RRB NTPC Graduate Level CBT-I Official Paper (Held On: 19 Jun, 2025 Shift 3) (Previous Year Paper)

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

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Q1. 15 chairs and 3 tables cost Rs. 7,800 and 14 chairs and 6 tables cost Rs. 9,200. What is the cost of 17 chairs and 18 tables?

(a) Rs. 17,596
(b) Rs. 17,600
(c) Rs. 17,604
(d) Rs. 17,598

Q2. Z is the wife of S. M and C are daughters of S. T is the daughter of C. How is M related to T?

(a) Mother
(b) Bother's wife
(c) Mother's mother
(d) Mother's sister

Q3. What powers and responsibilities were granted to Panchayati Raj Institutions through the 73rd Constitutional Amendment Act of 1992?.

(a) Direct control over the armed forces in rural areas
(b) Power to override state legislations in matters of local importance
(c) Constitutional status and protection
(d) Full autonomy from State

Q4. An award made by a Lok Adalat has the same status as a _____.

(a) High Court judgement
(b) Supreme Court order
(c) Magistrate's order
(d) Civil Court decree

Q5. Who were the 'Rajukas' during the Mauryan period?

(a) Militias
(b) Army administrators
(c) Provincial officials
(d) Craftsmen

Q6. What should come in place of the question mark (?) in the given series?

1514 1513 1517 1508 1524?

(a) 1499
(b) 1478
(c) 1474
(d) 1476

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Q7. In lipid biochemistry, why do unsaturated fatty acids tend to be liquid at room temperature?

(a) They form ionic bonds that prevent solidification.
(b) The cis-double bonds introduce kinks, reducing van der Waals interactions.
(c) Their double bonds increase molecular symmetry leading to less crystal packing.
(d) They have lower molecular weights than saturated fatty acids.

Q8. Which group gained increased importance in the post-Gupta society due to land grants?

(a) Brahmins
(b) Kshatriyas
(c) Vaishyas
(d) Shudras

Q9. How does the writ jurisdiction of the High Courts differ from that of the Supreme Court?

(a) High Courts require prior approval from the Supreme Court before issuing writs.
(b) High Courts can issue writs only against state governments, not the Centre.
(c) High Courts can issue writs only in appellate cases, not in original jurisdiction.
(d) High Courts can issue writs for purposes beyond Fundamental Rights, unlike the Supreme Court.

Q10. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

HKP22 ILQ31 JMR40 KNS49?

(a) LOT59
(b) LOS58
(c) LOS59
(d) LOT58

Q11. Hiromi Kawakami's speculative fiction novel, shortlisted for the 2025 International Booker Prize, is titled:

(a) Under the Eye of the Big Bird
(b) The Ten Loves of Nishino
(c) The Nakano Thrift Shop
(d) Strange Weather in Tokyo

Q12. 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. B lives on an odd numbered floor but not 3. The sum of floors on which B and D live is 7. E lives immediately below F. C lives on the top floor. How many people live above E?

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

Q13. A man takes 13 hours to swim 91 km downstream. He swims 39 km upstream in the same time. What is the speed (in km/hr) of the boat in still water?

(a) 5
(b) 8
(c) 1
(d) 9

Q14. Skill development became crucial in aligning the workforce with economic needs. Which flagship program was launched in 2015 to improve employability through skill training?

(a) Digital Literacy Program
(b) Skill India Mission
(c) Kaushal Bharat
(d) Ujjwala Yojana

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Q15. Find the simple interest (in Rs.) on Rs. 2,000 at 5.75% per annum rate of interest for the period from 15 February 2023 to 29 April 2023.

(a) 23
(b) 24
(c) 21
(d) 22

Q16. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

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

(a) BURM
(b) QJGB
(c) HAXS
(d) TMJF

Q17. From 10 to 12 April 2025, the 9th edition of the Global Technology Summit (GTS) was held in which city?

(a) Jaipur
(b) Chandigarh
(c) Lucknow
(d) New Delhi

Q18. The sides of a triangle are 109 cm, 171 cm, and 100 cm. What is the length (in cm) of its altitude corresponding to the side with a length of 171 cm?

(a) 60
(b) 49
(c) 82
(d) 94

Q19. Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week. V has the exam on Wednesday. Only one person has the exam after T. P has the exam immediately after R, but not on Tuesday. S has the exam immediately before U.

How many people have exams between P and Q?

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

Q20. A water tank can be filled in 19 minutes by using 39 pipes of the same capacity. In how many minutes (rounded off to two decimal places) will the water tank be filled if we use 23 pipes of the same capacity as above?

