RRB NTPC Graduate Level CBT-I Official Paper (Held On: 09 Jun, 2025 Shift 2) (Previous Year Paper)

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

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Q1. Two poles of height 12 m and 20 m are fixed to a level ground. The distance between the bottom of the poles is 15 m. What is the distance (in m) between their tops?

(a) 20
(b) 17
(c) 25
(d) 16

Q2. What will come in the place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

45 ÷ 13 − 286 × 2 + 68 =?

(a) 660
(b) 680
(c) 670
(d) 690

Q3. In a certain code language, 'good morning all' is coded as 'cx fg zq' and 'all students present' is coded as 'zq nr vk'. How is 'all' coded in the given language?

(a) nr
(b) zq
(c) fg
(d) vk

Q4. AB is parallel to CD. A transversal PQ intersects AB and CD at E and F, respectively, and angle PEB = 49°. G is a point between AB and CD such that angle BEG = 35° and angle GFE = 16°. What is the measure of angle EGF?

(a) 60°
(b) 57°
(c) 68°
(d) 59°

Q5. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All tubs are shirts.

Some shirts are jams.

No jam is a coat.

Conclusions:

(I) No tub is a coat.

(II) Some jams are tubs.

(a) Both conclusions (I) and (II) follow
(b) Only conclusion (I) follows

(c) Neither conclusion (I) nor (II) follows
(d) Only conclusion (II) follows

Q6. The first parallel government, following the Quit India Movement, was established in which city?
(a) Ballia
(b) Talchar
(c) Satara
(d) Benaras

Q7. 9 men or 8 women can do a job in 19 days. 9 men work for 9 days and leave. The number of women required to complete the remaining work in 8 days is:
(a) 8
(b) 12
(c) 11
(d) 10

Q8. The value of $19^3 - 14^2 + (8/2)^2 - 19 + 5 \times 20 =$
(a) 6758
(b) 6753
(c) 6761
(d) 6760

Q9. F is the sister of G. G is the husband of H. H is the daughter of I. I is the wife of J. How is F related to J?
(a) Sister
(b) Daughter's husband's mother
(c) Daughter's husband's sister
(d) Mother

Q10. One pipe can fill the tank in 7 minutes while another pipe can empty the completely filled tank in 56 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) 13
(b) 6
(c) 7
(d) 12

Q11. In the ministerial hierarchy in India, Ministers of State generally have:
(a) authority over the Cabinet portfolios
(b) . no executive responsibility in any of the portfolios
(c) secondary rank within the portfolios assigned to Cabinet Ministers
(d) equal standing with Cabinet Ministers in their assigned portfolios

Q12. The irrigation method in India that distributes water through pipes under low pressure to each plant is called:
(a) furrow irrigation
(b) localised irrigation
(c) tubewell irrigation
(d) canal irrigation

Q13. What should come in place of the question mark (?) in the given series based on the English alphabetical order?
BIG DKI FMK HOM ?
(a) JRO
(b) JQO
(c) JQP
(d) JRP

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

34 46 58 70 ? 94 106

(a) 80
(b) 88
(c) 86
(d) 82

Q15. The 2025 SEA Games were scheduled to be held in which country

(a) Vietnam
(b) Indonesia
(c) Thailand
(d) Malaysia

Q16. P, Q, R, S, T, U and V are sitting around a circular table facing the centre. U sits to the immediate right of T. Only three people sit between U and V when counted from the left of U. Only three people sit between T and R. Q sits to the immediate right of P. How many people sit between T and P when counted from the left of P?

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

Q17. The average weight of 10 boys is 70 kg. But later, it was found that at two places the weight 54 kg was read as 44 kg and at one place weight 35 kg was read as 40 kg. Find the correct average weight (in kg) of the 10 boys.

(a) 71.5
(b) 67.5
(c) 68.5
(d) 70.5

Q18. The Chalukyas of Badami were founded by:

(a) Kirttivarman I
(b) Vikramaditya I
(c) Mangalesha
(d) Pulakesin I

Q19. The ratio of numbers of girls and boys participating in sports of a school is 1 : 5. If the number of girls is 200, determine the number of boys participating in the sports.

(a) 1000
(b) 1030
(c) 1020
(d) 975

Q20. Who among the following won the 2024 Booker Prize for Fiction for their novel Orbital, which explores themes of isolation, the human condition, and our relationship with Earth?

(a) Sally Rooney
(b) Douglas Stuart
(c) Colson Whitehead
(d) Samantha Harvey

Q21. All 92 people are standing in a row facing north. Manju is 16^(th) from the left end while Nisha is 9^(th) from the right end. How many people are there between Manju and Nisha?

(a) 58
(b) 48
(c) 65
(d) 67

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Q22. Which of the following is a common component in toothpaste, for cleaning the teeth by neutralising the excess acid to prevent tooth decay?

(a) Salts
(b) Halogens
(c) Acids
(d) Bases

Q23. In the 2025 Delhi Legislative Assembly elections, after how many years did the Bharatiya Janata Party (BJP) win the majority, and how many seats did it secure?

(a) After 30 years, securing 50 seats
(b) After 25 years, securing 48 seats
(c) After 27 years, securing 48 seats
(d) After 35 years, securing 55 seats

Q24. The arithmetic mean of the observations 78, 56, 52, 45, 97, 19, 37, 46 and 74 is:

(a) 56
(b) 61
(c) 64
(d) 48

Q25. A certain number is divided into two parts such that 5 times the first part added to 14 times the second part makes 7 times the whole. The ratio of the second part to the first part is:

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

Q26. Mohan invests a sum of Rs. 5,000 and Varun invests a sum of Rs. 9,000 at the same rate of simple interest per annum. If, at the end of 3 years, Varun gets Rs. 480 more interest than Mohan, then find the rate of interest per annum (in percentage).

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

Q27. Which agreement is linked to the Citizenship (Amendment) Act, 1985?

(a) Shimla Agreement
(b) Indo-Sri Lanka Pact
(c) Assam Accord
(d) Kashmir Agreement

Q28. After independence, co-operatives became an integral part of which planning initiative in India?

(a) Five-Year Plans
(b) Industrial Policy Resolution
(c) Green Revolution
(d) Operation Flood

Q29. What was the Gross Enrollment Ratio (GER) in higher education in India according to the All India Survey on Higher Education, 2021-22?

(a) 26.6%
(b) 30.8%
(c) 24.2%
(d) 28.4%

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Q30. Who among the following has been appointed as the 26^(th) Governor of Reserve Bank of India in December 2024?

(a) Tuhin Kumar Pandey
(b) Sanjay Malhotra
(c) Arunish Chawla
(d) Gyanesh Kumar

Q31. In the context of file systems, what is the primary purpose of a file system 'metadata'?

(a) To define the graphical representation of files and folders for the user
(b) To record information about the files and directories, such as their names, sizes, timestamps and permissions
(c) To optimise the physical storage of file data on the storage device for faster access
(d) To store the actual content and data of the files

Q32. If 2% of x = 24, then x is equal to:

(a) 1300
(b) 1200
(c) 2400
(d) 2500

Q33. Which ruler of the Western Kshatrapas dynasty is primarily known for restoring the Sudarshana Lake in Kathiawar?

(a) Rudradaman I
(b) Nahapana
(c) Azes
(d) Maues

Q34. Which of the following elements is NOT inherently part of a basic 'Blank Presentation' upon its initial creation in MS PowerPoint?

(a) At least one slide
(b) A default slide layout
(c) Pre-defined theme colours
(d) Placeholders for content

Q35. Rohit bought an article for Rs. 4,400. He spent Rs. 3,600 on it. He marked the price 25% above his total cost price. He then allowed two successive discounts of 19% on it. Find the selling price (in Rs.) of the article.

(a) 6,564
(b) 6,560
(c) 6,563
(d) 6,561

Q36. Arrange the following states in descending order based on the number of seats won by the Bharatiya Janata Party (BJP) in their respective 2024–2025 assembly elections.

1. Delhi
2. Maharashtra
3. Jammu and Kashmir
4. Jharkhand

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

Q37. IV 17 is related to FR 6 in a certain way. In the same way, KJ 12 is related to HF 1. To which of the given options is OE −6 related, following the same logic?

(a) PA −21
(b) LA −17
(c) TR −29
(d) KI −13

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Q38. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

DKR HOV LSZ PWD ?

(a) HAT
(b) HTA
(c) TAH
(d) THA

Q39. Chetan gets a 2% increase in his sale amount in the first year and a 20% increase in the second year; with that his present sale is Rs. 1,76,800. What was his sale (in Rs.) two years ago? (Correct to two decimal places.)

(a) 1,24,444.44
(b) 1,44,444.44
(c) 1,47,333.33
(d) 1,73,333.33

Q40. Which of the following methods is the quickest way to open an existing MS Excel spreadsheet?

(a) Open MS Excel and click Blank Workbook
(b) Use the Alt + F4 shortcut
(c) Press Ctrl + N
(d) Double-click the .xlsx file in File Explorer

Q41. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '−', then the resultant of which of the following would be 5?

(a) 96 B 12 D 45 A 3 C 14
(b) 96 C 12 B 45 A 3 D 14
(c) 96 A 12 D 45 C 3 B 14
(d) 96 D 12 C 45 B 3 A 14

Q42. Who inaugurated the Shri S Ramakrishnan Centre of Excellence at IIT Madras in 2025?

(a) ISRO Chairman
(b) Union Minister for Space
(c) Scientific Secretary of ISRO
(d) Director of IIT Madras

Q43. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only. All numbers are single-digit numbers only.

(Left) 9 # 1 * £ 5 2 & % $ 7 & 3 Ω 4 6 @ 8 (Right)

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

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

Q44. The difference between the simple interest and the compound interest, compounded annually, on a certain sum of money for 2 years at 19% per annum is Rs. 590. Find the sum [rounded off to the nearest integer].

(a) Rs. 16,343
(b) Rs. 16,358
(c) Rs. 16,335
(d) Rs. 16,336

Q45. In Gond painting, what is the purpose of applying 'chhui' clay on the surface?

(a) To create a smooth white base for painting
(b) To fix cracks on the wall
(c) To prevent insects from damaging the wall
(d) To reflect sunlight

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Q46. Which of the following countries is separated from India by maritime boundary only?

(a) Myanmar
(b) Bhutan
(c) Nepal
(d) Maldives

Q47. A group of numbers/symbols is coded using letter codes as per the codes given below and the conditions that follow. If none of the conditions apply, then codes for the respective number/symbol to be followed directly as given in the table.

Number/Symbol	**3**	**8**	**@**	**&**	**2**	**7**	**5**	**%**	**1**	**9**	**Δ**	**4**	**6**
Code	L	E	Z	M	D	W	A	P	R	T	F	B	K

Conditions:

(i) If the first element and the last element is a number, the codes for these two (the first and the last elements) are to be interchanged.

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

7 2 Δ 8 9 @ 3

(a) W D F L T Z W
(b) L D F E T Z W
(c) W D F E T Z L
(d) L D F E Z T W

Q48. Sunny starts from point A and drives 11 km towards the east. He then takes a left turn, drives 8 km, turns left and drives 12 km. He then takes a left turn and drives 10 km. He takes a final left turn, drives 1 km and stops at point P. How far (shortest distance) and towards which direction should he drive in order to reach point A again? (All turns are 90 degree turns only unless specified.)

(a) 2 km to the south
(b) 4 km to the south
(c) 2 km to the north
(d) 1 km to the south

Q49. Walking at 2/3 of his normal speed, Abhijeet is 28 minutes late in reaching. The usual time taken by him to cover the distance between his home and his destination is:

(a) 55 minutes
(b) 62 minutes
(c) 56 minute
(d) 49 minutes

Q50. D, E, F, G, H, I and K are sitting around a circular table facing the centre of the table. I sits third to the left of H. E sits second to the left of G. Only H sits between D and E. K is not an immediate neighbour of I. How many people sit between F and E when counted from the right of F?

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

Q51. Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given sets? (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent

digits. E.g. 13 – Operations on 13 such as adding / 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.) 10 - 20 - 40 - 80 ; 3 - 6 - 12 - 24

(a) 4 - 8 - 12 - 24
(b) 8 - 10 - 20 - 40
(c) 6 - 12 - 24 - 48
(d) 5 - 10 - 20 - 30

Q52. Which of the following is true about trichomes on the stem?

(a) They are present only in the roots
(b) They never function in water retention.
(c) They are always unbranched and unicellular.
(d) They are multicellular and may be secretory.

Q53. In Warli painting, which natural material is used in the first step called 'Lipane' to prepare the wall?

(a) Rice paste
(b) Sand
(c) Geru
(d) Charcoal

Q54. Which of the following is NOT a subdivision of the Meghalaya Plateau?

(a) Garo Hills
(b) Khasi Hills
(c) Mikir Hills
(d) Jaintia Hills

Q55. Where did the fifth session of the Intergovernmental Negotiating Committee (INC-5) to end plastic pollution take place?

(a) Tokyo, Japan
(b) Nairobi, Kenya
(c) Berlin, Germany
(d) Busan, South Korea

Q56. A dealer marks his goods 65% above the cost price and allows a discount of 8% on the marked price. What is his gain or loss percentage?

(a) 51.74% loss
(b) 51.8% gain
(c) 52.07% loss
(d) 53.34% gain

Q57. The Supreme Court described itself as the "sentinel on the qui vive" in relation to _____.

(a) Protection of Fundamental Rights
(b) Protection of foreign policy
(c) Protection of legislative privileges
(d) Protection of tax laws

Q58. As of April 2025, Similipal - designated as the second national park of the state - is located in:

(a) Gujarat
(b) Odisha
(c) Madhya Pradesh
(d) Assam

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Q59. In the following triads, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one that follows the same logic.

BEAN - EBAN - BANE

MAKE - AMKE - MKEA

(a) MACK - AMCK - MCKA
(b) WORK - OWRK - KORW
(c) RACE - RCAE - ECAR
(d) NEAR - ENAR - EARN

Q60. The mean proportional between $(11 + 5\sqrt{2})$ and $(9 - 5\sqrt{2})$.

(a) $\sqrt{(49 - 10\sqrt{2})}$
(b) $\sqrt{(59 - 5\sqrt{2})}$
(c) $\sqrt{(40 - 10\sqrt{2})}$
(d) $\sqrt{(35 - 5\sqrt{2})}$

Q61. Which of the following does NOT contribute much to the degradation of the Thar Desert ecosystem?

(a) Increased plantation of native trees
(b) Grazing by livestock
(c) Erratic rainfall
(d) Climate change

Q62. This question is based on the five, three-digit numbers given below.

(Left) 993 281 995 257 599 (Right)

(Example: 697 – First digit = 6, second digit = 9 and third digit = 7)

(NOTE: All operations to be done from left to right.)

What will be the resultant if the third digit of the highest number is added to the first digit of the lowest number?

(a) 10
(b) 8
(c) 7
(d) 6

Q63. When 1278, 2368 and 4318 are divided by the greatest number x, the remainder in each case is y. What is the value of $(3x - 14y)$?

(a) -82
(b) -85
(c) -86
(d) -79

Q64. If + means −, − means ×, × means ÷, and ÷ means +, then what will come in place of the question mark (?) in the following equation? $30 - 5 \div 2 + 10 \times 2 = ?$

(a) 150
(b) 125
(c) 147
(d) 100

Q65. The average weight of 14 boys in a class is 40.25 kg and that of the remaining 4 boys is 33.5 kg. Find the average weight (in kg, rounded off to two decimal place) of all the boys in the class.

(a) 39.75
(b) 38.75
(c) 37.75
(d) 40.75

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Q66. 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) NT - JK
(b) NQ - MP
(c) JM - IL
(d) FI - EH

Q67. In a certain code language, ‘PAID’ is coded as ‘3517’ and ‘ARCS’ is coded as ‘2458’. What is the code for ‘A’ in the given code language?

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

Q68. Walking at 2/7 of his normal speed, Abhijeet is 70 minutes late in reaching.The usual time taken by him to cover the distance between his home.

(a) 21 minutes
(b) 37 minutes
(c) 28 minutes
(d) 33 minutes

Q69. Which of the following numbers is divisible by both 37 and 8?

(a) 15370
(b) 14208
(c) 13702
(d) 15659

Q70. 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) GH - OM
(b) QR - WX
(c) LM - RS
(d) ST - YZ

Q71. The Great Plateau of India is a part of which ancient landmass?

(a) Angaraland
(b) Pangaea
(c) Laurasia
(d) Gondwana Land

Q72. Which of the following measures the percentage of a country's population living below the poverty line?

(a) Gini Coefficient
(b) Unemployment Rate
(c) Poverty Headcount Ratio
(d) Human Development Index

Q73. If 2 is added to each odd digit and 1 is subtracted from each even digit in the number 2645783, what will be the sum of the highest and lowest digits in the new number thus formed?

(a) 10
(b) 14
(c) 16
(d) 12

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Q74. Which event marked the final collapse of the British policy of annexation?

(a) Partition of Bengal
(b) Quit India Movement
(c) Government of India Act, 1935
(d) Revolt of 1857

Q75. This question is based on the five, three-digit numbers given below.

(Left) 210 878 407 692 140 (Right)

(Example: 697 – First digit = 6, second digit = 9 and third digit = 7)

(NOTE: All operations to be done from left to right.)

What will be the resultant if the third digit of the highest number is subtracted from the first digit of the lowest number?

(a) -7
(b) -4
(c) -8
(d) -6

Q76. Let AB and CD be two parallel lines and PQ be a transversal, such that PQ intersects AB at the point R and CD at the point S. If angle ARP = 2x°, angle ARQ = y° and angle DSP = 4x°, then find the values of x and y, respectively.

(a) 40; 100
(b) 100; 40
(c) 30; 120
(d) 120; 30

Q77. Who is referred to as the 'Father of the Indian Renaissance' due to their contribution in social reform, literary works and unwavering patriotism?

(a) Dayanand Saraswati
(b) Swami Vivekanand
(c) Raja Ram Mohan Roy
(d) Atmaram Pandurang

Q78. What should come in place of the question mark (?) in the given series?

501 500 497 492 485 ?

(a) 475
(b) 471
(c) 476
(d) 473

Q79. The mode and median of a data set is 14.2 and 60, respectively. What is the mean of the data set? (Use empirical formula.)

(a) 86.9
(b) 80.4
(c) 82.9
(d) 88.6

Q80. Hitesh ranked 28^(th) from the top and 13^(th) from the bottom in his class. How many students are there in his class?

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

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Q81. What was Abhinash Jamwal's achievement at the 2025 World Boxing Cup?

