 81 − 16.2 = 64.8%.

=> Scheme III: 19 + 32 − (19 × 32 ÷ 100) = 51 − 6.08 = 44.92%.

=> Scheme IV: 34 + 7 − (34 × 7 ÷ 100) = 41 − 2.38 = 38.62%.

=> Since 38.62% is the minimum discount, it fetches the maximum selling price.

Therefore The correct answer is Scheme IV.

Additional Information

Relationship between Discount and SP

For a fixed Marked Price (MP), the Selling Price (SP) is inversely proportional to the discount offered. Higher discount means lower SP, and lower discount means higher SP.

Successive Discounts

When multiple discounts are offered one after another, the net discount is always less than the simple sum of individual discount percentages.

Q97. Answer: (d) Mohenjodaro

The Correct answer is Mohenjodaro.

Key Points

• Mohenjodaro, one of the most significant cities of the Indus Valley Civilization, is located in present-day Pakistan.

• It is considered one of the earliest urban settlements in the world, showcasing advanced features like planned city layouts, drainage systems, and granaries.

• A large number of terracotta toys were discovered at Mohenjodaro. These toys include models of carts, animals, and whistles, reflecting the advanced artistic and cultural practices of the civilization.

• The presence of terracotta toys indicates the importance of recreational activities and the use of toys in the daily lives of children during the Harappan period.

• The terracotta items also provide insights into the technological and artistic skills of the people living in Mohenjodaro.

• Mohenjodaro was known for its sophisticated urban planning and is often referred to as the "City of Mounds" due to the presence of large mounds resulting from the ancient ruins.

• The site of Mohenjodaro was excavated by R.D. Banerji in the early 20th century, revealing many artifacts, including toys, seals, ornaments, and pottery.

Additional Information

• Rakhigarhi

• Rakhigarhi is one of the largest sites of the Indus Valley Civilization, located in present-day Haryana, India.

• The site has provided evidence of advanced urban planning, burial practices, and pottery but has not been specifically noted for a large number of terracotta toys.

• Excavations at Rakhigarhi have revealed evidence of early farming practices, trade networks, and storage systems.

• Kalibangan

• Kalibangan is situated in Rajasthan, India, and is known for its distinctive features such as fire altars and evidence of plowed fields.

• While Kalibangan provides significant insights into the religious practices and agricultural advancements of the Indus Valley Civilization, it is not particularly famous for terracotta toys.

• The site is also known for its unique pottery and bricks used in construction.

• Lothal

• Lothal is located in Gujarat, India, and is famous for its dockyard, which indicates advanced maritime trade practices during the

Indus Valley Civilization.

• The site has yielded artifacts such as beads, seals, and tools but is not specifically noted for a large number of terracotta toys.

• Lothal provides evidence of a thriving trade network and technological expertise in bead-making and metallurgy.

Q98. Answer: (c) Jainism

The Correct answer is Jainism.

Key Points

• Chandragupta Maurya, the founder of the Mauryan Empire, is said to have converted to Jainism in his later years.

• He was deeply influenced by Jain teachings and the Jain saint Bhadrabahu.

• Under Bhadrabahu's guidance, Chandragupta renounced his throne and material possessions to embrace the ascetic life of Jainism.

• According to Jain tradition, Chandragupta migrated to Shravanabelagola in present-day Karnataka, where he spent his final years practicing strict asceticism.

• Jainism emphasizes principles such as ahimsa (non-violence), truthfulness, and detachment, which deeply resonated with Chandragupta.

• It is believed that Chandragupta ended his life through the Jain practice of Sallekhana, a ritual of voluntary fasting to death, as a way to purify the soul.

• The conversion of Chandragupta to Jainism marked a significant interaction between political authority and religious ideology in ancient India.

Additional Information

• Buddhism

• Buddhism was founded by Gautama Buddha in the 6th century BCE in India.

• It emphasizes the principles of Four Noble Truths and the Eightfold Path for achieving liberation.

• Chandragupta Maurya's grandson, Emperor Ashoka, embraced Buddhism and helped spread its teachings across Asia.

• Buddhism focuses on meditation, compassion, and achieving Nirvana.

• Zoroastrianism

• Zoroastrianism is one of the world's oldest monotheistic religions, founded by Prophet Zoroaster in ancient Persia.

• It centers around the worship of Ahura Mazda, the supreme deity, and emphasizes the duality of good and evil.

• Zoroastrianism has no historical connection to Chandragupta Maurya or his reign in India.

• Christianity

• Christianity is based on the teachings of Jesus Christ and originated in the 1st century CE in the Roman province of Judea.

• The religion emphasizes faith, love, and salvation through Jesus Christ.

• Christianity had not spread to India during Chandragupta Maurya's time, making it an unlikely option.

Q99. Answer: (b) 2

There are seven boxes: A, B, C, D, E, F, and G. Let's determine their positions from top to bottom.

1. Only three boxes are kept above G.

Position	Box
1	
2	
3	
4	G
5	
6	
7	

2. Only one box is kept between F and G.

	Case I	Case II
Position	Box	Box
1		

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2	F	
3		
4	G	G
5		
6		F
7		

3. Only three boxes are kept between F and B.

4. B is kept in some place above G.

From these two points, Case I is not possible.

	Case II
Position	Box
1	
2	B
3	
4	G
5	
6	F
7	

5. E is kept immediately below B.

	Case II
Position	Box
1	
2	B
3	E
4	G
5	
6	F
7	

7. C is not kept immediately above or below F.

	Case II
Position	Box
1	C
2	B
3	E
4	G
5	
6	F
7	

6. A is kept in one of the places above D.

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	Case II
Position	Box
1	C
2	B
3	E
4	G
5	A
6	F
7	D

There are 2 boxes kept below A.

Hence, the correct answer is "Option 2".

Q100. Answer: (d) 51.48

Shortcut Trick

For a hemisphere of radius r to be fully fitted inside a cuboid, the minimum dimensions of the cuboid must be 2r × 2r × r.

Volume of Cuboid = 2r × 2r × r = $4r^3 = 4 \times 3^3 = 108$ cm³.

Volume of Hemisphere = (2/3) × π × r^3 = (2/3) × 3.14 × 27 = 56.52 cm³.

Water Volume = 108 − 56.52 = 51.48 cm³.

Therefore The correct answer is 51.48 cm³.

Alternate Method

Given: Radius of hemisphere (r) = 3 cm, π = 3.14.

Formula Used: Volume of water = Volume of Cuboid − Volume of Hemisphere

=> Minimum Length of cuboid = 2 × r = 6 cm

=> Minimum Breadth of cuboid = 2 × r = 6 cm

=> Minimum Height of cuboid = r = 3 cm

=> Volume of Cuboid = 6 × 6 × 3 = 108 cm³

=> Volume of Hemisphere = (2/3) × 3.14 × $(3)^3$

=> Volume of Hemisphere = 2 × 3.14 × 9 = 56.52 cm³

=> Volume of water = 108 − 56.52 = 51.48 cm³

Therefore The correct answer is 51.48 cm³.

Additional Information

Volume of Sphere

The volume of a complete sphere is given by (4/3)πr^3, which is exactly double that of a hemisphere.

Surface Area of Hemisphere

Curved Surface Area = 2πr^2 and Total Surface Area (including base) = 3πr^2.

Cuboid Fitting Rule

To fit a solid, the dimensions of the container must be at least equal to the maximum diameter/height of the solid in all directions.

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