(a) 37.03
(b) 27.49
(c) 32.22
(d) 24.73

Q21. Convectional rainfall is common in which part of India during the pre-monsoon period?

(a) Chhota Nagpur Plateau
(b) Eastern Himalayas
(c) Western Ghats
(d) Kerala coast

Q22. What is the maximum time limit for a co-operative society to conduct its annual general meeting after the close of the financial year?

(a) 6 months
(b) 12 months
(c) 9 months

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(d) 3 months

Q23. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 1845637, what will be the sum of the digits that are second from the left and second from the right?

(a) 8
(b) 6
(c) 10
(d) 12

Q24. The length of a rectangular field is and breadth is ((2a+2√5)/4) m and breadth is ((a-√5)/2) m. Find the area of the rectangular field.

(a) $((a^2 - 5)/4)m^2$
(b) $((a^2 - 5)/2)m^2$
(c) $((a^2 + 5)/4)m^2$
(d) $((a^2 + 5)/2)m^2$

Q25. Which of the following events was part of the 15^(th) National Voters' Day celebrations held in January 2025?

(a) Presentation of best electoral practices awards
(b) Launch of digital voting machines
(c) Introduction of online voter ID application
(d) Announcement of new electoral boundaries

Q26. Which novel by Chimamanda Ngozi Adichie portrays the interconnected lives of four African women?

(a) Dream Count
(b) Half of a Yellow Sun
(c) Purple Hibiscus
(d) Americanah

Q27. The speed of a boat in still water is 17 km/hr and the speed of the stream is 16 km/hr. A man rows to a place at a distance of 26.4 km and comes back to the starting point. Find the total time (in hours) taken by him.

(a) 17.8
(b) 25.4
(c) 23.4
(d) 27.2

Q28. Which two numbers should be interchanged to make the following equation correct? (Note: The entire number should be interchanged and not individual digits of a given number.)

24 x 3 + (32÷ 4) - 10 x 8 + 26 = 196

(a) 24 and 32
(b) 4 and 8
(c) 26 and 24
(d) 3 and 8

Q29. In a circle, two chords, AB and CD, measuring 14 cm and 6 cm, respectively, are parallel to each other on the same side of the centre. If the distance between them is 4 cm, find the length (in cm) of the diameter of the circle.

(a) √58
(b) 2√29
(c) 2√58
(d) √29

Q30. In Carnatic music, the concluding part of 'Pallavi' is usually known as:

(a) Ragamalika
(b) Varnam
(c) Thanam
(d) Anu Pallavi

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Q31. What is the range of the Hansa NG trainer aircraft launched in 2025?

(a) 800 nautical miles
(b) 620 nautical miles
(c) 1,000 nautical miles
(d) 400 nautical miles

Q32. If triangle ABC ~= triangle PQR, such that angle ABC = 77°, angle BCA = (x-y)°, AC = 48 cm, angle PQR = (3x - 4)°, PR = x + 3y, then find the value of angle QRP.

(a) 32°
(b) 20°
(c) 28°
(d) 23°

Q33. Find the effective price percentage of the marked price after three consecutive discounts of 8%, 17% and 17%. (Rounded up to two decimal places.)

(a) 64.51%
(b) 64.71%
(c) 63.38%
(d) 64.53%

Q34. NKGO is related to LIEM in a certain way based on the English alphabetical order. In the same way, QNJR is related to OLHP. To which of the given options is TQMU related, following the same logic?

(a) ORKS
(b) ROKS
(c) ROSK
(d) ORSK

Q35. What is the median of the following data?

15, 70, 34, 37, 25, 36, 74, 36, 54, 78, 33

(a) 36.5
(b) 36
(c) 35.5
(d) 37

Q36. Which transport initiative aims to link India with Thailand and Myanmar under India's Act East Policy?

(a) Kaladan Project
(b) IMT Trilateral Highway
(c) Mekong-Ganga Corridor
(d) East Coast Economic Corridor

Q37. Which of the following statements about Printed Circuit Boards (PCBs) is INCORRECT?

(a) Complex devices may use multilayer PCBs to fit more circuitry.
(b) PCBs hold and connect electronic components using conductive tracks.
(c) PCBs provide a base to support and organize hardware parts.
(d) PCBs serve only desktop computers and not portable devices.

Q38. Under whose administration was the practice of Sati officially abolished in British India?

(a) Lord Dalhousie
(b) Lord William Bentinck
(c) Lord Cornwallis
(d) Lord Canning

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Q39. Which of the following numbers is divisible by 44?