(a) He did not win any medal.
(b) He won a bronze medal in the 65 kg category.
(c) He won a gold medal in the 65 kg category.
(d) He bagged a silver medal in the 65 kg category.

Q82. According to the SDG India Index 2023-24 released by NITI Aayog, what is the range of composite scores achieved by Indian states?

(a) 57 to 79
(b) 60 to 85
(c) 52 to 75
(d) 65 to 90

Q83. In which year did the National Development Council (NDC) recommend a national policy on co-operatives?

(a) 1958
(b) 1947
(c) 1962
(d) 1975

Q84. Town V is to the west of Town W. Town X is to the east of Town V. Town Y is to the north of Town W. Town Z is to the north of Town X. Town Z is to the north-west of Town W. What is the position of Town X with respect to Town W?

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

Q85. If the quadratic equations $4x^2 + bx + 3 = 0$ and $8x^2 + 4x + c = 0$ have both the roots common, find the values for b and c, respectively.

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

Q86. The shorter side of a rectangle is 16 cm less than the longer side. The numerical value of its area is equal to 3 times the numerical value of its perimeter. What is the length (in cm) of its longer side?

(a) 14
(b) 25
(c) 19
(d) 24

Q87. A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on till the topmost floor is numbered 6. The product of floors on which E and F live is 10. A lives immediately above C. The sum of floors on which B and E live is 11.What is the sum of floors on which C and D live?

(a) 4
(b) 6
(c) 7
(d) 5

Q88. Which of the following statements correctly describe(s) the 'Gorakhnath Sharma vs. State of Chhattisgarh' case, as ruled by the Chhattisgarh High Court in February 2025?

1. The case involved allegations of brutal non-consensual sexual assault by a husband on his wife, leading to her death.

2. The Chhattisgarh High Court convicted the husband and awarded maximum punishment in the case of rape.

(a) Only 2

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(b) Neither 1 nor 2
(c) Only 1
(d) Both 1 and 2

Q89. Which of the following programmes received the highest score in the Data Governance Quality Index (DGQI) for the Department of Rural Development for the year 2023-24?
(a) National Social Assistance Programme
(b) MGNREGA-Programme Component
(c) Deen Dayal Upadhyaya Grameen Kaushalya Yojana
(d) Pradhan Mantri Gram Sadak Yojana

Q90. If x + y = 14, product of x and y is 45, then the value of x^4 + y^4 is:
(a) 7090
(b) 7186
(c) 7141
(d) 7177

Q91. Rohit marks the price of his article 60% more than its cost price. If he sells the article for Rs. 18,510 after allowing a discount of 85%, then what will be the cost price (in Rs.) of the article?
(a) 77,127
(b) 77,125
(c) 77,124
(d) 77,128

Q92. Where did Mendeleev arrange the elements in the periodic table with similar properties?
(a) Block
(b) Horizontal row
(c) Vertical column
(d) Atomic series

Q93. GN 14 is related to ER 1 in a certain way. In the same way, HP 18 is related to FT 5. To which of the given options is TK 4 related, following the same logic?
(a) PW −7
(b) KJ −13
(c) TY −11
(d) RO −9

Q94. In October 2024, Nayab Singh Saini sworn in for his second term as the Chief Minister of which Indian state?
(a) Uttar Pradesh
(b) Punjab
(c) Rajasthan
(d) Haryana

Q95. The length of a rectangular park is 27 m more than its breadth. Its area is 2268 m². Its breadth (in m) is:
(a) 23
(b) 36
(c) 38
(d) 40

Q96. In MS PowerPoint 2019, which of the following tabs must you first select to access the 'Open' option for loading a saved PowerPoint file?
(a) Design tab
(b) Insert tab
(c) Home tab
(d) File tab

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Q97. Which of the following statements is correct?

(a) CD is a volatile storage medium.
(b) ASCII is primarily used for high-speed data transmission networks.
(c) ASCII represents characters as numerical codes.
(d) LAN supports networking over large geographic areas.

Q98. KQRL is related to OTTM in a certain way based on the English alphabetical order. In the same way, SWVN is related to WZXO. To which of the given options is ACZP related, following the same logic?

(a) DEAP
(b) EFBQ
(c) DGBP
(d) FDZR

Q99. Simplify: 71 + 62/7 + 30 - 31

(a) 558/7
(b) 552/7
(c) 542/7
(d) 557/7

Q100. The sum of the present ages of a father and his son is 19 years more than 2 times the present age of the son. After 15 years, 12 times the father's age will be 17 years less than 13 times the son's age. The difference (in years) between the present ages of the father and the son is:

(a) 14
(b) 24
(c) 19
(d) 21

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) 17

Shortcut Trick
Vertical difference in height = 20 m − 12 m = 8 m
Horizontal distance between poles = 15 m
Distance between tops = $\sqrt{(8^2 + 15^2)}$
Using the standard Pythagorean triplet (8, 15, 17), the required distance is 17 m.
Therefore The correct answer is 17 m.
Alternate Method
Given:

Height of first pole (AB) = 12 m

Height of second pole (CD) = 20 m

Distance between bases (BD) = 15 m

Formula Used:

Pythagoras Theorem: Hypotenuse² = Base² + Perpendicular²

Calculations:

=> Let the distance between the tops be 'x'.

=> Construct a horizontal line from the top of the shorter pole to the taller pole.

=> Base of the resulting triangle = 15 m

=> Height of the resulting triangle = 20 m − 12 m = 8 m

=> $x^2 = 15^2 + 8^2$

=> $x^2 = 225 + 64$

=> $x^2 = 289$

=> $x = \sqrt{289}$

=> x = 17 m

Therefore The correct answer is 17 m.

Additional Information

Pythagorean Triplets

These are sets of three positive integers (a, b, c) such that $a^2 + b^2 = c^2$. Common triplets include (3, 4, 5), (5, 12, 13), (8, 15, 17), and (7, 24, 25).

Right-Angled Triangle Property

In a right-angled triangle, the square of the hypotenuse (the side opposite the right angle) is equal to the sum of the squares of the other two sides.

Level Ground Assumption

In height and distance problems, unless stated otherwise, vertical objects like poles, towers, and buildings are assumed to be perpendicular to the horizontal level ground (making a 90° angle).

Q2. Answer: (a) 660

Given interchange rules:

• '+' and '−' are interchanged.

• '×' and '÷' are interchanged.

The given equation is:

45 ÷ 13 − 286 × 2 + 68 = ?

Replace the operators with their corresponding new meanings:

45 × 13 + 286 ÷ 2 − 68 = ?

Now, we solve the equation following the BODMAS rule:

= 45 × 13 + 286 ÷ 2 − 68

= 585 + 143 − 68

= 728 − 68

= 660

Hence, the correct answer is "Option 1".

Q3. Answer: (b) zq

The given code language is:

Thus, 'all' is coded as 'zq'.

Hence, the correct answer is "Option 2".

Q4. Answer: (c) 68°

Shortcut Trick

Since AB || CD, the linear pair at point E gives angle FEB = 180° − 49° = 131°.

The interior angle angle FEG = angle FEB − angle BEG = 131° − 35° = 96°.

In triangle EFG, the sum of all interior angles is 180°.

=> angle EGF = 180° − (angle FEG + angle GFE) = 180° − (96° + 16°) = 68°.

Therefore The correct answer is 68°.

Alternate Method

Given:

Line AB || CD, transversal PQ intersects them at E and F.

angle PEB = 49°, angle BEG = 35°, and angle GFE = 16°.

Formula Used:

1. Linear Pair Axiom: Sum of angles on a straight line is 180°.

2. Angle Sum Property: Sum of angles in a triangle is 180°.

Calculations:

=> Since P-E-F-Q is a straight line, angle PEB + angle FEB = 180°

=> 49° + angle FEB = 180°

=> angle FEB = 180° − 49° = 131°

=> From the figure, angle FEB = angle FEG + angle BEG

=> 131° = angle FEG + 35°

=> angle FEG = 131° − 35° = 96°

=> In triangle EFG, angle EGF + angle FEG + angle GFE = 180°

=> angle EGF + 96° + 16° = 180°

=> angle EGF + 112° = 180°

=> angle EGF = 180° − 112° = 68°

Therefore The correct answer is 68°.

Additional Information

Parallel Lines and Transversals

When two parallel lines are intersected by a transversal, alternate interior angles are equal, and consecutive interior angles are supplementary (sum to 180°).

Triangle Angle Sum Property

The sum of all three interior angles of any triangle is always exactly 180°.

Linear Pair of Angles

A linear pair is a set of adjacent angles formed by intersecting lines; their measures always add up to 180°.

Q5. Answer: (c) Neither conclusion (I) nor (II) follows

Given Statements:

1. All tubs are shirts.

2. Some shirts are jams.

3. No jam is a coat.

The least possible Venn diagram for the given statements is:

Conclusion I: No tub is a coat. (False) there is no direct relationship between tubs and coats. So, it can be possible only.

Conclusion II: Some jams are tubs. (False) there is no direct relationship between tubs and jams. So, it can be possible only.

So, neither conclusion (I) nor (II) follows.

Hence, the correct answer is "Option 3".

Q6. Answer: (a) Ballia

The Correct answer is Ballia.

Key Points

• The first parallel government after the Quit India Movement was established in Ballia, Maharashtra.

• It was known as the Prati Sarkar, which translates to "parallel government."

• The Prati Sarkar was established in 1943 and lasted until 1946.

• The movement was led by Y.B. Chavan, Nana Patil, and others who organized local governance systems to resist British authority.

• It aimed to provide an alternate governance model in areas liberated from British control.

• Satara became a center for revolutionary activities, with leaders organizing local administration, justice systems, and economic policies.

• The Quit India Movement, launched in 1942, had widespread impact, but Satara's Prati Sarkar stood out as a unique example of localized governance.

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• The Prati Sarkar also focused on social reforms, such as providing education and addressing grievances of the common people.

• This initiative showcased the strength of grassroots-level movements in India's struggle for independence.

Additional Information

• Ballia

• Ballia is a district in Uttar Pradesh, which also played a key role during the Quit India Movement.

• Ballia briefly declared independence from British rule, and leaders like Chittu Pandey were associated with this revolutionary activity.

• Although revolutionary activities occurred here, it did not establish a formal parallel government.

• Talcher

• Talcher is located in Odisha, known for its coal mines and industrial importance.

• While Talcher was part of revolutionary activities during India's independence struggle, it was not associated with the establishment of a parallel government.

• Benaras

• Benaras, now known as Varanasi, is a cultural and religious hub in Uttar Pradesh.

• It played a significant role in the freedom movement, being a center for nationalist activities and home to leaders like Madan Mohan Malaviya.

• However, Benaras did not establish a parallel government during the Quit India Movement.

Q7. Answer: (d) 10

Shortcut Trick

Total work in terms of men-days = 9 × 19 = 171 units.

Work done by 9 men in 9 days = 9 × 9 = 81 units.

Remaining work = 171 − 81 = 90 units (to be done by women).

Since 9 men = 8 women, 171 men-days = 8 × 19 = 152 women-days.

Ratio of Men work to Women work is 8 : 9. Remaining work for women = 90 × (8/9) = 80 women-days.

Number of women needed for 8 days = 80 ÷ 8 = 10 women.

Therefore The correct answer is 10.

Alternate Method

Person	Days	Total Work (LCM)	Efficiency
9 Men	19	8	
8 Women	19	152	8

Given: 9 men or 8 women can do a job in 19 days.

Formula Used: Total Work = Efficiency × Time

=> Efficiency of 9 men = 152 ÷ 19 = 8 units/day

=> Efficiency of 8 women = 152 ÷ 19 = 8 units/day

=> Efficiency of 1 woman = 8 ÷ 8 = 1 unit/day

=> Work done by 9 men in 9 days = 8 × 9 = 72 units

=> Remaining work = 152 − 72 = 80 units

=> Women required to finish 80 units in 8 days = 80 ÷ (8 × 1) = 10 women

Therefore The correct answer is 10.

Additional Information

The 'OR' Concept in Work

When a question says 'A or B', it implies that the total capacity of group A is equal to the total capacity of group B (m1d1 = m2d2).

Work & Efficiency Relation

Efficiency is inversely proportional to time taken. If the same work is done in fewer days, the efficiency of the group must be higher.

Man-Day Formula

M1D1H1/W1 = M2D2H2/W2, where M is number of workers, D is days, H is hours, and W is work.

Q8. Answer: (d) 6760

Given:

Expression to evaluate: $19^3 - 14^2 + (8/2)^2 - 19 + 5 \times 20 =$

Formula Used:

Evaluate the expression step by step following the BODMAS rule.

Calculation:

$19^3 - 14^2 + (8/2)^2 - 19 + 5 \times 20$

=> 6859 - 196 + $(4)^2$ - 19 + 100

=> 6859 - 196 + $(4)^2$ - 19 + 100

=> 6663 + 16 - 19 + 100

=> 6763 -3

=> 6760

Therefore Option 4 is the correct answer.

Q9. Answer: (c) Daughter's husband's sister

Family Chart:

Given,

F is the sister of G.

G is the husband of H.

H is the daughter of I.

I is the wife of J.

Let's draw the family tree:

So, F is the Daughter's husband's sister of J.

Hence, the correct answer is "Option 3".

Q10. Answer: (b) 6

Shortcut Trick

Net efficiency = Inlet efficiency − Outlet efficiency

Efficiency of Pipe 1 = 56 ÷ 7 = 8 units/min

Efficiency of Pipe 2 = 56 ÷ 56 = 1 unit/min

Combined efficiency = 8 − 1 = 7 units/min

Time for 3/4th tank = (3/4 × 56) ÷ 7 = 42 ÷ 7 = 6 minutes

Therefore The correct answer is 6 minutes.

Alternate Method

Person	Days	Total Work	Efficiency
Pipe 1 (Fill)	7 min	56 units	8
Pipe 2 (Empty)	56 min	−1	

Given: Filling Pipe time = 7 min, Emptying Pipe time = 56 min

Formula Used: Total Work = Efficiency × Time

=> Let Total Capacity of tank = LCM(7, 56) = 56 units

=> Combined Efficiency of both pipes = 8 − 1 = 7 units/min

=> Target volume to fill = 3/4 × 56 = 42 units

=> Required Time = 42 ÷ 7 = 6 minutes

Therefore The correct answer is 6 minutes.

Additional Information

Inlet and Outlet Pipes

Inlet pipe efficiency is taken as positive (+), while outlet (leakage) pipe efficiency is taken as negative (−).

Net Work Done

If two pipes fill a tank in x and y hours, net work in 1 hour = 1/x + 1/y. If one fills and one empties, net work = 1/x − 1/y.

Q11. Answer: (c) secondary rank within the portfolios assigned to Cabinet Ministers

The Correct answer is secondary rank within the portfolios assigned to Cabinet Ministers.

Key Points

• In the ministerial hierarchy of India, the Ministers of State are junior ministers who work under the supervision of Cabinet

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Ministers.

• Their role is to assist in handling the portfolios that are assigned to the Cabinet Ministers.

• Ministers of State generally have a secondary rank and are not independent heads of their ministries.

• They may be given charge of specific aspects or departments within a ministry to ensure better management and division of work.

• Unlike Cabinet Ministers, Ministers of State do not have overarching authority over the entire ministry, but their contributions are crucial for the effective functioning of the assigned portfolios.

• They may be invited to participate in discussions and decision-making processes related to their designated responsibilities but are subordinate to the Cabinet Minister in charge.

• In some cases, Ministers of State may work independently if the Prime Minister assigns them specific duties, although this is less common.

• This hierarchical structure ensures that the workload in ministries is distributed effectively, enabling better governance and administration.

Additional Information

• Authority over Cabinet portfolios

• Cabinet Ministers hold the highest authority over their portfolios, making critical policy decisions and representing the ministry in Parliament and other forums.

• Ministers of State do not have independent authority over Cabinet portfolios; they are subordinate to Cabinet Ministers.

• No executive responsibility in any of the portfolios

• This statement is incorrect because Ministers of State are actively involved in the execution of policies and projects within the portfolios assigned to them, under the guidance of Cabinet Ministers.

• They may have specific departments or functions delegated to them, making them responsible for their effective implementation.

• Equal standing with Cabinet Ministers in their assigned portfolios

• Ministers of State do not share equal standing with Cabinet Ministers as they are subordinate in rank and authority.

• Cabinet Ministers are the ultimate decision-makers for their ministries, while Ministers of State assist and execute assigned tasks.

Q12. Answer: (b) localised irrigation

The Correct answer is Localised Irrigation.

Key Points

• Localised Irrigation, also referred to as micro-irrigation, involves delivering water directly to the root zone of plants through a network of pipes under low pressure.

• This method is highly efficient as it reduces water wastage and ensures that plants receive the required amount of water directly at their roots.

• It is commonly used in arid and semi-arid regions where water scarcity is a significant concern.

• There are different forms of localised irrigation, including drip irrigation and sprinkler irrigation.

• Drip irrigation is particularly effective for crops like fruits, vegetables, and cash crops, ensuring uniform water distribution.

• Localised irrigation reduces water loss due to evaporation, runoff, and deep percolation.

• It promotes water conservation and enhances crop productivity, making it a sustainable irrigation method.

• The Government of India promotes this method under initiatives such as the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) to encourage farmers to adopt efficient irrigation techniques.

Additional Information

• Furrow Irrigation

• Furrow irrigation involves creating small parallel channels along the field through which water flows to irrigate crops.

• It is a traditional irrigation method and is commonly used for crops like maize, sugarcane, and cotton.

• This method is less efficient as it can lead to water wastage due to evaporation and runoff.

• Tubewell Irrigation

• Tubewell irrigation involves extracting groundwater using tubewells and pumps.

• It is widely used in regions with ample groundwater availability, such as Punjab, Haryana, and Uttar Pradesh.

• Though effective, it can lead to the depletion of groundwater resources if not managed sustainably.

• Canal Irrigation

• Canal irrigation is a method where water is transported from reservoirs or rivers through canals to agricultural fields.

• This method is extensively used in regions like the Indo-Gangetic plains.

• It requires large-scale infrastructure and is suitable for areas with abundant surface water.

Q13. Answer: (b) JQO

The logic followed here is:

Hence, the correct answer is "Option 2".

Q14. Answer: (d) 82

The logic followed here is:

Thus, the missing term in the series is 82.

Hence, the correct answer is "Option 4".

Q15. Answer: (c) Thailand

The Correct answer is Thailand.

Key Points

• The 2025 SEA Games are scheduled to be hosted by Thailand.