(a) 3379
(b) 3344
(c) 3550
(d) 2967

Q40. The Northern Plains of India have been primarily formed by which of the following processes?

(a) Volcanic eruption
(b) Tectonic uplift
(c) Deposition of alluvium
(d) Glacial erosion

Q41. If the third proportional of 40 and Z is 10, then what is the positive value of Z?

(a) 17
(b) 19
(c) 20
(d) 21

Q42. According to World Bank's State of Social Protection Report 2025, as of 2022, how many people in low- and middle-income countries lacked adequate social protection coverage?

(a) 02 billion
(b) 05 billion
(c) 04 billion
(d) 03 billion

Q43. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

All pulse are rice.

All rice are wheat.

All wheat are corn.

Conclusions:

(1) All pulse are corn.

(II) Some corn are rice.

(a) Only conclusion (1) follows
(b) Both conclusions (1) and (II) follow
(c) Only conclusion (II) follows
(d) Neither conclusion (1) nor (II) follows

Q44. What does PCB stand for in electronics?

(a) Personal Control Board
(b) Portable Control Base
(c) Power Circuit Board
(d) Printed Circuit Board

Q45. If $3\cot A = 2$, then find the value of $\sqrt{(3(\text{cosec}^2 A - 1))/(\sec^2 A - 1)}$

(a) $2\sqrt{3}/3$
(b) $4\sqrt{3}/9$
(c) $2\sqrt{3}/9$
(d) $4\sqrt{3}/3$

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Q46. UQNV is related to SOLT in a certain way based on the English alphabetical order. In the same way, XTQY is related to VROW. To which of the given options is RNKS related, following the same logic?

(a) LPIQ
(b) PLQI
(c) LPQI
(d) PLIQ

Q47. What is the primary objective of the 'Sahkar' taxi service, launched by the Indian government in March 2025?

(a) To empower drivers through a cooperative, profit-sharing model
(b) To establish a government-owned ride-hailing monopoly
(c) To provide free taxi services to senior citizens
(d) To replace all existing private taxi services in India

Q48. In a certain code language, 'CURE' is coded as '3527' and 'EATS' is coded as '1246'.

What is the code for 'E' in the given code language?

(a) 6
(b) 2
(c) 7
(d) 1

Q49. Refer to the following number and symbol series and answer the question that follows.

Counting to be done from left to right only.

(NOTE: All numbers are single digit numbers only.)

(Left) 4 $ 4 2 2 7 4 1 8 € 6 9 3 £ 3 £ 9 @ % 9 # £ (Right)

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

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

Q50. The volume of a right circular cylinder is 4851 cm^3 and its curved surface area is 462 cm^2. If this cylinder is generated by rotating a rectangle about its length by 360°, what will be the perimeter (in cm) of this rectangle?

Use $\pi = 22/7$

(a) 49
(b) 53
(c) 47
(d) 43

Q51. What was the cutoff date for migrants to be eligible under the Citizenship (Amendment) Act, 2019 (CAA)?

(a) December 31, 2014
(b) August 15, 1947
(c) January 26, 1950
(d) March 31, 2020

Q52. Which of the following is the most effective method for organizing files and folders in a computer's operating system?

(a) Creating a logical folder structure that reflects the content, using clear, descriptive names
(b) Naming files and folders with random characters to avoid confusion
(c) Renaming folders frequently to prevent them from becoming cluttered
(d) Storing all files and folders in one directory to save space

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Q53. Who was 'Young Raja' in the context of Khond Uprising in Odisha?

(a) U Tirot Singh
(b) Maganlal Bhukhan
(c) Jetha Madhavji
(d) Chakra Bisoi

Q54. If 14, 7, 12, and y are in proportion, then the value of y is:

(a) 10
(b) 16
(c) 2
(d) 6

Q55. Which of the following features is NOT typical of the Thar Desert?

(a) Inland drainage
(b) Oases
(c) Dense evergreen forests
(d) Shifting dunes

Q56. Which latitude passes through the Rann of Kutch?

(a) 20°N
(b) 25°N
(c) 18°N
(d) 23.5°N

Q57. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

SPM 8, TQN 14, URO 20, VSP 26, ?

(a) WTQ 32
(b) WQM 30
(c) XPM 30
(d) XRN 32

Q58. This question is based on the five, three-digit numbers given below.

(Left) 514 414 422 875 167 (Right)

(Example-697 - First digit = 6, second digit = 9 and third digit = 7) (NOTE: All operations to be done from left to right.)

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

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

Q59. Which of the following is the greatest number that divides 137 and 198 and leaves 7 and 3 as respective remainders?