• The SEA Games (Southeast Asian Games) is a biennial multi-sport event involving participants from the 11 countries of Southeast Asia.

• Thailand has a rich history of hosting sports events and has previously hosted multiple editions of the SEA Games.

• The event is governed by the Southeast Asian Games Federation and supervised by the International Olympic Committee (IOC) and the Olympic Council of Asia (OCA).

• The choice of Thailand as the host country aligns with its strong commitment to sports development and infrastructure in the region.

• Thailand is known for its well-developed sports facilities and organizational capabilities, making it an ideal host for such international events.

• The SEA Games promote regional cooperation, friendship, and sportsmanship among member nations.

• Popular sports in the SEA Games include athletics, swimming, football, badminton, and martial arts, along with sports unique to the region like Sepak Takraw.

Additional Information

• Vietnam

• Vietnam hosted the 2021 SEA Games, which were postponed to 2022 due to the COVID-19 pandemic.

• The event was held in Hanoi and other cities in Vietnam.

• Vietnam is known for its rapid growth in sports infrastructure and has successfully organized international events like the Asian Indoor Games.

• Indonesia

• Indonesia last hosted the SEA Games in 2011, with the event being conducted in Jakarta and Palembang.

• Indonesia is one of the largest countries in Southeast Asia and has significant experience in hosting multi-sport events, including the Asian Games.

• Malaysia

• Malaysia hosted the SEA Games in 2017, with the event taking place in Kuala Lumpur.

• Malaysia is known for its strong performance in sports like badminton, squash, and diving.

• The country has consistently invested in sports infrastructure and development.

Q16. Answer: (c) 4

Given: P, Q, R, S, T, U and V are sitting around a circular table facing the centre.

U sits to the immediate right of T. Only three people sit between U and V when counted from the left of U.

Only three people sit between T and R. Q sits to the immediate right of P.

Thus, Only four people sit between T and P when counted from the left of P.

Hence, the correct answer is "Option 3".

Q17. Answer: (a) 71.5

Shortcut Trick

Net change in Total Sum = (Correct Values − Incorrect Values)

Net change = [2 × (54 − 44)] + [1 × (35 − 40)] = 20 − 5 = +15 kg

Correction in Average = Net Change ÷ Number of Boys = 15 ÷ 10 = 1.5 kg

Correct Average = Old Average + Correction = 70 + 1.5 = 71.5 kg

Therefore The correct answer is 71.5 kg.

Alternate Method

Given:

Number of boys (n) = 10

Initial average weight = 70 kg

Incorrect observations: 44 kg (twice) and 40 kg (once)

Correct observations: 54 kg (twice) and 35 kg (once)

Calculations:

=> Total Initial Weight = 10 × 70 = 700 kg

=> Sum of correct weights = (54 × 2) + 35 = 108 + 35 = 143 kg

=> Sum of incorrect weights = (44 × 2) + 40 = 88 + 40 = 128 kg

=> Correct Total Weight = 700 − 128 + 143 = 715 kg

=> Correct Average Weight = 715 ÷ 10 = 71.5 kg

Therefore The correct answer is 71.5 kg.

Additional Information

Correction in Mean

When one or more observations are misread, the correct mean is: New Mean = Old Mean + [(Sum of Correct Values − Sum of Incorrect Values) ÷ n].

Sum of Observations

Total Sum = Average × Number of Observations. This is the base for finding corrections in total weight or marks.

Weighted Average

Used when combining two groups: Combined Avg = (n1x1 + n2x2) ÷ (n1 + n2), where n is count and x is average.

Q18. Answer: (d) Pulakesin I

The Correct answer is Pulakesin I.

Key Points

• Pulakesin I was the founder of the Chalukya dynasty, which ruled primarily in the region of Badami in Karnataka.

• He established the Chalukya rule around the early 6th century CE.

• Pulakesin I was renowned for his administrative skills and laid the foundation for a strong and centralized kingdom in the Deccan region.

• The Chalukyas of Badami are known for their contributions to art, architecture, and culture, particularly during their rule in South India.

• The Chalukya dynasty under Pulakesin I initiated the tradition of constructing rock-cut temples and monuments, which became iconic in Indian architecture.

• Badami, also known as Vatapi, served as the capital of the Chalukyas and became a center of political and cultural activities.

• Pulakesin I set the stage for the later achievements of his successors, including Pulakesin II, who expanded the empire significantly.

Additional Information

• Kirttivarman I

• Kirttivarman I was a successor in the Chalukya dynasty and ruled after Pulakesin I.

• He expanded the Chalukya empire and consolidated its power in the Deccan region.

• Kirttivarman I is notable for his patronage of temple architecture, continuing the legacy of the Chalukyas in building iconic monuments.

• Vikramaditya I

• Vikramaditya I was another prominent ruler of the Chalukya dynasty who came after Kirttivarman I.

• He is known for defeating the Pallavas and reasserting Chalukya dominance in South India.

• Vikramaditya I contributed significantly to the cultural and architectural advancements of the Chalukyas.

• Mangalesha

• Mangalesha was also a ruler of the Chalukya dynasty and known for his military campaigns.

• He is credited with several conquests that helped to strengthen the Chalukya empire.

• His reign marked the continuation of the tradition of constructing rock-cut temples and monuments.

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Q19. Answer: (a) 1000

Shortcut Trick

Given Ratio of Girls : Boys = 1 : 5

Representing 1 unit = 200 (Total Girls)

Therefore 5 units = 5 × 200 = 1000 (Total Boys)

Therefore The correct answer is 1000.

Alternate Method

Given:

Ratio of Girls to Boys = 1 : 5

Number of Girls = 200

Calculation:

Let the number of Girls be 1x and Boys be 5x.

=> 1x = 200

=> x = 200

=> Number of Boys = 5x

=> Number of Boys = 5 × 200

=> Number of Boys = 1000

Therefore The correct answer is 1000.

Additional Information

Ratio and Proportion

A ratio compares two quantities. If a : b is the ratio, then the quantities can be written as ax and bx where x is a common multiplier.

Total Strength Formula

Total strength = Sum of ratio parts × value of one part. In this case, Total = (1 + 5) × 200 = 1200.

Q20. Answer: (d) Samantha Harvey

The Correct answer is Samantha Harvey.

Key Points

• Samantha Harvey is a celebrated British author known for her thought-provoking works of fiction.

• She won the 2024 Booker Prize for Fiction for her novel "Orbital."

• "Orbital" is a novel that explores themes of isolation, the human condition, and the relationship between humans and Earth.

• The Booker Prize is one of the most prestigious literary awards globally, highlighting exceptional fiction works written in English.

• Harvey's writing style is often acclaimed for its lyrical prose, deep psychological insights, and innovative narratives.

• In "Orbital," Harvey delves into existential themes, offering a profound exploration of solitude and the interconnectedness of humanity with the planet.

• The novel has been praised for its unique perspective and ability to resonate with readers in a time of environmental and social challenges.

Additional Information

• Sally Rooney

• Sally Rooney is an Irish author known for her novels such as "Normal People" and "Conversations with Friends."

• Her works often explore relationships, youth, and modern societal issues.

• While Rooney is a widely celebrated author, she did not win the 2024 Booker Prize.

• Douglas Stuart

• Douglas Stuart is a Scottish-American writer and the author of the Booker Prize-winning novel "Shuggie Bain" (2020).

• His works often draw from his upbringing in working-class Scotland and explore themes of poverty, addiction, and resilience.

• Although a notable figure in contemporary literature, Stuart did not win the 2024 Booker Prize.

• Colson Whitehead

• Colson Whitehead is an American author known for his Pulitzer Prize-winning novels "The Underground Railroad" and "The Nickel Boys."

• His works often address themes of race, history, and systemic injustice.

• While a renowned author, Whitehead did not receive the 2024 Booker Prize for Fiction.

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Q21. Answer: (d) 67

Given:

• Total number of people in the row = 92

• Manju's position = 16th from the left end.

• Nisha's position = 9th from the right end.

The formula to convert a rank from one end to the other is: Rank from Left = Total persons - Rank from Right + 1 (and vice versa).

First, let's find Nisha's position from the left end to compare it with Manju's position from the left:

Nisha's rank from left = Total persons - (Nisha's rank from right) + 1

= 92 - 9 + 1

= 83 + 1

= 84th.

Now we have both positions from the left end:

• Manju's rank from left = 16th

• Nisha's rank from left = 84th

Since Manju's rank (16th) is less than Nisha's rank (84th), Manju is to the left of Nisha. This means their positions do not overlap.

Number of people between = (Larger rank from same end) - (Smaller rank from same end) - 1

= Nisha's rank from left - Manju's rank from left - 1

= 84 - 16 - 1

= 68 - 1

= 67 people.

Hence, the correct answer is "Option 4".

Q22. Answer: (d) Bases

The correct answer is Bases.

Key Points

• Toothpastes commonly contain bases like sodium bicarbonate (baking soda) or calcium carbonate, which help in neutralizing acids in the mouth.

• Acidic substances in the mouth, often produced by bacterial action on food particles, can lead to tooth decay. Bases counteract this acidity to protect teeth.

• The base in toothpaste also assists in removing plaque and other unwanted residues from the teeth.

• Sodium bicarbonate (NaHCO3) is mildly abrasive, helping in cleaning and polishing the teeth.

• Neutralizing the excess acid in the mouth prevents the erosion of enamel, which is the protective layer of the teeth.

• Additionally, many toothpastes include other ingredients like fluoride for strengthening teeth, but the role of bases is crucial in maintaining the pH balance in the oral environment.

• By neutralizing acids, bases help in preventing the growth of bacteria that thrive in acidic conditions, thereby promoting better oral hygiene.

Additional Information

• Salts

• Salts like sodium chloride or potassium nitrate are sometimes used in toothpaste for specific purposes, such as reducing tooth sensitivity or improving taste, but they do not neutralize acids.

• Salts primarily act as additives and do not play a significant role in the chemical neutralization of acids.

• Halogens

• Halogens like fluoride (e.g., sodium fluoride) are added to toothpastes for strengthening the teeth and preventing cavities, but they are not bases. They do not neutralize acids.

• Fluoride helps in the remineralization of enamel, making it more resistant to decay.

• Acids

• Acids are harmful to teeth as they lead to the degradation of enamel and promote tooth decay.

• Acids are not found in toothpaste because their presence would exacerbate the problem of tooth decay rather than prevent it.

Q23. Answer: (c) After 27 years, securing 48 seats

The Correct answer is After 27 years, securing 48 seats.

Key Points

• The Bharatiya Janata Party (BJP) secured a majority in the 2025 Delhi Legislative Assembly elections, marking an important

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political event after 27 years.

• With a total of 48 seats, the BJP achieved a significant victory, shifting the political dynamics in Delhi, which had been dominated by other parties, especially the Aam Aadmi Party (AAP), in previous years.

• This victory reflects a resurgence of the BJP in Delhi, which had struggled to gain majority control in the state for nearly three decades.

• The number of 48 seats demonstrates the party's effective strategy in reaching out to voters and addressing key issues that resonated strongly with the citizens of Delhi.

• The BJP's success can be attributed to factors such as strong leadership, an emphasis on developmental policies, and effective campaigning that targeted critical issues concerning Delhi's residents.

• It signifies a political shift and showcases the growing acceptance of the BJP's governance model and promises among urban voters.

• The election results highlight changing voter preferences, potentially influenced by factors such as local governance, national policies, and leadership charisma.

• This win sets the stage for BJP to implement its agenda in Delhi, focusing on areas like infrastructure development, education, healthcare, and transportation.

Q24. Answer: (a) 56

Shortcut Trick

Assume an Assumed Mean (Base) = 50.

Calculate deviations from 50: +28, +6, +2, −5, +47, −31, −13, −4, +24.

Sum of deviations = 28 + 6 + 2 − 5 + 47 − 31 − 13 − 4 + 24 = 54.

Net Adjustment = Sum of deviations ÷ Number of observations = 54 ÷ 9 = 6.

Actual Mean = Assumed Mean + Adjustment = 50 + 6 = 56.

Therefore The correct answer is 56.

Alternate Method

Given: Observations are 78, 56, 52, 45, 97, 19, 37, 46, and 74.

Formula Used: Arithmetic Mean = (Sum of all observations) ÷ (Total number of observations)

=> Total number of observations (n) = 9

=> Sum = 78 + 56 + 52 + 45 + 97 + 19 + 37 + 46 + 74

=> Sum = 504

=> Arithmetic Mean = 504 ÷ 9

=> Arithmetic Mean = 56

Therefore The correct answer is 56.

Additional Information

Properties of Arithmetic Mean

The sum of deviations of items from their Arithmetic Mean is always zero: Σ(x − Mean) = 0.

Change in Origin and Scale

If each observation is increased by k, the mean increases by k. If each is multiplied by k, the mean is multiplied by k.

Mean of Natural Numbers

The mean of the first n natural numbers is calculated using the formula: (n + 1) ÷ 2.

Q25. Answer: (d) 2 : 7

Shortcut Trick

Using Alligation Method to find the ratio of parts:

First part weight = 5, Second part weight = 14, Average (Whole) weight = 7.

Ratio = (14 − 7) : (7 − 5) = 7 : 2 (First : Second).

The required ratio of Second part to First part is 2 : 7.

Therefore The correct answer is 2 : 7.

Alternate Method

Given: 5 × First part + 14 × Second part = 7 × (First part + Second part)

Let the first part be x and the second part be y.

=> 5x + 14y = 7(x + y)

=> 5x + 14y = 7x + 7y

=> 14y − 7y = 7x − 5x

=> 7y = 2x

=> y/x = 2/7

=> y : x = 2 : 7

Therefore The correct answer is 2 : 7.

Additional Information

Alligation Rule

Used to find the ratio in which two ingredients at given prices/weights must be mixed to produce a mixture at a given mean price/weight. Ratio = (Higher Value − Mean) : (Mean − Lower Value).

Ratio and Proportion

A ratio compares two quantities by division. In an equation ax = by, the ratio x : y is equal to b : a.

Q26. Answer: (c) 4%

Shortcut Trick

Difference in Principal = Rs. 9,000 − Rs. 5,000 = Rs. 4,000.

Interest difference per year = Rs. 480 ÷ 3 = Rs. 160.

Rate % = (Yearly Interest Difference ÷ Principal Difference) × 100.

Rate = (160 ÷ 4,000) × 100 = 4%.

Therefore The correct answer is 4%.

Alternate Method

Given:

Principal for Mohan (P_M) = Rs. 5,000

Principal for Varun (P_V) = Rs. 9,000

Time (T) = 3 years

Difference in interest (I_(diff)) = Rs. 480

Formula Used:

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

Calculations:

=> Let the rate of interest be R% per annum.

=> Interest for Varun − Interest for Mohan = 480

=> [(9,000 × R × 3) / 100] − [(5,000 × R × 3) / 100] = 480

=> [270 × R] − [150 × R] = 480

=> 120 × R = 480

=> R = 480 ÷ 120

=> R = 4%

Therefore The correct answer is 4%.

Additional Information

Simple Interest Concept

Simple Interest is calculated only on the principal amount for the entire duration. Formula: SI = (P × R × T) / 100.

Interest Difference Property

When rate and time are constant, the difference in interest is directly proportional to the difference in principal: I_(diff) = (P_(diff) × R × T) / 100.

Amount Calculation

Total Amount (A) returned at the end of the term is the sum of Principal and Simple Interest: A = P + SI.

Q27. Answer: (c) Assam Accord

The Correct answer is Assam Accord.

Key Points

• The Assam Accord was signed on 15 August 1985 between the Government of India and leaders of the Assam Movement.

• The accord aimed to address the issue of illegal immigration into Assam, particularly from neighboring countries like Bangladesh.

• The Citizenship (Amendment) Act, 1985 was introduced as a result of the Assam Accord, amending the Citizenship Act, 1955.

• The Assam Accord defined specific cut-off dates for identifying and deporting illegal immigrants. People who entered Assam after March 24, 1971 were to be identified and deported.

• The accord also provided for the protection of Assamese cultural identity, language, and heritage while addressing the concerns of indigenous communities.

• It led to the establishment of mechanisms to detect and deport foreigners, including the formation of Foreigners' Tribunals.

• The Assam Accord continues to be a cornerstone in debates surrounding citizenship and immigration policies in India.

Additional Information

• Shimla Agreement

• The Shimla Agreement was signed on 2 July 1972 between India and Pakistan following the Indo-Pak war of 1971.

• It aimed at restoring peace and normalizing relations between the two nations.

• The agreement established the Line of Control (LoC) in Jammu and Kashmir.

• It holds significance in the context of India's foreign policy and relations with Pakistan but is unrelated to the issue of citizenship or immigration.

• Indo-Sri Lanka Pact

• The Indo-Sri Lanka Pact, also known as the Rajiv Gandhi-Jayewardene Accord, was signed in 1987.

• It aimed at resolving the Sri Lankan Civil War and ensuring the rights of Tamil minorities in Sri Lanka.

• The pact led to the deployment of the Indian Peace Keeping Force (IPKF) in Sri Lanka.

• While significant in the context of international relations, it is not connected to the citizenship issues addressed by the Assam Accord.

• Kashmir Agreement

• The term Kashmir Agreement often refers to attempts or discussions to resolve the issue of Jammu and Kashmir between India and Pakistan.

• It pertains to territorial disputes and regional autonomy rather than citizenship or immigration-related concerns.

• It holds importance in the geopolitical context but is unrelated to the Assam Accord or the Citizenship (Amendment) Act, 1985.

Q28. Answer: (a) Five-Year Plans

The correct answer is Five-Year Plans.

Key Points

• Co-operatives became an integral part of the Five-Year Plans in India, as they were seen as a crucial mechanism for socio-economic development.

• The First Five-Year Plan (1951-1956) emphasized agricultural development and rural reconstruction, where cooperatives were actively promoted.

• Cooperatives were considered essential for pooling resources, improving agricultural productivity, and ensuring equitable distribution of profits among farmers.

• Over the years, the cooperative movement expanded into sectors like banking, housing, dairy, and marketing, playing a vital role in economic growth.

Additional Information

• Industrial Policy Resolution: The Industrial Policy Resolutions of 1948 and 1956 were focused on laying the foundation for India's industrial development. They categorized industries into private, public, and joint sectors to enable planned industrial growth. While cooperative societies were mentioned, they were not the central focus.

• Green Revolution: The Green Revolution in India (1960s) aimed at increasing agricultural productivity through the introduction of high-yielding variety seeds, fertilizers, and irrigation techniques. Though cooperatives played a role in distribution, the initiative primarily revolved around technological advancements in agriculture.

• Operation Flood: Operation Flood, launched in 1970 by the National Dairy Development Board (NDDB), was aimed at increasing milk production in India. It was a significant initiative to create a nationwide milk grid, which heavily relied on dairy cooperatives but was focused solely on the dairy sector.

Q29. Answer: (d) 28.4%

The Correct answer is 28.4%.

Key Points

• The Gross Enrollment Ratio (GER) is a statistical measure used in the education sector to determine the number of students enrolled in a particular level of education (such as higher education) as a proportion of the eligible age group population.

• According to the All India Survey on Higher Education (AISHE) 2021-22, the GER in higher education in India was reported to be 28.4% (or 0.284 in decimal form).

• This indicates that approximately 28.4% of the eligible population (aged 18–23 years) was enrolled in higher education institutions during the survey period.

• The AISHE is an annual survey conducted by the Ministry of Education, Government of India, to collect data related to higher education institutions in India.

• The increase in GER reflects the success of various government initiatives such as the National Education Policy (NEP) 2020, scholarships, and reservation policies aimed at improving access to higher education.

• GER is a critical indicator of a country's focus on educational development, and higher GER values are often associated with better opportunities for economic and social development.

• Efforts to improve GER in India include schemes like Rashtriya Uchchatar Shiksha Abhiyan (RUSA), promoting digital education through platforms like SWAYAM, and implementing policies for equitable access to education for marginalized communities.

Additional Information

• Gross Enrollment Ratio (GER)

• GER is calculated using the formula: (Total enrollment in higher education / Population of the eligible age group) x 100.

• It helps measure the level of participation in education and is used for international comparisons.

• A higher GER indicates more inclusive access to education, whereas a lower GER reflects gaps in access.

• All India Survey on Higher Education (AISHE)

• The AISHE is an annual initiative of the Ministry of Education, launched in the year 2010-11.

• It collects comprehensive data related to higher education institutions, including enrollment, faculty, infrastructure, finances, and more.

• The survey covers all types of institutions, including universities, colleges, and standalone institutions.

• The data is used to shape policies and programs for the development of higher education in India.

Q30. Answer: (b) Sanjay Malhotra

The Correct answer is Sanjay Malhotra.

Key Points

• Sanjay Malhotra was appointed as the 26th Governor of the Reserve Bank of India (RBI) in December 2024.

• He succeeded the previous RBI Governor to take charge of India's central banking institution.

• Sanjay Malhotra is a seasoned bureaucrat and has served in various important roles in the Government of India.

• Prior to his appointment as RBI Governor, he was serving as the Secretary of the Department of Financial Services (DFS), under the Ministry of Finance.

• His leadership at DFS was instrumental in overseeing India's financial sector reforms, including efforts to improve banking services, credit accessibility, and digital payment systems.

• The Reserve Bank of India plays a crucial role in managing the country's monetary policy, regulating the banking system, and ensuring financial stability.

• His appointment as RBI Governor comes at a time when the central bank is focused on addressing challenges like inflation control, managing interest rates, and ensuring economic growth.

• As RBI Governor, he is tasked with implementing policies that align with India's economic goals and strengthening the country's financial institutions.

• The RBI Governor also represents India in international forums, such as the International Monetary Fund (IMF) and World Bank, playing a key role in shaping global economic policies.

Additional Information

• Tuhin Kumar Pandey

• Tuhin Kumar Pandey is an Indian Administrative Service (IAS) officer, known for his role as Secretary of the Department of Investment and Public Asset Management (DIPAM).

• DIPAM handles disinvestment and strategic sale of government-owned entities in India.

• He played a significant role in the privatization of public sector enterprises during his tenure.

• Arunish Chawla

• Arunish Chawla is an IAS officer and has served in various capacities in the Indian government.

• He has been involved in policy-making and implementation in areas like urban development and governance reforms.

• Gyanesh Kumar

• Gyanesh Kumar is a senior IAS officer known for his work in key administrative roles in the Ministry of Home Affairs.

• His contributions include working on issues related to internal security, disaster management, and governance.

Q31. Answer: (b) To record information about the files and directories, such as their names, sizes, timestamps and permissions

The Correct answer is To record information about the files and directories, such as their names, sizes, timestamps, and permissions.

Key Points

• A file system metadata is essential for managing and organizing files and directories on a storage device.

• It includes vital information such as the names, sizes, timestamps (creation, modification, and access times), and permissions associated with each file and directory.

• Metadata enables the operating system to locate and access files efficiently, ensuring proper functioning of the file system.

• This data is typically stored in specialized structures such as inodes (in UNIX-like systems) or Master File Tables (MFT) (in NTFS).

• It also contains information about the file structure (e.g., whether a file is a regular file, directory, or symbolic link).

• By maintaining this data, the file system can enforce security measures (permissions and access controls) and enable features like file versioning or recovery.

• Efficient metadata management is crucial for system performance, as it directly impacts how quickly files can be located and accessed.

Additional Information

• To define the graphical representation of files and folders for the user

• This option refers to the user interface of a file system, which is not the primary function of metadata.

• The graphical representation is determined by the operating system's file explorer, such as Windows Explorer or macOS Finder.

• While metadata supports file organization, it does not dictate how files and folders appear visually to users.

• To optimise the physical storage of file data on the storage device for faster access

• This function falls under data allocation algorithms used by the file system to manage physical storage.

• Examples include contiguous allocation, linked allocation, and indexed allocation.

• While metadata can assist in tracking storage blocks, optimization of physical storage is a separate function.

• To store the actual content and data of the files

• Metadata does not store the actual file content; it only describes and tracks the files.

• The actual data is stored in data blocks or clusters managed by the file system.

• Metadata acts as a reference guide, pointing to the location of these data blocks.

Q32. Answer: (b) 1200

Given:

2% of x = 24.

Formula Used:

To find x:

x = (Given Value)/(Percentage Value)

Calculation:

2% = 2/100.

Given, 2% of x = 24.

=> (2/100) × x = 24

=> x = 24 ÷ (2/100)

=> x = 24 × (100/2)

=> x = 24 × 50

=> x = 1200

The value of x is 1200.

Q33. Answer: (a) Rudradaman I

The Correct answer is Rudradaman I.

Key Points

• Rudradaman I was one of the most prominent rulers of the Western Kshatrapas dynasty, which ruled over parts of present-day Gujarat, Rajasthan, and Madhya Pradesh.

• He is particularly known for his patronage of Sanskrit literature and for being the first king to issue inscriptions exclusively in Sanskrit.

• Rudradaman I undertook the restoration of the Sudarshana Lake located in Kathiawar (present-day Gujarat).

• The Sudarshana Lake was originally constructed during the reign of the Mauryan emperor Chandragupta Maurya, and later maintained by subsequent rulers.

• Rudradaman I repaired and restored this important lake after it was damaged due to floods. His efforts to restore the lake were mentioned in the Junagadh inscription, a significant epigraphical record.

• The Junagadh inscription highlights Rudradaman's engineering skills and his commitment to public welfare by ensuring water availability for agriculture and the general population.

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• Rudradaman I's reign is marked by his efforts to strengthen the economy, administration, and infrastructure, including works like the restoration of Sudarshana Lake.

• He is also known for his military campaigns and for maintaining a strong and stable kingdom during his reign.

Additional Information

• Nahapana

• Nahapana was another notable ruler of the Western Kshatrapas dynasty. He ruled parts of western India during the early centuries CE.

• Nahapana is known for his extensive coinage and inscriptions, which provide valuable information about the socio-economic conditions during his reign.

• He was defeated by the Satavahana king Gautamiputra Satakarni, and much of his territory was annexed by the Satavahanas.

• Azes

• Azes was an Indo-Scythian ruler who established his kingdom in parts of northwestern India during the 1st century BCE.

• He is known for his contribution to the spread of the Indo-Scythian culture and his coinage, which often depicts Greek and Indian influences.

• Azes is also associated with the Azes Era, which is a chronological system used in ancient Indian history.

• Maues

• Maues, also known as Moga, was an Indo-Scythian king who ruled parts of Gandhara and Punjab.

• He is considered the founder of the Indo-Scythian rule in India and is known for his administrative and cultural contributions.

• Maues issued coins that depict a blend of Greek, Indian, and Scythian motifs, signifying the cultural diversity during his reign.

Q34. Answer: (c) Pre-defined theme colours

The Correct answer is Pre-defined theme colours.

Key Points

• A 'Blank Presentation' in MS PowerPoint is designed to provide a completely neutral starting point for users to create their own presentations.

• When a blank presentation is created, it includes at least one slide, a default slide layout, and placeholders for content (like titles, subtitles, or text).

• However, it does not include pre-defined theme colours, which are part of specific templates or themes applied to a presentation.

• Theme colours are associated with design templates and help maintain a cohesive and professional appearance in a presentation. These need to be manually applied if required.

• The absence of pre-defined theme colours allows users to have complete creative control over the presentation design, ensuring flexibility for customization.

• Users can choose to apply themes and colour schemes from the 'Design' tab in PowerPoint if they wish to enhance their slides with a professional layout.

Additional Information

• At least one slide

• Every new 'Blank Presentation' in PowerPoint includes at least one slide by default. This slide often has a title layout to help users start their presentation quickly.

• The initial slide serves as a placeholder for the presentation title and subtitle.

• A default slide layout

• By default, PowerPoint assigns a basic slide layout to the first slide of a blank presentation. This layout typically includes placeholders for text.

• Layouts can be changed or customized from the 'Slide Layout' option to match the presentation's needs.

• Placeholders for content

• Placeholders are pre-formatted areas on a slide where users can add text, images, charts, or multimedia.

• In a blank presentation, placeholders for title and content are included to simplify the process of creating slides.

• Placeholders can be resized, moved, or removed based on the user's requirements.

Q35. Answer: (d) 6,561

Shortcut Trick

Total Cost Price (CP) = 4,400 + 3,600 = 8,000.

Marked Price (MP) = 8,000 × 125/100 = 10,000.

Selling Price (SP) = 10,000 × (81/100) × (81/100).

SP = 10,000 × 6,561/10,000 = 6,561.

Therefore The correct answer is Rs. 6,561.

Alternate Method

Given: Purchase Price = 4,400, Overhead Expenses = 3,600, Markup % = 25%, Successive Discounts = 19% each.

Formulas: Total CP = Purchase Price + Overheads | MP = CP × (100 + Markup%)/100 | SP = MP × (100 − D1%)/100 × (100 − D2%)/100

=> Total Cost Price (CP) = 4,400 + 3,600 = 8,000

=> Marked Price (MP) = 8,000 + (25% of 8,000) = 8,000 + 2,000 = 10,000

=> First Discounted Price = 10,000 − (19% of 10,000) = 10,000 − 1,900 = 8,100

=> Final Selling Price (SP) = 8,100 − (19% of 8,100) = 8,100 − 1,539 = 6,561

Therefore The correct answer is Rs. 6,561.

Additional Information

Total Cost Price Calculation

When a person spends money on repairs, transportation, or overheads, these costs are added to the initial purchase price to get the Effective Cost Price.

Successive Discount Formula

Single equivalent discount for two successive discounts a% and b% = (a + b − ab/100)%. Here: 19 + 19 − (19×19)/100 = 38 − 3.61 = 34.39%.

Q36. Answer: (d) 2 > 1 > 3 > 4

The Correct answer is 2 > 1 > 3 > 4.

Key Points

• The descending order of the number of seats won by the Bharatiya Janata Party (BJP) in the respective 2024-2025 Assembly elections is Maharashtra > Delhi > Jammu and Kashmir > Jharkhand.

• Maharashtra has a significant political landscape where BJP has traditionally secured a large number of seats due to its strong electoral base and alliance with other political groups.

• Delhi, although a smaller state in terms of Assembly seats, saw a notable number of BJP wins, attributed to its focus on urban development and nationalistic campaigns.

• Jammu and Kashmir witnessed BJP's growing influence, especially in the Jammu region, following the abrogation of Article 370, leading to increased support in this Union Territory.

• Jharkhand, a state with a strong tribal demographic, has traditionally been a challenging region for the BJP compared to the other states listed, resulting in fewer seats.

• The order reflects the political strategy, regional popularity, and voter base of the BJP in the respective states during the mentioned elections.

Additional Information

• Maharashtra

• Maharashtra has 288 legislative assembly seats, making it one of the largest states in terms of political representation.

• BJP's success in Maharashtra can be attributed to its alliance with Shiv Sena (Shinde faction) and support in urban and rural areas.

• Key issues like infrastructure development, agricultural policies, and industrial growth influenced the electoral outcomes.

• Delhi

• Delhi has 70 assembly seats, and BJP has been focusing on urban-centric issues like pollution control, women's safety, and infrastructure development.

• Although traditionally dominated by the Aam Aadmi Party (AAP), BJP has been increasing its influence with campaigns emphasizing national issues.

• Jammu and Kashmir

• Post the abrogation of Article 370, the BJP has gained significant support in the Jammu region due to its stance on national security and development.

• Jammu and Kashmir, now a Union Territory, has a total of 90 assembly seats, with BJP performing well in its stronghold regions.

• Jharkhand

• Jharkhand has 81 assembly seats, and the BJP has been traditionally challenged by regional parties like Jharkhand Mukti Morcha (JMM).

• Tribal welfare and land rights are critical issues in this state, affecting BJP's performance.

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Q37. Answer: (b) LA −17

The logic followed in this pattern involves a consistent alphabetical shift for both letters and an arithmetic operation for the number:

For 'IV 17' related to 'FR 6':

For 'KJ 12' related to 'HF 1':

The consistent pattern observed is: First letter -3, Second letter -4, Number -11.

Applying the same logic to 'OE -6':

Thus, OE -6 is related to LA -17.

The derived result LA -17 matches Option 2.

Hence, the correct answer is "Option 2".

Q38. Answer: (c) TAH

The logic followed here is:

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

Hence, the correct answer is "Option 3".

Q39. Answer: (b) 1,44,444.44

Shortcut Trick

Let the initial sale be X.

Net multiplier → 1.02 × 1.20 = 1.224

Final Sale = 1,76,800

X = 1,76,800 ÷ 1.224 ≈ 1,44,444.44

Therefore The correct answer is Rs. 1,44,444.44.

Alternate Method

Given:

First year increase = 2%

Second year increase = 20%

Present Sale = Rs. 1,76,800

Calculations:

=> Let sale two years ago = S

=> Sale after 1st year = S × (100 + 2)/100 = S × 102/100

=> Sale after 2nd year = (S × 102/100) × (100 + 20)/100 = 1,76,800

=> S × 1.02 × 1.2 = 1,76,800

=> S × 1.224 = 1,76,800

=> S = 1,76,800 ÷ 1.224

=> S = 1,44,444.444...

Therefore The correct answer is Rs. 1,44,444.44.

Additional Information

Successive Percentage Change

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

Fractional Conversion

2% = 1/50 and 20% = 1/5. Use multiplier 51/50 and 6/5 for faster calculation in ratio method.

Base Change Property

To find the initial value from the final value, divide the final value by $(1 + r/100)^n$ for uniform growth.

Q40. Answer: (d) Double-click the .xlsx file in File Explorer

The Correct answer is Double-click the .xlsx file in File Explorer.

Key Points

• Double-clicking a .xlsx file in File Explorer is the quickest method to open an existing Excel spreadsheet. This method bypasses the need to manually open the application and locate the file within the software.

• Excel files are identified by their .xlsx extension, which is the default format for spreadsheets created in Microsoft Excel.

• When double-clicked, the file automatically opens in Microsoft Excel, provided the software is installed and properly associated with the file type.

• This method is user-friendly and eliminates additional steps such as navigating through the Excel interface or using shortcuts.

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• It is especially useful when working with files stored in specific folders or directories, ensuring faster access and convenience.

• The association between the .xlsx file extension and Microsoft Excel is set during the installation of the software, making this method seamless for most users.

• Double-clicking files is a universally recognized way to open documents in their designated applications across most operating systems, such as Windows and macOS.

Additional Information

• Open MS Excel and click Blank Workbook

• This method is primarily used to create a new spreadsheet, not to open an existing file.

• While this approach allows users to access Excel, they would still need to manually locate and open the desired file.

• This process is slower compared to directly opening the file by double-clicking it.

• Use the Alt + F4 shortcut

• Alt + F4 is a shortcut to close the currently active window, including Microsoft Excel.

• It is not used to open existing spreadsheets and is designed to exit or terminate applications.

• This shortcut is widely used for closing programs in Windows operating systems.

• Press Ctrl + N

• Ctrl + N is a shortcut for creating a new workbook in Microsoft Excel, not opening an existing file.

• It is helpful for quickly starting a new project but would require additional steps to locate and open an existing spreadsheet.

• This shortcut is part of the broader range of keyboard shortcuts available in Excel.

Q41. Answer: (c) 96 A 12 D 45 C 3 B 14

BODMAS Rule:

According to the question, the letters are interchanged with mathematical operators as follows:

Letter	A	B	C	D
Operator	÷	×	•	–

Let's check each option by substituting the operators and evaluating the expression to find which one results in 5.

1) 96 B 12 D 45 A 3 C 14

Equation: 96 × 12 − 45 ÷ 3 + 14

=> 96 × 12 − 45 ÷ 3 + 14

=> 1152 − 45 ÷ 3 + 14

=> 1152 − 15 + 14

=> 1137 + 14

=> 1151 ≠ 5 (Incorrect)

2) 96 C 12 B 45 A 3 D 14

Equation: 96 + 12 × 45 ÷ 3 − 14

=> 96 + 12 × 45 ÷ 3 − 14

=> 96 + 540 ÷ 3 − 14

=> 96 + 180 − 14

=> 276 − 14

=> 262 ≠ 5 (Incorrect)

3) 96 A 12 D 45 C 3 B 14

Equation: 96 ÷ 12 − 45 + 3 × 14

=> 96 ÷ 12 − 45 + 3 × 14

=> 8 − 45 + 3 × 14

=> 8 − 45 + 42

=> −37 + 42

=> 5 = 5 (Correct)

4) 96 D 12 C 45 B 3 A 14

Equation: 96 − 12 + 45 × 3 ÷ 14

=> 96 − 12 + 45 × 3 ÷ 14

=> 96 − 12 + 135 ÷ 14

=> 96 − 12 + 9.64

=> 84 + 9.64

=> 93.64 ≠ 5 (Incorrect)

Hence, the correct answer is "Option 3".

Q42. Answer: (a) ISRO Chairman

The Correct answer is ISRO Chairman.

Key Points

• The Shri S Ramakrishnan Centre of Excellence was inaugurated at IIT Madras, which is one of India's leading institutions in science and technology research.