(a) 65
(b) 67
(c) 71
(d) 68

Q60. Find the median from the following data.

Age in years	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No. of patients	11	18	22	30	40	16	33

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(a) 74 years
(b) 45 years
(c) 58 years
(d) 56 years

Q61. If 3 is added to each even digit and 2 is added to each odd digit in the number 413257, what will be the sum of the first and last digits in the new number thus formed?

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

Q62. Each of the digits in the number 7234169 is arranged in ascending order from left to right. The position(s) of how many digits will remain unchanged as compared to that in the original number?

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

Q63. Mr. Becks starts from Point A and drives 9 km towards the East. He then takes a right turn, drives 16 km, turns right and drives 28 km. He then takes a right turn and drives 21 km. He takes a final right turn, drives 19 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90 degrees turns only unless specified.)

(a) 7 km to the South
(b) 1 km to the North
(c) 3 km to the North
(d) 5 km to the South

Q64. A man receives Rs. 7,915 per month as salary. He saves 20% of his salary every month. His expenditure per month is:

(a) Rs. 6,346
(b) Rs. 6,420
(c) Rs. 6,270
(d) Rs. 6,332

Q65. A, B, C, D, E, F, and G are sitting around a circular table facing the centre.

D sits to the immediate right of B. Only three people sit between D and E when counted from the left of D. Only three people sit between B and C. F sits to the immediate right of A.

How many people sit between A and B when counted from the left of A?

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

Q66. Q, R, S, T, U, V and Y are sitting around a circular table facing the centre of the table. Y sits fourth to the left of S. R sits fourth to the right of T. Only two people sit between S and T when counted from the left of S. V is not an immediate neighbour of R or T. U is not an immediate neighbour of V. Who sits third to the right of Q?

(a) T
(b) R
(c) U
(d) Y

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Q67. N, I, G, H, T and S 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. Only H lives below G. Only I lives above S. T lives immediately below S. Who lives on floor numbered 3?

(a) H
(b) T
(c) S
(d) N

Q68. The ratio of three numbers is 10: 15:13. If 10 percent of the first number is 66, what would be 50 percent of the difference of the third and second number?

(a) 64
(b) 65
(c) 68
(d) 66

Q69. Financial inclusion has been a major goal of post-1991 economic reforms in India. Which of the following flagship schemes was launched in 2014 to promote financial inclusion through universal access to banking facilities?

(a) Atal Pension Yojana (APY)
(b) Pradhan Mantri Jan Dhan Yojana (PMJDY)
(c) Pradhan Mantri MUDRA Yojana (PMMY)
(d) National Rural Livelihood Mission (NRLM)

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) UP-CW
(b) BW-JD
(c) DY-LE
(d) JE - RL

Q71. A group of people consists of men, women and children. Among them, 20% are men, 30% are women and the rest are children, and their average weights are 50 kg, 40 kg and 30 kg, respectively. The average weight of the group (in kg) is:

(a) 37
(b) 34
(c) 36
(d) 35

Q72. In MS Word, when a user wants to move a block of text from one part of a document to another, which of the following sequences of actions should be performed?

(a) Type the text Save it Retype it at the new location
(b) Cut the text Paste the text at the desired location
(c) Copy the text Paste the text at the desired location
(d) Highlight the text Save it Open it in another document

Q73. If the selling price of a bed is 2-times of initial, then the profit is 8-times of initial. Find the initial profit percentage (in %).

(a) 25
(b) 16.67
(c) 300
(d) 400

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Q74. Mr. Z starts from Point Y and drives 12 km towards the north. He then takes a left turn, drives 2 km, turns right and drives 1 km. He then takes a left turn and drives 14 km. He takes a final left turn, drives 13 km and stops at Point X. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90-degree turns only unless specified.)

(a) 16 km towards the east
(b) 14 km towards the west
(c) 11 km towards the south
(d) 13 km towards the north

Q75. At STP, the number of molecules present in 5.6 L of O2 gas is:

(a) 6.022×10^{23}
(b) 1.5055 x 1023
(c) 2.24 x 1023
(d) 3.011 x 1023

Q76. If at the same rate of interest, in 2 years, the simple interest is Rs. 40 and compound interest, compounded annually, is 41, then what is the principal (in Rs.)?

(a) 393
(b) 404
(c) 395
(d) 400

Q77. KX 3 is related to OV -9 in a certain way. In the same way, IR 11 is related to MP -1. To which of the given options is JG -2 related, following the same logic?