• The center is named after Shri S Ramakrishnan, a renowned figure in the field of space and technology.

• The ISRO Chairman is a key figure in India's space research and development and represents the Indian Space Research Organisation (ISRO).

• ISRO is India's national space agency, under the Department of Space, and is known for its successful missions like Chandrayaan, Mangalyaan, and other satellite launches.

• The inauguration by the ISRO Chairman highlights the collaboration between academic institutions and national space agencies to foster innovation and research.

• This center is likely to focus on advanced research in areas like space technology, satellite systems, and propulsion mechanisms, which are key areas for ISRO.

• The ISRO Chairman is usually an individual with vast experience in space science and engineering, making them an ideal choice for such inaugurations.

• This collaboration aligns with India's vision of becoming a global leader in space technology and research.

Additional Information

• Union Minister for Space

• The Union Minister for Space oversees the Department of Space, which supervises ISRO and other related organizations.

• While the minister provides policy direction, inaugurations of technical centers are typically conducted by experts such as the ISRO Chairman.

• The minister's role is more focused on governance, allocation of resources, and policy decisions rather than operational or technical matters.

• Scientific Secretary of ISRO

• The Scientific Secretary of ISRO is responsible for coordinating scientific and technical activities within ISRO.

• This role involves facilitating research, but the Chairman, as the leader of ISRO, is usually chosen for major inaugurations.

• The Scientific Secretary plays a crucial role in ensuring the scientific integrity and operational excellence of ISRO's missions.

• Director of IIT Madras

• The Director of IIT Madras is the administrative and academic head of the institution.

• While the director plays a key role in establishing collaborations and overseeing institutional activities, national-level inaugurations are typically conducted by distinguished external figures.

• The director would have contributed significantly to the establishment of the Shri S Ramakrishnan Centre of Excellence but would not be the primary figure for such a high-profile inauguration.

Q43. Answer: (a) Two

Given series:

(Left) 9 # 1 * £ 5 2 & % $ 7 & 3 Ω 4 6 @ 8 (Right)

Condition to be checked:

Number → Symbol → Symbol

Let's examine the series for this pattern:

9 # 1 * £ 5 2 & % $ 7 & 3 Ω 4 6 @ 8

There are two such symbols, each of which is immediately preceded by a number and also immediately followed by another symbol (2 & % and 1 * £ $).

Hence, the correct answer is "Option 1".

Q44. Answer: (a) Rs. 16,343

Shortcut Trick

For 2 years, the difference between CI and SI is given by the formula: Difference = P × $(R/100)^2$.

Given Rate (R) = 19% and Difference = Rs. 590.

590 = P × $(19/100)^2$

590 = P × (361/10000) => P = (590 × 10000) ÷ 361

P = 5900000 ÷ 361 ≈ Rs. 16,343.49

Therefore The correct answer is Rs. 16,343.

Alternate Method

Given:

Time (T) = 2 years

Rate (R) = 19% per annum

Difference (CI − SI) = Rs. 590

Formula Used:

Simple Interest (SI) for 2 years = (P × R × T) ÷ 100

Compound Interest (CI) for 2 years = $P[(1 + R/100)^2 − 1]$

Calculations:

=> SI for 2 years = (P × 19 × 2) ÷ 100 = 0.38P

=> CI for 2 years = $P[(1 + 19/100)^2 − 1]$

=> CI = $P[(119/100)^2 − 1]$ = P[1.4161 − 1] = 0.4161P

=> Difference (CI − SI) = 0.4161P − 0.38P = 0.0361P

=> 0.0361P = 590

=> P = 590 ÷ 0.0361

=> P ≈ Rs. 16,343.49

Therefore The correct answer is Rs. 16,343.

Additional Information

Difference for 3 Years

The difference between CI and SI for 3 years is given by: Difference = $P(R/100)^2 × (3 + R/100)$.

Effective Rate Method

For 2 years, the effective CI rate is R + R + (R×R)/100. The SI rate is 2R. The difference is simply $(R^2/100)$%.

Compound Interest Half-Yearly

If compounded half-yearly, the rate becomes R/2 and the time becomes 2n years.

Q45. Answer: (a) To create a smooth white base for painting

The Correct answer is To create a smooth white base for painting.

Key Points

• In Gond painting, the application of 'chhui' clay on the surface serves a critical function of preparing the base for the artwork.

• Chhui clay is a type of natural white clay that is traditionally used to create a smooth and uniform white surface for painting.

• This white base helps in enhancing the visibility of the colors used in Gond paintings, which are often vibrant and detailed.

• The application of chhui clay ensures that the surface is even and non-porous, making it easier for the artists to apply intricate patterns and designs.

• Gond painting is a traditional art form of the Gond tribe, one of the largest tribal communities in Madhya Pradesh, India.

• The technique of using chhui clay reflects the eco-friendly and resourceful practices of the Gond artists, who use materials readily available in their environment.

• The smooth white background provided by the clay allows for the intricate dot and line patterns that are characteristic of Gond paintings to stand out distinctly.

• This preparatory step is essential to maintaining the durability and aesthetic quality of the artwork.

Additional Information

• To fix cracks on the wall

• Although some types of clay are used to repair cracks in walls, the primary purpose of chhui clay in Gond painting is not structural repair but rather to create a smooth base for the artwork.

• Chhui clay has properties that make it suitable for painting, but it is not specifically used as a material for repairing cracks.

• To prevent insects from damaging the wall

• Chhui clay is not typically applied to prevent insects from damaging walls. Other materials, such as lime or specific chemical treatments, are more commonly used for this purpose.

• In the context of Gond art, the focus of chhui clay is on its role in enhancing the painting process rather than acting as a protective layer against pests.

• To reflect sunlight

• While white surfaces, including those created using chhui clay, can reflect sunlight, this is not the primary reason for its application in Gond painting.

• The reflective properties of the clay may contribute to its aesthetic appeal, but its main purpose is to provide a suitable surface for detailed artwork.

Q46. Answer: (d) Maldives

The Correct answer is Maldives.

Key Points

• Maldives is separated from India by a maritime boundary only, as it is located in the Indian Ocean and does not share any land borders with India.

• The closest Indian territory to the Maldives is the Lakshadweep Islands, which are located to the north of the Maldives.

• The maritime boundary between India and Maldives is defined in accordance with the United Nations Convention on the Law of the Sea (UNCLOS).

• The Maldives is situated approximately 700 kilometers southwest of India and is known for its strategic location in the Indian Ocean.

• The bilateral relations between India and Maldives are strong, including cooperation in areas like security, tourism, trade, and climate change.

• India has a policy of “Neighborhood First” which emphasizes mutual cooperation with neighboring countries, including the Maldives.

• The Maldives consists of 26 atolls, which are a chain of islands that are scattered across the Indian Ocean.

• The Maldives' proximity to India makes it a significant partner in maintaining maritime security and stability in the region.

Additional Information

• Myanmar

• Myanmar shares a land border with India along the northeastern states, including Manipur, Mizoram, Nagaland, and Arunachal Pradesh.

• The border between India and Myanmar is approximately 1,643 kilometers long.

• Myanmar also has a maritime boundary with India in the Bay of Bengal, but the land border is a distinguishing factor.

• Bhutan

• Bhutan is a landlocked country located in the Himalayas and shares a land border with India along states such as West Bengal, Assam, Arunachal Pradesh, and Sikkim.

• The bilateral relationship between India and Bhutan is guided by the India-Bhutan Friendship Treaty.

• Nepal

• Nepal is also a landlocked country and shares a land border with India along states such as Bihar, Uttar Pradesh, Uttarakhand, and West Bengal.

• The India-Nepal border is unique as it is an open border, allowing free movement of people between the two nations.

Q47. Answer: (b) L D F E T Z W

Number/Symbol	**3**	**8**	**@**	**&**	**2**	**7**	**5**	**%**	**1**	**9**	**Δ**	**4**	**6**
Code	L	E	Z	M	D	W	A	P	R	T	F	B	K

Conditions:

(i) If the first element and the last element is a number, the codes for these two (the first and the last elements) are to be interchanged.

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

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

Given- 7 2 Δ 8 9 @ 3

The first element is 7 (an odd number).

The last element is 3 (an odd number).

The second element is 2 (not a perfect square).

The third element is Δ (a symbol, not a perfect square).

Rule No. (i): This condition applies because the first element (7) is a number and the last element (3) is also a number. So, their codes will be interchanged.

Rule No. (ii): This condition does not apply because the last element (3) is an odd number, not an even number.

Rule No. (iii): This condition does not apply because neither the second element (2) nor the third element (Δ) are perfect squares.
Based on the applicable rule (i), the first and last elements' codes are interchanged.
The original code for 7 is W.
The original code for 3 is L.
So, 7 will be coded as L.
And 3 will be coded as W.
The code for 2 is D.
The code for Δ is F.
The code for 8 is E.
The code for 9 is T.
The code for @ is Z.
The code for & is M.
Thus, '7 2 Δ 8 9 @ 3' is coded as → L D F E T Z W.
Hence, the correct answer is "Option 2".

Q48. Answer: (c) 2 km to the north

Given:
Sunny starts from point A and drives 11 km towards the east.
He then takes a left turn, drives 8 km, turns left and drives 12 km.
He then takes a left turn and drives 10 km.
He takes a final left turn, drives 1 km and stops at point P.
Thus, he drive 2 km to the north in order to reach point A again.
Hence, the correct answer is "Option 3".

Q49. Answer: (c) 56 minute

Shortcut Trick
When distance is constant, Speed is inversely proportional to Time.
Speed ratio (Usual : New) = 1 : 2/3 = 3 : 2
Time ratio (Usual : New) = 2 : 3
Difference in time ratio = 3 − 2 = 1 unit → 28 minutes
Usual time = 2 units = 2 × 28 minutes = 56 minutes
Therefore The correct answer is 56 min.
Alternate Method
Given:
New Speed (S2) = 2/3 of Usual Speed (S1)
Time difference (Δt) = 28 minutes
Formula Used:
Speed × Time = Distance
Usual Time (T) = [Late time × Numerator] ÷ [Difference between Numerator and Denominator]
Calculations:
=> Let usual speed be S and usual time be T.
=> New speed = (2/3)S and New time = T + 28
=> S × T = (2/3)S × (T + 28)
=> T = (2/3)(T + 28)
=> 3T = 2T + 56
=> T = 56 minutes
Therefore The correct answer is 56 min.
Additional Information
Inverse Proportionality Rule
If speed becomes a/b of its original value, then time becomes b/a of its original value provided the distance is constant.
Average Speed
For two equal distances covered at speeds x and y, Average Speed = 2xy ÷ (x + y).

Relative Speed

Same direction: (S1 − S2) | Opposite direction: (S1 + S2).

Q50. Answer: (c) Two

Given: D, E, F, G, H, I and K are sitting around a circular table facing the centre of the table.

I sits third to the left of H. E sits second to the left of G. Only H sits between D and E.

K is not an immediate neighbour of I.

Thus, Only two people sit between F and E when counted from the right of F.

Hence, the correct answer is "Option 3".

Q51. Answer: (c) 6 - 12 - 24 - 48

The logic followed here is:

Logic: Each subsequent number is obtained by multiplying the previous number by 2.

For, (10, 20, 40, 80)

=> 10 × 2 = 20.

=> 20 × 2 = 40.

=> 40 × 2 = 80.

For, (3, 6, 12, 24)

=> 3 × 2 = 6.

=> 6 × 2 = 12.

=> 12 × 2 = 24.

Let's check options one by one:

Option 1) 4 - 8 - 12 - 24

=> 4 × 2 = 8. (Matches)

=> 8 × 2 = 16 ≠ 12.

Here, logic not followed.

Option 2) 8 - 10 - 20 - 40

=> 8 × 2 = 16 ≠ 10.

Here, logic not followed.

Option 3) 6 - 12 - 24 - 48

=> 6 × 2 = 12. (Matches)

=> 12 × 2 = 24. (Matches)

=> 24 × 2 = 48. (Matches)

Here, logic followed.

Option 4) 5 - 10 - 20 - 30

=> 5 × 2 = 10. (Matches)

=> 10 × 2 = 20. (Matches)

=> 20 × 2 = 40 ≠ 30.

Here, logic not followed.

Hence, the correct answer is "Option 3".

Q52. Answer: (d) They are multicellular and may be secretory.

The Correct answer is They are multicellular and may be secretory.

Key Points

• Trichomes are epidermal outgrowths that can be present on the stem, leaves, and even other parts of the plant.

• They are typically multicellular, consisting of several cells, and may take on various forms such as scales, hairs, or glandular structures.

• Trichomes can have secretory functions, producing substances like essential oils, resins, or other chemicals that help deter herbivores or attract pollinators.

• They also play a role in water retention by reducing water loss from the plant surface, helping plants survive in dry environments.

• Trichomes may protect plants from excessive sunlight by reflecting light and reducing heat absorption.

• In some plants, trichomes act as a defense mechanism by being sharp or sticky, preventing pests and herbivores from damaging the plant.

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• They are highly diverse in structure and function, depending on the species and environmental conditions.

Q53. Answer: (c) Geru

The Correct answer is Geru.

Key Points

• Geru is a natural red ochre pigment used in Warli painting, particularly in the initial step known as 'Lipane'.

• 'Lipane' refers to the process of preparing the wall surface for painting by applying a smooth layer of geru mixed with water or cow dung.

• The use of geru gives the wall a distinctive reddish-brown or earthy tone, which serves as the base for the white rice paste designs in Warli art.

• This natural pigment is widely available and eco-friendly, aligning with the Warli tribe's connection to nature and sustainability.

• Geru creates a textured surface that enhances the contrast of the white rice paste used for drawing intricate patterns and motifs.

• The Warli paintings are deeply rooted in the tradition of the Warli tribe, predominantly found in the North Sahyadri Range of Maharashtra and Gujarat.

• The use of geru in 'Lipane' highlights the Warli tribe's reliance on locally sourced materials and their harmonious relationship with the environment.

Additional Information

• Rice Paste

• Rice paste is indeed used in Warli painting but serves a different function. It is the primary medium for creating the iconic white motifs and patterns on the prepared red-brown surface.

• It is made by grinding rice into a fine paste, often mixed with water or a binding agent, to achieve a smooth consistency.

• The white rice paste symbolizes purity and is used to depict themes of life, nature, and cultural rituals.

• Sand

• Sand is not a material typically associated with preparing the wall surface in Warli painting. However, sand may sometimes be mixed with materials like cow dung to create a rough surface for other traditional art forms.

• Sand lacks the distinct color and texture provided by geru, which is essential for the aesthetic appeal of Warli art.

• Charcoal

• Charcoal is a black pigment used in various art forms but is not a component of Warli painting.

• While charcoal could be used for sketching or other forms of tribal art, it does not serve the purpose of preparing the wall or creating motifs in Warli art.

Q54. Answer: (c) Mikir Hills

The Correct answer is Mikir Hills.

Key Points

• The Mikir Hills are not part of the Meghalaya Plateau. They are located in the Assam state of India and are geographically distinct from the plateau.

• The Mikir Hills lie near the Kaziranga National Park and are part of the Karbi Anglong district in Assam.

• These hills are part of the Assam Plateau, which is an extension of the Peninsular Plateau.

• The Mikir Hills are home to the Karbi tribes, a significant ethnic group in this region, and are rich in biodiversity.

• While the Meghalaya Plateau consists of the Garo, Khasi, and Jaintia Hills, the Mikir Hills are geographically and geologically separate, making them unrelated to the Meghalaya Plateau.

Additional Information

• Garo Hills

• The Garo Hills are one of the three main hill ranges of the Meghalaya Plateau, located in the western part of Meghalaya.

• They are named after the Garo tribes, who are native to this region.

• The Garo Hills are known for their thick forests, biodiversity, and unique cultural heritage.

• Popular tourist attractions include the Nokrek Biosphere Reserve and the Balpakram National Park.

• Khasi Hills

• The Khasi Hills are centrally located in the Meghalaya Plateau and are named after the Khasi tribes, one of the indigenous groups of Meghalaya.

• This region is famous for the living root bridges and Cherrapunji, which is one of the wettest places on Earth.

• The Khasi Hills are also known for their cultural traditions and matrilineal society.

• Jaintia Hills

• The Jaintia Hills are located in the eastern part of the Meghalaya Plateau and are named after the Jaintia tribes.

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• This region is rich in minerals, particularly limestone and coal.

• The hills are known for their natural caves, such as the Liat Prah Cave, which is one of the longest caves in India.

Q55. Answer: (d) Busan, South Korea

The Correct answer is Busan, South Korea.

Key Points

• The fifth session of the Intergovernmental Negotiating Committee (INC-5) to end plastic pollution was held in Busan, South Korea.

• This session is part of the global effort under the United Nations to develop an international legally binding instrument to address the issue of plastic pollution.

• The INC sessions are aimed at tackling the growing challenge of plastic waste and its impact on marine ecosystems, human health, and biodiversity.

• Busan is a significant location for hosting such international events due to its role as a global hub for trade and environmental initiatives.

• The sessions focus on the life cycle of plastics, covering production, design, waste management, and recycling.

• South Korea has been actively involved in international environmental policies and has taken measures to address plastic waste management within its borders.

• The INC-5 session is a continuation of the global series initiated by the United Nations Environment Assembly (UNEA).

• The meeting also emphasized the need for collaborative efforts among nations to curb plastic pollution through policy frameworks, innovation, and public awareness campaigns.

Additional Information

• Tokyo, Japan

• Tokyo is the capital city of Japan and a major global hub for technology, innovation, and international diplomacy.

• While Japan is actively involved in addressing plastic pollution, Tokyo was not the location for the INC-5 session.

• Japan has implemented various measures such as plastic bag charges to reduce plastic waste.

• Nairobi, Kenya

• Nairobi is the headquarters of the United Nations Environment Programme (UNEP).

• The first session of the INC to combat plastic pollution was held in Nairobi, highlighting its importance as a center for environmental negotiations.

• Kenya has been a pioneer in plastic bag bans, showcasing its commitment to combating pollution.

• Berlin, Germany

• Berlin is a leading city in Europe for hosting climate and environmental policy discussions.

• Germany has one of the most advanced waste management systems in the world and plays a key role in global efforts to reduce plastic pollution.

• Although Berlin was not chosen for INC-5, Germany has been actively participating in the INC sessions.

Q56. Answer: (b) 51.8% gain

Shortcut Trick

Net change formula: Net Gain% = a + b + (ab ÷ 100)

Here, a = 65 (markup is positive) and b = −8 (discount is negative).

Gain% = 65 − 8 − (65 × 8 ÷ 100) = 57 − 5.2 = 51.8%.

Since the result is positive, it is a gain.

Therefore The correct answer is 51.8% gain.

Alternate Method

Given: Markup = 65%, Discount = 8%.

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

=> Let Cost Price (CP) = 100.

=> Marked Price (MP) = 100 + 65% of 100 = 165.

=> Selling Price (SP) = 165 − 8% of 165 = 165 × 0.92 = 151.8.

=> Gain = SP − CP = 151.8 − 100 = 51.8.

=> Gain% = (51.8 ÷ 100) × 100 = 51.8%.

Therefore The correct answer is 51.8% gain.

Additional Information

Marked Price & Discount

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Discount is always calculated on the Marked Price (MP). Profit or loss is always calculated on the Cost Price (CP).

Markup Percentage

Markup% = [(MP − CP) ÷ CP] × 100. It represents the increase in price over the base cost.

Q57. Answer: (a) Protection of Fundamental Rights

The Correct answer is Protection of Fundamental Rights.

Key Points

• The phrase "sentinel on the qui vive" was used by the Supreme Court of India to describe its role as the guardian of the Fundamental Rights enshrined in the Constitution of India.

• The term "qui vive" means "on alert" or "on guard," symbolizing the Supreme Court's vigilant role in ensuring that the rights guaranteed to citizens are not infringed by the state or any other entity.

• Under Article 32 of the Indian Constitution, individuals have the right to approach the Supreme Court directly for the enforcement of their Fundamental Rights.

• The Supreme Court has the power to issue five types of writs (Habeas Corpus, Mandamus, Prohibition, Certiorari, and Quo Warranto) to protect these rights.

• Fundamental Rights are outlined in Part III of the Indian Constitution and include rights such as the Right to Equality (Articles 14-18), Right to Freedom (Articles 19-22), Right against Exploitation, and others.

• The judiciary acts as the final interpreter of the Constitution, ensuring that laws passed by the legislature and actions taken by the executive conform to the principles of the Constitution.

• The concept of judicial review allows the Supreme Court to strike down unconstitutional laws or actions that violate Fundamental Rights.

Additional Information

• Protection of foreign policy

• The Supreme Court does not directly deal with the protection of foreign policy. Matters related to foreign policy fall under the purview of the executive branch, specifically the Ministry of External Affairs.

• However, the judiciary can intervene if the implementation of foreign policy violates the Constitution or Fundamental Rights.

• Protection of legislative privileges

• Legislative privileges refer to the special rights and immunities enjoyed by members of the legislature, as specified in Article 105 for Parliament and Article 194 for State Legislatures.

• The judiciary generally does not interfere in legislative privileges unless there is a violation of Fundamental Rights or constitutional limits.

• Protection of tax laws

• The protection of tax laws falls under the purview of the legislature and executive. The judiciary may review tax laws to ensure that they comply with the Constitution and do not violate Fundamental Rights.

• For instance, if a tax law discriminates unfairly, it may be challenged under the Right to Equality (Article 14).

Q58. Answer: (b) Odisha

The Correct answer is Odisha.

Key Points

• Similipal is a national park and a tiger reserve located in the state of Odisha, India.

• The park is part of the Similipal-Kuldiha-Hadgarh Elephant Reserve, which comes under the Mayurbhanj district of Odisha.

• It was declared a national park in 1980 and is recognized as the second national park of the state.

• The name "Similipal" is derived from the abundance of Semul trees (silk cotton trees), which bloom vividly in this region.

• Similipal is known for its rich biodiversity, including species like Bengal tigers, Asian elephants, leopards, and gaurs.

• The park also features a wide range of flora and fauna, with a mix of tropical evergreen forests, deciduous forests, and grasslands.

• It is famous for its picturesque waterfalls like Barehipani and Joranda, which are major attractions for visitors.

• Similipal was designated as a UNESCO World Network of Biosphere Reserves in the year 2009.

• The area is significant for its indigenous tribal population, including the Ho, Munda, and Santhal tribes, who reside in and around the park.

• Similipal plays a critical role in conservation efforts for endangered species and protecting the natural ecosystem of the Eastern Ghats region.

Additional Information

• Gujarat

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

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• The state also features other important wildlife sanctuaries like the Blackbuck National Park (Velavadar) and Marine National Park.
• However, Similipal is not located in Gujarat.
• Madhya Pradesh
• Madhya Pradesh is often referred to as the "Heart of India" and is known for its rich wildlife.
• The state boasts famous national parks like Kanha National Park, Bandhavgarh National Park, and Pench National Park.
• Similipal, however, is not located in Madhya Pradesh.
• Assam
• Assam is renowned for the Kaziranga National Park, which is a UNESCO World Heritage Site and home to the one-horned rhinoceros.
• The state also has other wildlife sanctuaries like Manas National Park and Dibru-Saikhowa National Park.
• Similipal is not situated in Assam.

Q59. Answer: (a) MACK - AMCK - MCKA

The logic followed here is:
For, BEAN - EBAN - BANE
For, MAKE - AMKE - MKEA
Similarly,
MACK - AMCK - MCKA
Hence, the correct answer "Option 1".

Q60. Answer: (a) √(49 - 10√2)

Shortcut Trick
Mean proportional between a and b is given by √(a × b).
Let a = (11 + 5√2) and b = (9 − 5√2).
Product = 11 × 9 − 11 × 5√2 + 9 × 5√2 − (5√2)² = 99 − 55√2 + 45√2 − 50 = 49 − 10√2.
Mean Proportional = √(49 − 10√2).
Therefore The correct answer is √(49 − 10√2).
Alternate Method
Given:
First term (a) = (11 + 5√2)
Second term (b) = (9 − 5√2)
Formula Used:
Mean proportional (M.P.) = √(a × b)
Calculations:
=> M.P. = √[(11 + 5√2) × (9 − 5√2)]
=> M.P. = √[11(9 − 5√2) + 5√2(9 − 5√2)]
=> M.P. = √[99 − 55√2 + 45√2 − 25(2)]
=> M.P. = √[99 − 10√2 − 50]
=> M.P. = √(49 − 10√2)
Therefore The correct answer is √(49 − 10√2).
Additional Information
Mean Proportional
The mean proportional between two numbers x and y is a number z such that x:z = z:y, which implies $z^2 = xy$ or z = √(xy).
Third Proportional
For two numbers a and b, the third proportional c is defined as a:b = b:c, giving $c = b^2/a$.
Fourth Proportional
For three numbers a, b, and c, the fourth proportional d is defined as a:b = c:d, giving d = (b × c)/a.

Q61. Answer: (a) Increased plantation of native trees

The Correct answer is Increased plantation of native trees.
Key Points
• Increased plantation of native trees is a sustainable practice and contributes to the restoration of the ecosystem.

• Native trees are well-adapted to the climatic conditions and soil types of the region, making them ideal for conserving the local biodiversity.

• Planting native species enhances the ability of the Thar Desert to combat desertification, as these trees can provide shade, prevent soil erosion, and improve soil moisture retention.

• These trees support the local wildlife by providing habitats and food sources, and they also preserve the ecosystem's natural balance.

• Unlike invasive species, native trees do not disrupt the existing ecological processes. Instead, they contribute to the stability and resilience of the environment.

• Efforts to plant native trees are often part of governmental and non-governmental programs aimed at combating desertification under initiatives such as the United Nations Convention to Combat Desertification (UNCCD).

• This practice does not lead to any significant degradation of the Thar Desert ecosystem but rather helps in its long-term sustainability.

Additional Information

• Grazing by livestock

• Grazing by livestock is a major contributor to the degradation of the Thar Desert ecosystem. Overgrazing leads to soil erosion and the destruction of vegetation, which are critical to maintaining the desert's delicate ecological balance.

• Livestock grazing often reduces the availability of native vegetation, leading to the loss of habitat for local wildlife.

• Excessive grazing also disrupts the soil's capacity to retain moisture, further exacerbating desertification.

• Erratic rainfall

• Erratic rainfall is another factor impacting the Thar Desert ecosystem. The desert region experiences highly unpredictable and irregular rainfall patterns, which affect the growth of vegetation and the availability of water resources.

• Sudden bursts of rainfall can lead to soil erosion, while prolonged drought periods can decrease the survival rate of plants and animals.

• This variability in precipitation is a natural characteristic of desert climates but becomes more pronounced with climate change.

• Climate change

• Climate change has a profound impact on the Thar Desert ecosystem, as rising temperatures and changing precipitation patterns intensify desertification.

• It leads to increased occurrences of extreme weather events, such as heatwaves and heavy storms, which disrupt the ecological balance.

• Climate change also affects the survival of native flora and fauna, as they struggle to adapt to the rapidly changing conditions.

• Global efforts to mitigate climate change, such as the Paris Agreement, aim to address these challenges to ecosystems worldwide, including the Thar Desert.

Q62. Answer: (c) 7

The given three-digit numbers are: 993, 281, 995, 257, 599.

Now,

The highest number is 995. Its third digit is 5.

The lowest number is 257. Its first digit is 2.

Perform the addition.

Add the third digit of the highest number 5 to the first digit of the lowest number 2.

5 + 2 = 7.

Hence, the correct answer is "Option 3".

Q63. Answer: (a) -82

Shortcut Trick

For the same remainder y, x is the HCF of differences: |2368 − 1278|, |4318 − 2368|, and |4318 − 1278|.

Differences are 1090, 1950, and 3040. Their HCF (x) is 10.

Remainder y = 1278 ÷ 10 → y = 8.

Required value = 3(10) − 14(8) = 30 − 112 = −82.

Therefore The correct answer is -82.

Alternate Method

Given: Numbers are 1278, 2368, 4318.

Step 1: Calculate differences between numbers:

=> 2368 − 1278 = 1090

=> 4318 − 2368 = 1950

=> 4318 − 1278 = 3040

Step 2: Find x (HCF of 1090, 1950, 3040):

=> 1090 = 10 × 109

=> 1950 = 10 × 195

=> 3040 = 10 × 304

=> Common factor x = 10.

Step 3: Find remainder y:

=> 1278 = (10 × 127) + 8

=> y = 8.

Step 4: Calculate (3x − 14y):

=> 3(10) − 14(8) = 30 − 112 = −82.

Therefore The correct answer is -82.

Additional Information

HCF with Same Remainder

When n numbers are divided by the greatest number x to leave the same remainder, x is always the HCF of the absolute differences of those numbers.

HCF with Different Remainders

If numbers N1, N2, N3 leave remainders r1, r2, r3, then the greatest divisor is HCF((N1−r1), (N2−r2), (N3−r3)).

Property of HCF

The HCF of any two numbers also divides their difference, which is why the difference method works for finding the greatest common divisor.

Q64. Answer: (c) 147

BODMAS Rule:

According to the question, the signs are interchanged as follows:

Original Symbol	**•**	**−**	**×**	**÷**
New Symbol	−	×	÷	•

Now, given the equation: 30 − 5 ÷ 2 + 10 × 2 = ?

After interchanging the specified signs, the new equation is:

30 × 5 + 2 − 10 ÷ 2 = ?

Perform operations according to BODMAS:

=> 30 × 5 + 2 − 10 ÷ 2

=> 150 + 2 − 5

=> 152 − 5

=> 147

Hence, the correct answer is "Option 3".

Q65. Answer: (b) 38.75

Shortcut Trick

Ratio of number of boys = 14 : 4 = 7 : 2.

Using Deviation Method: Assume a base average of 33.5 kg.

Positive deviation from 7 units = 7 × (40.25 − 33.5) = 7 × 6.75 = 47.25.

Net increase in average = Total deviation ÷ Total units = 47.25 ÷ (7 + 2) = 5.25 kg.

Actual average weight = 33.5 + 5.25 = 38.75 kg.

Therefore The correct answer is 38.75 kg.

Alternate Method

Given:

Number of boys (Group 1) = 14 | Average weight (Group 1) = 40.25 kg

Number of boys (Group 2) = 4 | Average weight (Group 2) = 33.5 kg

Formula Used:

Combined Average = (n1 × A1 + n2 × A2) ÷ (n1 + n2)

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Calculations:

=> Total weight of 14 boys = 14 × 40.25 = 563.5 kg

=> Total weight of 4 boys = 4 × 33.5 = 134 kg

=> Total weight of all 18 boys = 563.5 + 134 = 697.5 kg

=> Average weight of all boys = 697.5 ÷ 18

=> Average weight = 38.75 kg

Therefore The correct answer is 38.75 kg.

Additional Information

Weighted Average Formula

When data is given in groups, the overall average is A_w = (n1a1 + n2a2 + ... + n_ka_k) ÷ (n1 + n2 + ... + n_k).

Ratio Shortcut

If the number of items in groups can be simplified into a ratio, use the simplified ratio values instead of actual numbers for faster calculation.

Effect of Change in Each Term

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

Properties of Average

The average always lies between the minimum and maximum values of the data set (i.e., 33.5 < 38.75 < 40.25).

Q66. Answer: (a) NT - JK

The logic followed here is.

Option (1) 'NT - JK':

Option (2) 'NQ - MP':

Option (3) 'JM - IL':

Option (4) 'FI - EH':

Hence, the correct answer is "Option 1".

Q67. Answer: (a) 5

The given code language is:

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

Hence, the correct answer is "Option 1".

Q68. Answer: (c) 28 minutes

Shortcut Trick

Speed ratio (New : Normal) = 2 : 7

Since distance is constant, Time ratio (New : Normal) = 7 : 2

Difference in time ratio parts = 7 − 2 = 5 units

5 units = 70 minutes → 1 unit = 14 minutes

Normal time = 2 units = 2 × 14 minutes = 28 minutes

Therefore The correct answer is 28 min.

Alternate Method

Given:

New Speed (S_n) = 2/7 of Normal Speed (S_u)

Time delay = 70 minutes

Formula Used:

Distance = Speed × Time

If Distance is constant, Speed prop. to 1/Time

Calculations:

=> Let Normal speed be 7x and Normal time be T.

=> New speed = 2x

=> Since Distance = Speed × Time:

=> 7x × T = 2x × (T + 70)

=> 7T = 2T + 140

=> 5T = 140

=> T = 140 ÷ 5

=> T = 28 minutes

Therefore The correct answer is 28 min.

Additional Information

Inverse Proportion Rule

When the distance is constant, the ratio of speeds is the inverse of the ratio of time taken: S1/S2 = T2/T1.

Late/Early Concept

If a person is late by 'L' and early by 'E', the total time difference is L + E. If both are late or both are early, the difference is |L − E|.

Average Speed

For the same distance covered at speeds x and y, Average Speed = 2xy ÷ (x + y).

Q69. Answer: (b) 14208

Shortcut Trick

To be divisible by 8, the last three digits of the number must be divisible by 8.

Check options: (1) 370 → No, (2) 208 → Yes (208 ÷ 8 = 26), (3) 702 → No, (4) 659 → No.

Only 14208 satisfies the divisibility rule for 8.

Verify for 37: 14208 ÷ 37 = 384.

Therefore The correct answer is 14208.

Alternate Method

Given: Numbers 15370, 14208, 13702, 15659. Need to find the number divisible by LCM(37, 8).

Step 1: Divisibility by 8

=> 15370: Last 3 digits 370 ÷ 8 → Remainder = 2 (Not divisible)

=> 14208: Last 3 digits 208 ÷ 8 → 26 (Divisible)

=> 13702: Last 3 digits 702 ÷ 8 → Remainder = 6 (Not divisible)

=> 15659: Last digit is odd (Not divisible)

Step 2: Divisibility by 37 for 14208

=> 14208 = (14800 − 592)

=> 14800 ÷ 37 = 400

=> 592 ÷ 37 = 16

=> 14208 ÷ 37 = 400 − 16 = 384 (Divisible)

Therefore The correct answer is 14208.

Additional Information

Divisibility Rule of 8

A number is divisible by 8 if its last three digits are zeros or form a number divisible by 8.

Divisibility Rule of 37

For larger numbers, 37 has a property where 111, 222, 333... are all divisible by 37 (since 37 × 3 = 111).

LCM Method

If a number is divisible by two co-prime numbers a and b, it must be divisible by their product (a × b). Here, 37 and 8 are co-prime.

Q70. Answer: (a) GH - OM

The logic followed here is.

Option (1) 'GH - OM':

Option (2) 'QR - WX':

Option (3) 'LM - RS':

Option (4) 'ST - YZ':

Hence, the correct answer is "Option 1".

Q71. Answer: (d) Gondwana Land

The Correct answer is Gondwana Land.

Key Points

• Gondwana Land was a part of the supercontinent Pangaea, which existed during the Paleozoic and Mesozoic eras.

• It comprised the present-day landmasses of South America, Africa, Antarctica, Australia, and the Indian subcontinent.

• The breakup of Gondwana Land led to the formation of the continents as we know them today.

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• The Great Plateau of India, which includes the Deccan Plateau, is considered a part of Gondwana Land due to its geological history and the presence of ancient rocks.
• Gondwana rocks in India contain coal deposits and are significant for mineral extraction.
• The breakup of Gondwana Land is attributed to tectonic plate movements and continental drift.
• Its name is derived from the Gondwana region in India, which was identified as having rocks and fossils from this ancient landmass.
• Gondwana Land played a crucial role in the evolution of life, with fossils of early plants and animals found in its deposits.

Additional Information

• Angaraland
• Angaraland was the northern counterpart of Gondwana Land, forming the other part of the supercontinent Pangaea.
• It consisted of present-day Russia, Siberia, and parts of northern Europe.
• Angaraland was separated from Gondwana Land by the Tethys Sea, which existed during the Paleozoic and Mesozoic eras.
• It played a significant role in the geological evolution of the northern hemisphere.
• Pangaea
• Pangaea was a supercontinent that existed during the late Paleozoic and early Mesozoic eras.
• It encompassed all of Earth's landmasses before they split into Laurasia and Gondwana Land.
• Pangaea's breakup led to the formation of the continents due to tectonic plate movements.
• The term "Pangaea" means "all lands" in Greek, highlighting its unified landmass.
• Laurasia
• Laurasia was the northern part of the supercontinent Pangaea after its division.
• It included the modern landmasses of North America, Europe, and Asia.
• Laurasia's separation from Gondwana Land marked the beginning of continental drift.
• It contributed to the formation of the northern hemisphere continents and their geological features.

Q72. Answer: (c) Poverty Headcount Ratio

The Correct answer is Poverty Headcount Ratio.

Key Points

• The Poverty Headcount Ratio is a metric used to measure the percentage of a country's population that lives below the poverty line.
• This indicator helps in understanding the extent of poverty in a nation and is widely used in social and economic analysis.
• It is based on defining a specific poverty threshold or line, which represents the minimum income or consumption level required to meet basic needs such as food, shelter, and clothing.
• The Poverty Headcount Ratio is expressed as a percentage of the total population. For example, if 20% of a country's population lives below the poverty line, the ratio is 20%.
• This measure is crucial for governments and international organizations like the World Bank to assess the impact of their poverty alleviation programs and make informed policy decisions.
• It is often calculated using data from household surveys conducted at national and regional levels.
• The indicator is part of broader frameworks like the Sustainable Development Goals (SDGs), specifically under Goal 1: No Poverty.
• The measure also provides insights into inequality and helps target resources toward the most vulnerable groups in society.

Additional Information

• Gini Coefficient
• The Gini Coefficient is a measure of income inequality within a population.
• It ranges from 0 (perfect equality) to 1 (maximum inequality).
• A lower Gini Coefficient indicates a more equal income distribution, whereas a higher value suggests greater inequality.
• This metric is often used alongside poverty measures to understand the broader economic disparities in a society.
• Unemployment Rate
• The Unemployment Rate refers to the percentage of the labor force that is unemployed but actively seeking work.
• This indicator highlights the employment situation in a country but does not directly measure poverty.
• It is an important economic metric but does not account for individuals who are employed but still live in poverty (working poor).
• Human Development Index (HDI)
• The Human Development Index (HDI) is a composite index that measures a country's overall social and economic development.
• It considers factors such as life expectancy, education level, and per capita income.

• Although HDI reflects development levels, it does not specifically measure the proportion of people living in poverty.

Q73. Answer: (a) 10

Given:

Original number = 2645783

For each digit in the number:

• Add 2 to each odd digit.

• Subtract 1 from each even digit.

Formula Used:

New digit = Odd digit + 2 (if digit is odd)

New digit = Even digit − 1 (if digit is even)

Sum of the highest and lowest digits = Highest digit in the new number + Lowest digit in the new number

Calculation:

Original number = 2, 6, 4, 5, 7, 8, 3

Step 1: Apply the transformation rule:

• 2 (even) => 2 − 1 = 1

• 6 (even) => 6 − 1 = 5

• 4 (even) => 4 − 1 = 3

• 5 (odd) => 5 + 2 = 7

• 7 (odd) => 7 + 2 = 9

• 8 (even) => 8 − 1 = 7

• 3 (odd) => 3 + 2 = 5

New number = 1, 5, 3, 7, 9, 7, 5

Step 2: Find the highest and lowest digits:

• Highest digit = 9

• Lowest digit = 1

Step 3: Calculate the sum of the highest and lowest digits:

=> Sum = 9 + 1

=> Sum = 10

The sum of the highest and lowest digits in the new number is 10.

Q74. Answer: (d) Revolt of 1857

The correct answer is Revolt of 1857.

Key Points

• The Revolt of 1857, also known as the First War of Indian Independence, marked a turning point in the history of British rule in India.

• It was a widespread but unsuccessful rebellion against the British East India Company rule.

• The revolt was triggered due to various factors such as economic exploitation, political annexation, religious interference, and social injustices.

• One of the key policies that fueled resentment was the Doctrine of Lapse, implemented by Lord Dalhousie, which allowed the British to annex Indian princely states if the rulers did not have a direct heir.

• The annexation of states like Awadh further intensified the discontent among Indian rulers and the local population.

• The rebellion was led by figures such as Rani Lakshmibai of Jhansi, Tantia Tope, Nana Sahib, and others, who became symbols of resistance.

• The revolt demonstrated the widespread dissatisfaction among Indians and revealed the limitations of the British policies of annexation.

• After suppressing the revolt, the British Crown took direct control of India through the Government of India Act, 1858, ending the era of East India Company rule.

• The revolt marked the final collapse of the British annexation policy, and subsequent rulers adopted a more cautious approach towards governance and administration.

Additional Information

• Partition of Bengal

• The Partition of Bengal in 1905 by Lord Curzon was a significant event in Indian history. It divided Bengal into East Bengal and West Bengal based on religious and administrative reasons.

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• The move was seen as an attempt to divide Hindus and Muslims and weaken the nationalist movement.

• The widespread protests against the partition led to the growth of the Swadeshi Movement and ultimately resulted in the reversal of the partition in 1911.

• Quit India Movement

• The Quit India Movement was launched by the Indian National Congress on 8 August 1942 under the leadership of Mahatma Gandhi.

• It demanded an end to British rule in India and was characterized by widespread protests, strikes, and civil disobedience.

• Unlike the Revolt of 1857, this movement was non-violent but still faced brutal suppression by the British authorities.

• Government of India Act, 1935

• The Government of India Act, 1935 was the longest Act passed by the British Parliament concerning India.

• It introduced significant reforms, including the establishment of provincial autonomy and the creation of the Federal Court.

• This Act laid the foundation for the federal structure of governance but did not address the complete independence aspirations of Indians.

Q75. Answer: (a) -7

The given three-digit numbers are: 210, 878, 407, 692, 140.

Now,

The highest number is 878. Its third digit is 8.

The lowest number is 140. Its first digit is 1.

Perform the subtraction.

Subtract the third digit of the highest number 8 from the first digit of the lowest number 1.

1 - 8 = -7.

Hence, the correct answer is "Option 1".

Q76. Answer: (c) 30; 120

Shortcut Trick

Since PQ is a straight line, angle ARP and angle ARQ form a linear pair, so 2x + y = 180.

For parallel lines AB and CD, the exterior angle angle ARP and the interior angle angle RSD are corresponding angles (thus equal).

Since angle RSD and angle DSP form a linear pair at point S, their sum is 180°.

Substituting angle ARP for angle RSD: 2x + 4x = 180 => 6x = 180 => x = 30.

Now, 2(30) + y = 180 => 60 + y = 180 => y = 120.

Therefore The correct answer is 30; 120.

Alternate Method

Given:

AB || CD and PQ is a transversal.

angle ARP = 2x°, angle ARQ = y°, and angle DSP = 4x°.

Formula Used:

1. Linear Pair Axiom: Sum of angles on a straight line is 180°.

2. Corresponding Angles Postulate: If two parallel lines are cut by a transversal, then the pairs of corresponding angles are equal.

Calculations:

=> Since P-R-Q is a straight line, angle ARP + angle ARQ = 180°

=> 2x + y = 180° --- (Equation 1)

=> Since AB || CD, angle ARP = angle RSC (Corresponding angles)

=> angle RSC = 2x°

=> Now, at point S, angle RSC + angle DSP = 180° (Linear pair)

=> 2x + 4x = 180°

=> 6x = 180°

=> x = 180° ÷ 6 = 30°

=> Substitute x = 30 in Equation 1:

=> 2(30) + y = 180°

=> 60 + y = 180°

=> y = 180° − 60° = 120°

Therefore The correct answer is 30; 120.

Additional Information

Corresponding Angles

When two parallel lines are intersected by a transversal, angles in the same relative position at each intersection are equal.

Alternate Interior Angles

Angles between the parallel lines on opposite sides of the transversal are equal (e.g., angle BRS = angle RSC).

Co-interior Angles

Interior angles on the same side of the transversal are supplementary, meaning their sum is 180°.

Q77. Answer: (c) Raja Ram Mohan Roy

The correct answer is Raja Ram Mohan Roy.

Key Points

• Raja Ram Mohan Roy is called the 'Father of the Indian Renaissance' for his immense contribution to social, religious, and educational reforms in India during the 19th century.

• He played a pivotal role in the abolition of the inhuman practice of Sati in 1829, with the help of Lord William Bentinck.

• Raja Ram Mohan Roy was a strong advocate for women's rights, including widow remarriage and women's education.

• He founded the Brahmo Samaj in 1828, which aimed to reform and modernize the social and religious practices of Hinduism.

Additional Information

• Dayanand Saraswati: He was the founder of the Arya Samaj, a Hindu reform movement. He advocated for the return to the Vedas and opposed idol worship, caste discrimination, and child marriage. His slogan "Back to the Vedas" aimed at reviving the ancient Indian culture and knowledge.

• Swami Vivekananda: A disciple of Sri Ramakrishna Paramahamsa, Swami Vivekananda played a crucial role in introducing Indian philosophies like Vedanta and Yoga to the Western world. He is famous for his speech at the Parliament of the World's Religions in Chicago in 1893, where he addressed the audience as "Sisters and Brothers of America."

• Atmaram Pandurang: He was a social reformer and one of the founders of the Prarthana Samaj, a reformist movement in Maharashtra. The Prarthana Samaj aimed to remove caste discrimination and promote widow remarriage, women's education, and other social reforms.

Q78. Answer: (c) 476

The logic followed here is:

Hence, the correct answer is "Option 3".

Q79. Answer: (c) 82.9

Shortcut Trick

Apply the Empirical Formula: Mean = (3 × Median − Mode) ÷ 2.

Mean = (3 × 60 − 14.2) ÷ 2

Mean = (180 − 14.2) ÷ 2

Mean = 165.8 ÷ 2 = 82.9

Therefore The correct answer is 82.9.

Alternate Method

Given:

Mode of the data set = 14.2

Median of the data set = 60

Formula Used:

The Empirical Formula for a moderately skewed distribution is:

Mode = 3 × Median − 2 × Mean

Calculations:

=> 14.2 = 3 × 60 − 2 × Mean

=> 14.2 = 180 − 2 × Mean

=> 2 × Mean = 180 − 14.2

=> 2 × Mean = 165.8

=> Mean = 165.8 ÷ 2

=> Mean = 82.9

Therefore The correct answer is 82.9.

Additional Information

Empirical Relationship

The empirical relationship between Mean, Median, and Mode is used for unimodal and moderately skewed distributions.

Q80. Answer: (a) 40

Given:

• Hitesh's rank from the top = 28th

• Hitesh's rank from the bottom = 13th

The formula for the total number of persons in a row (or class) when one person's rank from both ends is known is: Total persons = (Rank from one end) + (Rank from other end) - 1

Using this formula for Hitesh's ranks:

Total students = (Hitesh's rank from top) + (Hitesh's rank from bottom) - 1

= 28 + 13 - 1

= 41 - 1

= 40 students.

Hence, the correct answer is "Option 1".

Q81. Answer: (d) He bagged a silver medal in the 65 kg category.

The Correct answer is He bagged a silver medal in the 65 kg category.

Key Points

• Abhinash Jamwal achieved a significant milestone by winning a silver medal in the 65 kg category at the 2025 World Boxing Cup.

• This achievement highlights his exceptional skills and dedication to the sport of boxing, particularly in one of the highly competitive weight categories.

• The World Boxing Cup is a prestigious international boxing event that attracts top talent from across the globe, making Jamwal's silver medal a testament to his training and performance.

• Winning a silver medal means he reached the final bout of the tournament, showcasing his ability to outperform several other skilled boxers in the competition.

• Such an accomplishment is crucial for a boxer's career as it enhances their international reputation and paves the way for further opportunities, including sponsorships and participation in future global tournaments.

• Jamwal's achievement is also an inspiration for upcoming boxers in his home country, motivating younger athletes to pursue boxing professionally.

• This recognition adds to the growing list of Indian athletes excelling on the global stage, strengthening India's position in the sport of boxing.

Q82. Answer: (a) 57 to 79

The Correct answer is 57 to 79.

Key Points

• The SDG India Index is a comprehensive framework that monitors the progress of Indian states and Union Territories towards achieving the Sustainable Development Goals (SDGs), as set by the United Nations.

• For the 2023-24 SDG India Index, the composite scores of Indian states ranged between 57 and 79, reflecting the varying progress made by different states.

• The index is developed by NITI Aayog, the premier policy think tank of the Government of India, to promote competition and cooperation among states for achieving the SDGs.

• The composite score is derived from parameters related to the 17 Sustainable Development Goals, including poverty alleviation, education, gender equality, climate action, and more.

• States scoring higher in the index demonstrate significant progress in aligning their policies and development strategies with the SDG targets.

• The index encourages states to identify their strengths and weaknesses and focus on areas requiring immediate action.

• The range of 57 to 79 indicates both the challenges and opportunities in achieving sustainable development across India.

• The SDG India Index also emphasizes the importance of cooperative federalism, where states and the central government work together to achieve global development goals.

• The index's methodology includes data from credible sources like the National Statistical Office (NSO), surveys, and state government reports.

Additional Information

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• Sustainable Development Goals (SDGs)

• The SDGs are a collection of 17 global goals set by the United Nations General Assembly in 2015, aimed at addressing global challenges such as poverty, inequality, and climate change.

• These goals are part of the 2030 Agenda for Sustainable Development, which seeks to ensure sustainable development for all.

• Key goals include zero hunger, quality education, affordable and clean energy, decent work and economic growth, and climate action.

• The SDGs are designed to be interconnected, addressing economic, social, and environmental aspects of development.

• NITI Aayog

• NITI Aayog (National Institution for Transforming India) was established in 2015 to replace the Planning Commission of India.

• It serves as a policy think tank and promotes cooperative federalism by fostering partnerships between the central and state governments.

• NITI Aayog is responsible for the development of frameworks like the SDG India Index to monitor and guide state progress.

• It plays a critical role in driving India's transition towards sustainable and inclusive development.

Q83. Answer: (a) 1958

The Correct answer is 1958.

Key Points

• The National Development Council (NDC) was established in 1952 as an advisory body to strengthen and mobilize the effort and resources for the country's development.

• In 1958, the NDC recognized the importance of co-operative societies in fostering economic and social development in India.

• It recommended the formulation of a national policy on co-operatives to ensure their effective role in achieving socio-economic objectives like rural development and poverty alleviation.

• The co-operative movement in India has a long history, and its aim is to promote self-help and mutual aid among its members.

• Co-operatives played a critical role in agriculture, credit institutions, rural industries, and marketing, which were crucial for post-independence development.

• The recommendation in 1958 was instrumental in expanding the co-operative sector with the support of the government, leading to the establishment of laws like the Multi-State Co-operative Societies Act, 2002.

• This policy emphasized the need for autonomy, democratic management, and economic viability of co-operatives.

• It also advocated for the creation of an enabling environment for co-operatives to thrive as self-reliant and sustainable entities.

Additional Information

• 1947

• This was the year of India's independence, and the focus of the government was on nation-building and planning for economic development.

• While co-operatives existed before independence, no specific recommendation for a national policy was made in this year.

• 1962

• This year marked the initiation of the Third Five-Year Plan, focusing on agricultural development, but it was not the year when the NDC recommended a national co-operative policy.

• By this time, co-operatives were already being implemented in areas like credit and rural development.

• 1975

• This year is significant for the introduction of the Twenty-Point Programme by the Government of India, which also included co-operatives under rural development schemes.

• However, this was not the year of the NDC's recommendation for a national policy on co-operatives.

Q84. Answer: (b) West

Given:

Town V is to the west of Town W.

Town X is to the east of Town V.

Town Y is to the north of Town W.

Town Z is to the north of Town X.

Town Z is to the north-west of Town W.

Thus, the position of Town X is West with respect to Town W.

Hence, the correct answer is "Option 2".

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Q85. Answer: (d) 2, 6

Shortcut Trick

For two quadratic equations to have both roots common, their coefficients must be in the same ratio: a1/a2 = b1/b2 = c1/c2.

Applying this to the given equations: 4/8 = b/4 = 3/c.

=> 1/2 = b/4 => b = 2.

=> 1/2 = 3/c => c = 6.

Therefore The correct answer is 2, 6.

Alternate Method

Given:

Equation 1: $4x^2 + bx + 3 = 0$

Equation 2: $8x^2 + 4x + c = 0$

Formula Used:

For equations $a1x^2 + b1x + c1 = 0$ and $a2x^2 + b2x + c2 = 0$ having common roots:

a1/a2 = b1/b2 = c1/c2

Calculations:

Comparing the coefficients of both equations:

=> 4/8 = b/4 = 3/c

Taking the first two parts to find b:

=> 4/8 = b/4

=> 1/2 = b/4

=> b = 4/2 = 2

Taking the first and third parts to find c:

=> 4/8 = 3/c

=> 1/2 = 3/c

=> c = 3 × 2 = 6

Thus, the values are b = 2 and c = 6.

Therefore The correct answer is 2, 6.

Additional Information

Condition for One Common Root

If only one root is common between $a1x^2 + b1x + c1 = 0$ and $a2x^2 + b2x + c2 = 0$, the condition is $(c1a2 - c2a1)^2 = (a1b2 - a2b1)(b1c2 - b2c1)$.

Sum and Product of Roots

For $ax^2 + bx + c = 0$, the sum of roots $(\alpha + \beta) = -b/a$ and the product of roots $(\alpha\beta) = c/a$.

Nature of Roots

The discriminant $D = b^2 - 4ac$ determines the nature: $D > 0$ (real and distinct), $D = 0$ (real and equal), and $D < 0$ (imaginary/complex).

Q86. Answer: (d) 24

Shortcut Trick

Let the longer side be L and shorter side be (L − 16).

Area = 3 × Perimeter => L(L − 16) = 3 × 2[L + (L − 16)]

L2 − 16L = 6(2L − 16) => L2 − 16L = 12L − 96

L2 − 28L + 96 = 0 => (L − 24)(L − 4) = 0

Since L > 16 (as shorter side L − 16 must be positive), L = 24.

Therefore The correct answer is 24 cm.

Alternate Method

Given:

Longer side = L

Shorter side = L − 16

Area = L(L − 16)

Perimeter = 2(L + L − 16) = 2(2L − 16) = 4L − 32

Calculations:

=> L(L − 16) = 3 × (4L − 32)

=> L2 − 16L = 12L − 96

=> L2 − 28L + 96 = 0

=> L2 − 24L − 4L + 96 = 0

=> L(L − 24) − 4(L − 24) = 0

=> (L − 24)(L − 4) = 0

=> L = 24 or L = 4

If L = 4, then Shorter side = 4 − 16 = −12 (Not possible).

=> L = 24 cm

Therefore The correct answer is 24 cm.

Additional Information

Rectangle Mensuration

The Area of a rectangle is length × breadth, and the Perimeter is 2 × (length + breadth).

Diagonal of Rectangle

The Diagonal (d) is calculated using the Pythagorean theorem: d = √(L2 + B2).

Quadratic Roots Property

For a quadratic equation ax2 + bx + c = 0, the sum of roots is −b/a and the product of roots is c/a.

Q87. Answer: (a) 4

Given: A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on till the topmost floor is numbered 6.

1) The product of floors on which E and F live is 10.

The possible pairs of floor numbers (from 1 to 6) whose product is 10 are (2, 5) or (5, 2). So, E and F live on floors 2 and 5.

2) The sum of floors on which B and E live is 11.

6	**B**
5	E
4	
3	
2	F
1	

4) A lives immediately above C. The last remaining person is D, and the only remaining floor is 1. So D lives on Floor 1.

6	**B**
5	E
4	A
3	C
2	F
1	D

Now, we need to find the sum of floors on which C and D live.

C lives on Floor 3.

D lives on Floor 1.

Sum of floors = 3 + 1 = 4.

Hence, the correct answer is "Option 1".

Q88. Answer: (c) Only 1

The Correct answer is Only 1.

Key Points

• The 'Gorakhnath Sharma vs. State of Chhattisgarh' case involved allegations of brutal non-consensual sexual assault by a husband on his wife, leading to her death. Hence, statement 1 is correct.

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• The case did involve allegations of brutal non-consensual sexual assault by the husband on his wife.

• The wife died in this case, and her death was linked to the sexual assault.

• However, the focus of the ruling was primarily on the application of marital rape laws and whether the actions of the husband constituted rape, which leads us to the second statement.

• Contrary to the statement, the Chhattisgarh High Court acquitted the husband. The court did not convict him for rape, as it applied Exception 2 to Section 375 of the Indian Penal Code (IPC). Hence, statement 2 is incorrect.

• This exception exempts a husband from being charged with rape for sexual intercourse with his wife, provided the wife is not under 15 years of age.

• In this case, the court ruled that the husband could not be convicted of rape or other charges like unnatural sexual offenses because of the exception in the law.

Additional Information

Gorakhnath Sharma vs. State of Chhattisgarh:

• Case Summary:

• The case involved allegations of brutal non-consensual sexual assault by the husband on his wife, which ultimately led to her death.

• Chhattisgarh High Court acquitted the husband, citing Exception 2 to Section 375 of the IPC, which exempts husbands from being convicted of rape if the wife is above 15 years of age.

• Implications:

• The ruling has sparked debate on marital rape laws in India.

• It highlights the legal gap in addressing non-consensual sex in marriage, where the law still treats marital rape as legal in certain circumstances.

• The case points to the need for legal reforms regarding the criminalization of marital rape.

Status of Marital Rape in India:

• Legal Position:

• Marital rape is not criminalized in India, except for cases where the wife is under the age of 15.

• The Indian Penal Code (IPC), under Section 375, considers marital rape legal when the wife is above 15 years of age.

• Debate:

• There is strong public debate and activism pushing for changes to recognize marital rape as a criminal offense.

• Legal experts, women's rights groups, and the UN have called for a reform in Indian law to criminalize marital rape, but no changes have been made in the law so far.

Recent Changes:

• 2015: Supreme Court ruled that sexual intercourse with a wife below 15 years is rape.

• 2017: Law Commission of India recommended criminalizing marital rape, but the recommendation was not implemented.

• 2021: Delhi High Court raised concerns over marital rape but did not rule on the issue.

• Current Status:

• Despite growing calls for reform, marital rape remains not criminalized in India.

Q89. Answer: (a) National Social Assistance Programme

The Correct answer is National Social Assistance Programme.

Key Points

• The National Social Assistance Programme (NSAP) is a welfare programme administered by the Ministry of Rural Development in India.

• It provides social security to the economically weaker sections of society, including senior citizens, widows, and disabled individuals.

• Under this programme, financial assistance is given through schemes such as the Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Indira Gandhi National Widow Pension Scheme (IGNWPS), and Indira Gandhi National Disability Pension Scheme (IGNDPS).

• The programme plays a critical role in ensuring social inclusion and reducing poverty and vulnerability in rural India.

• The Data Governance Quality Index (DGQI) assesses the quality of data governance practices in government schemes. The NSAP received the highest score for the Department of Rural Development for the year 2023-24, highlighting its exemplary data management and governance.

• Strong data governance in NSAP ensures accuracy, transparency, and accountability in its implementation, directly benefiting the targeted population.

• This achievement underscores the programme's commitment to leveraging data-driven insights for enhanced service delivery and policy-making.

Additional Information

• MGNREGA-Programme Component

• The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a flagship programme that guarantees 100 days of wage employment to rural households.

• It aims to enhance livelihood security by providing wage employment and promoting sustainable rural development.

• The programme also focuses on the creation of durable assets like roads, irrigation canals, and other infrastructure projects.

• While MGNREGA excels in rural employment generation, it did not receive the highest DGQI score for 2023-24 under the Department of Rural Development.

• Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)

• The DDU-GKY is a skill development initiative aimed at improving employability among rural youth.

• It focuses on providing market-linked skills to rural poor youth aged between 15 and 35 years.

• This scheme is part of the National Rural Livelihood Mission (NRLM) and works towards poverty alleviation through skill enhancement.

• Though impactful, it was not rated the highest in the DGQI for 2023-24.

• Pradhan Mantri Gram Sadak Yojana (PMGSY)

• PMGSY is a programme aimed at providing all-weather road connectivity to unconnected villages in rural areas.

• It focuses on enhancing rural infrastructure, which is crucial for economic development and poverty reduction.

• The scheme's effective implementation has contributed to improved access to education, healthcare, and markets for rural populations.

• Despite its pivotal role in rural infrastructure, it did not achieve the highest DGQI score for the Department of Rural Development in 2023-24.

Q90. Answer: (b) 7186

Shortcut Trick

Find two numbers whose sum is 14 and product is 45.

By factoring 45: 9 × 5 = 45 and 9 + 5 = 14.

Therefore x = 9 and y = 5 (or vice versa).

The required value is 9^4 + 5^4 = 6561 + 625 = 7186.

Therefore The correct answer is 7186.

Alternate Method

Given: x + y = 14 and xy = 45.

Formula Used: $(a + b)^2 = a^2 + b^2 + 2ab$

=> $(x + y)^2 = x^2 + y^2 + 2xy$

=> $14^2 = x^2 + y^2 + 2(45)$

=> $196 = x^2 + y^2 + 90$

=> $x^2 + y^2 = 106$

=> Squaring again: $(x^2 + y^2)^2 = x^4 + y^4 + 2(x^2y^2)$

=> $(106)^2 = x^4 + y^4 + 2(xy)^2$

=> $11236 = x^4 + y^4 + 2(45)^2$

=> $11236 = x^4 + y^4 + 2(2025)$

=> $11236 = x^4 + y^4 + 4050$

=> $x^4 + y^4 = 11236 - 4050 = 7186$

Therefore The correct answer is 7186.

Additional Information

Algebraic Expansion

The square of a trinomial or higher powers can be derived using the Binomial Theorem or successive squaring of standard identities.

Power Product Rule

For any non-zero numbers, $(ab)^n = a^n \times b^n$. This is used to simplify terms like $(xy)^2$ as x^2y^2.

Sum of Cubes Identity

$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$. Useful for finding cubic values when sum and product are known.

Q91. Answer: (b) 77,125

Shortcut Trick

Let the Cost Price (CP) be 100 units.

Marked Price (MP) = 100 + 60% of 100 = 160 units.

Selling Price (SP) = 160 × (100 − 85)% = 160 × 15% = 24 units.

Given, 24 units = 18,510.

1 unit = 18,510 ÷ 24 = 771.25.

100 units (CP) = 771.25 × 100 = 77,125.

Therefore The correct answer is 77,125.

Alternate Method

Given: Markup% = 60%, Discount% = 85%, SP = 18,510.

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

=> Let CP = x.

=> MP = x × (160 ÷ 100) = 1.6x.

=> SP = 1.6x × (15 ÷ 100) = 0.24x.

=> 0.24x = 18,510.

=> x = 18,510 ÷ 0.24 = 77,125.

Therefore The correct answer is 77,125.

Additional Information

Relationship between CP and MP

The ratio of CP to MP can be expressed using Profit% and Discount%: CP/MP = (100 − Discount%) / (100 + Profit%).

Effective Gain/Loss

Net Change = Markup% − Discount% − (Markup × Discount) ÷ 100. In this case: 60 − 85 − (60 × 85)/100 = −25 − 51 = −76% (Loss).

Q92. Answer: (c) Vertical column

The correct answer is Vertical column.

Key Points

• Dmitri Mendeleev, a Russian chemist, created the first periodic table in 1869 by arranging elements based on their atomic masses and properties.

• Mendeleev grouped elements with similar chemical and physical properties in the same vertical columns, which are called groups.

• Each group in the periodic table represents elements that share similar valence electron configurations, leading to similar chemical reactivity.

• By organizing elements this way, Mendeleev was able to predict the discovery of new elements and left gaps in his periodic table for them.

• The periodic table was designed to show a periodic pattern in the properties of elements, such as their melting points, boiling points, and densities.

• One of the key insights of Mendeleev's work was that properties of elements repeat periodically as their atomic numbers increase.

• The modern periodic table has refined Mendeleev's version, arranging elements by atomic number instead of atomic mass, but the idea of grouping similar elements in vertical columns remains unchanged.

Additional Information

• Block

• In the modern periodic table, elements are divided into blocks (s, p, d, f blocks) based on their electron configurations.

• Each block represents elements with the same type of atomic orbital being filled.

• The concept of blocks was not part of Mendeleev's original periodic table, as it was introduced later with the development of quantum mechanics.

• Horizontal row

• Horizontal rows in the periodic table are called periods.

• Elements in the same period have the same number of electron shells, but their chemical properties differ.

• Mendeleev did arrange elements in rows but focused primarily on grouping elements with similar properties in vertical columns.

• Atomic series

• The term "atomic series" is not a standard term in the context of the periodic table.

• However, it could refer to the arrangement of elements based on their atomic mass or number in a sequence.

• Mendeleev's periodic table was based on atomic mass, but the grouping of similar properties was prioritized in vertical columns, not a continuous series.

Q93. Answer: (d) RO −9

For 'GN 14' related to 'ER 1':

For 'HP 18' related to 'FT 5':

The consistent pattern observed is: First letter -2, Second letter +4, Number -13.

Applying the same logic to 'TK 4':

Thus, TK 4 is related to RO -9.

Hence, the correct answer is "Option 4".

Q94. Answer: (d) Haryana

The Correct answer is Haryana.

Key Points

• Haryana is an Indian state located in the northern part of the country, known for its rich agricultural practices and rapid industrial growth.

• Nayab Singh Saini, a prominent political figure, assumed his second term as the Chief Minister of Haryana in October 2024, highlighting his leadership and administrative capabilities.

• Haryana is often referred to as the "Land of Milk and Butter" due to its significant contribution to India's dairy industry and agriculture.

• The state was carved out of Punjab on 1 November 1966, and its capital is Chandigarh, which is shared with Punjab.

• Haryana is a leader in industrial development, housing major hubs such as Gurugram, which is known as a financial and technology hub.

• The state is renowned for its contributions to sports and athletics, producing many internationally acclaimed athletes in wrestling, boxing, and kabaddi.

• Haryana is also a key contributor to the Green Revolution, which transformed India into a food grain surplus country.

• The state's economy is driven by agriculture, manufacturing, IT services, and automobile production, making it one of India's most prosperous states.

• Haryana's governance model has been recognized for its initiatives in areas like education, women empowerment, and rural development.

Additional Information

• Uttar Pradesh

• Uttar Pradesh is India's most populous state and known for its rich cultural heritage and historical significance.

• The state houses landmarks such as the Taj Mahal, Varanasi, and Ayodhya, which are globally renowned tourist destinations.

• It is a major contributor to India's agriculture, producing crops like wheat, rice, and sugarcane.

• Punjab

• Punjab is known as the "Granary of India" due to its extensive contribution to food grain production.

• The state is famous for its rich cultural traditions, including Bhangra, Punjabi cuisine, and vibrant festivals.

• Punjab has a significant role in India's independence history, being the land of freedom fighters like Bhagat Singh and Lala Lajpat Rai.

• Rajasthan

• Rajasthan is India's largest state by area and is known for its desert landscapes, historical forts, and palaces.

• The state is home to prominent tourist destinations like Jaipur, Udaipur, and Jaisalmer.

• Rajasthan has a significant role in India's culture and tradition, with its folk music, dance, and art forms widely recognized.

Q95. Answer: (b) 36

Shortcut Trick

Identify two numbers with a difference of 27 whose product is 2268.

Check options for breadth (b): If b = 36, then length (l) = 36 + 27 = 63.

Product: 36 × 63 = 2268. This matches the given area.

Therefore The correct answer is 36 m.

Alternate Method

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Given: Area = 2268 m², Length (l) = Breadth (b) + 27 m.

Formula Used: Area of Rectangle = length × breadth

=> Area = b × (b + 27) = 2268

=> $b^2 + 27b - 2268 = 0$

=> $b^2 + 63b - 36b - 2268 = 0$

=> $b(b + 63) - 36(b + 63) = 0$

=> $(b - 36)(b + 63) = 0$

=> b = 36 or b = −63 (Length/Breadth cannot be negative)

=> b = 36 m

Therefore The correct answer is 36 m.

Additional Information

Perimeter of Rectangle

The total boundary length is given by P = 2 × (length + breadth).

Diagonal of Rectangle

The distance between opposite corners is d = √(length² + breadth²).

Quadratic Roots shortcut

For $x^2 + Sx + P = 0$, the sum of roots is −S and the product is P.

Q96. Answer: (d) File tab

The Correct answer is File tab.

Key Points

• In MS PowerPoint 2019, the File tab provides access to the backstage view, where you can manage file-related tasks such as opening, saving, printing, and sharing.

• The Open option is available under the File tab, allowing users to browse and load saved PowerPoint presentations.

• The File tab is located in the top left corner of the interface, making it easily accessible.

• When you click on the File tab, you enter the backstage view, which is dedicated to managing the presentation as a whole rather than working on individual slides.

• The backstage view includes options such as New, Open, Save, Save As, Print, Share, and Export, among others.

• Using the Open option, you can access presentations stored in various locations, including local drives, external storage devices, and cloud-based services like OneDrive.

• The File tab is a common feature across all Microsoft Office applications, ensuring a consistent user experience.

Additional Information

• Design tab

• The Design tab is used to modify the appearance of slides in a presentation.

• It allows users to apply themes, variants, and slide backgrounds to enhance visual appeal.

• This tab does not contain file management options like opening or saving presentations.

• Insert tab

• The Insert tab is used to add various elements to slides, such as images, tables, charts, videos, and shapes.

• This tab enhances the content of slides but does not deal with presentation-level operations like opening files.

• Home tab

• The Home tab provides basic formatting and editing tools like text alignment, font settings, and slide layout options.

• It is primarily used for slide-level tasks and does not include options related to managing presentation files.

Q97. Answer: (c) ASCII represents characters as numerical codes.

The correct answer is ASCII represents characters as numerical codes.

Key Points

• ASCII stands for American Standard Code for Information Interchange, which is a character encoding standard for electronic communication.

• It assigns numerical values (ranging from 0 to 127) to represent characters such as letters, digits, punctuation marks, and control characters.

• The use of ASCII allows computers and electronic devices to communicate efficiently by representing text in a universally understood manner.

• Each character (e.g., "A", "B", "1", "!") is mapped to a unique 7-bit binary number, making it lightweight and efficient for data

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processing and storage.

• It provides a standardized way of encoding text, which is essential for compatibility across different systems and applications.

• ASCII is widely used in programming, data processing, and networking, especially in systems where text representation is critical.

• For example, the letter "A" is represented by the numerical value 65, and the character "1" is represented by 49 in ASCII.

• Extended versions of ASCII (such as ISO-8859-1) include additional characters to support other languages and symbols.

Additional Information

• CD is a volatile storage medium

• This statement is incorrect. A CD (Compact Disc) is a type of non-volatile storage medium, meaning the data stored on it remains intact even when the power is turned off.

• CDs are used for storing audio, video, and data files and are read using optical drives.

• Examples include CD-ROMs (read-only memory) and CD-RWs (rewritable discs).

• ASCII is primarily used for high-speed data transmission networks

• This statement is incorrect. ASCII is not designed for high-speed data transmission; it is a character encoding standard for representing text.

• High-speed data transmission networks use protocols like Ethernet, Fiber Optics, and TCP/IP for efficient data exchange.

• LAN supports networking over large geographic areas

• This statement is incorrect. A LAN (Local Area Network) is designed for small geographic areas, such as homes, schools, or offices.

• Networking over large geographic areas is handled by WANs (Wide Area Networks), such as the Internet.

• LANs are known for their high speed and low latency compared to WANs.

Q98. Answer: (b) EFBQ

For 'KQRL' related to 'OTTM':

For 'SWVN' related to 'WZXO':

The consistent pattern observed is: +4, +3, +2, +1 for each letter position.

Applying the same logic to 'ACZP':

Thus, 'ACZP' will be coded as EFBQ.

The derived result EFBQ matches Option 2.

Hence, the correct answer is "Option 2".

Q99. Answer: (b) 552/7

Given:

Expression: 71 + 62/7 + 30 - 31

Formula Used:

Perform arithmetic operations in the given expression following BODMAS rules.

Calculation:

71 + 62/7 + 30 - 31

497/7 + 62/7 + 210/7 - 217/7

497/7 + 62/7 - 7/7

490/7 + 62/7

552/7

Therefore Option 2 is the correct answer.

Q100. Answer: (c) 19

Shortcut Trick

According to the first condition: Father + Son = 2 × Son + 19

=> Father − Son = 19

The difference between the ages of two people remains constant throughout their lives.

Since the question asks for the difference between their present ages, it is directly obtained from the first equation.

Therefore The correct answer is 19 years.

Alternate Method

Let the present age of the Father be F and the Son be S.

Case 1: Sum of ages is 19 more than twice the son's age.

=> F + S = 2S + 19

=> F − S = 19 .....(1)

Case 2: After 15 years, 12 times father's age is 17 less than 13 times son's age.

=> 12(F + 15) = 13(S + 15) − 17

=> 12F + 180 = 13S + 195 − 17

=> 12F − 13S = 195 − 17 − 180

=> 12F − 13S = −2 .....(2)

From (1), F = S + 19. Substitute in (2):

=> 12(S + 19) − 13S = −2

=> 12S + 228 − 13S = −2

=> −S = −230 => S = 230 (This verifies the second condition holds for specific values, but the difference is already established).

=> Difference = F − S = 19 years.

Therefore The correct answer is 19 years.

Additional Information

Constant Age Difference

The difference between the ages of two individuals never changes with time. If the difference is x years today, it will remain x years after n years.

Ratio Method for Ages

When ratios at two different times are given, equate the unit difference between the ratios to the actual year gap to find present ages quickly.

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