(a) NF-15
(b) OF-13
(c) NE-14
(d) ΟΕ-15

Q78. Privatisation can be partial, involving minority shareholding by the private sector. What is the government's shareholding threshold in a PSU for it to be considered privatised?

(a) 51%
(b) Less than 51%
(c) 75%
(d) More than 50%

Q79. In a certain code language, 'LOST' is coded as '6832' and 'SALT' is coded as '2136'.

What is the code for 'A' in the given code language?

(a) 1
(b) 2
(c) 3
(d) 6

Q80. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

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

(36, 27, 41)

(45, 36, 50)

(a) (53, 44, 58)
(b) (28, 19, 43)
(c) (61, 52, 56)
(d) (74, 65, 89)

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Q81. Chemical fertilisers were used intensively during the Green Revolution. What was the result of their overuse?

(a) Crop diversification
(b) Soil salinity
(c) Higher pest resistance
(d) Flooding

Q82. Kalpana and Sudha got 656 and 697 marks, respectively, in the same examination. If Kalpana scored 32% marks, then what is the percentage of marks scored by Sudha?

(a) 34%
(b) 37%
(c) 35%
(d) 32%

Q83. The Ajanta caves have been mentioned in the accounts of which of the following travellers?

(a) Ibn-Battuta
(b) Hiuen Tsang
(c) Domingo Paes
(d) Megasthenes

Q84. The Red Shirt Movement, also known as Khudai Khidmatgar, was led by which Indian freedom fighter in the North-West Frontier Province?

(a) Khan Abdul Ghaffar Khan
(b) Subhas Chandra Bose
(c) Maulana Abul Kalam Azad
(d) Madan Mohan Malviya

Q85. Which keyboard shortcut is used to copy selected text in MS Word 365?

(a) Ctrl + X
(b) Ctrl + Z
(c) Ctrl + V
(d) Ctrl + C

Q86. A group of numbers and symbols is coded using letter codes as per the codes given below and the conditions that follow. Study the given codes and conditions and answer the question that follows.

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

Number /Symbol	**4**	**@**	**7**	**#**	**3**	**&**	**8**	**•**	**2**	**^**	**9**
Code	H	A	J	B	K	C	L	D	M	E	N

Conditions:

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

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

iii) If both the second and third elements are perfect cubes, then the code of the second element will be the code of the third element.

What will be the code for the following group?

348@

(a) KLHA
(b) ALHK
(c) AHLK
(d) KHLA

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Q87. If a + b = 50 and a - b = 21 find the value of $(a + b)^2$

(a) 2456
(b) 2504
(c) 2466
(d) 2500

Q88. This question is based on the five, three-digit numbers given below.

(Left) 307 485 194 237 937 (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) -6
(b) -5
(c) -7
(d) -3

Q89. The average of first 17 multiples of 13 is:

(a) 127
(b) 117
(c) 137
(d) 128

Q90. Consider the following statements regarding Operation Brahma, launched in March 2025.

1. The operation was launched by the Government of India to assist Myanmar and Thailand after a major earthquake.

2. Indian Navy ships Satpura and Savitri from the Eastern Naval Command sailed for Yangon with relief material.

3. The Indian Army deployed a 118-member medical task force from the Shatrujeet Brigade as part of the relief efforts.

4. A 60-bed Medical Treatment Centre was set up by the Indian Army in Thailand for trauma and emergency care.

Which of the above statements are correct?

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

Q91. An article's cost price is Rs. 300, and the marked price is mentioned as Rs. 1,032. What is the profit percentage of the seller if he sells it by allowing a discount of 50% on the marked price?

(a) 73%
(b) 69%
(c) 72%
(d) 70%

Q92. Simplify: $[(26 \div 4/2) \times \{8 \div 2 \times (12-2)/5\} \div \{4 \times 4 \div 3\}]$

(a) 16.5
(b) 19.5
(c) 30
(d) 13

Q93. As of April 2025, what growth percentage of Gross Domestic Product (GDP) for 2025-26 is projected by the Reserve Bank of India?

(a) 5%
(b) 6.5%
(c) 4.5%
(d) 6.3%

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Q94. As of February 2025, how many Khelo India Centres have been established across India for training athletes?

(a) 1041
(b) 1205
(c) 2021
(d) 1511

Q95. Which of the following is a unit of the dimension 'length'?

(a) Metre
(b) Kilogram
(c) Ampere
(d) Joule

Q96. Let a be an odd positive integer. If the roots of a quadratic equation x^2- (a - 1)x + 4a + 7 = 0 are integers, then the least value of a is:

(a) 19
(b) 21
(c) 23
(d) 25

Q97. Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of ::?

#: OSR:: JNM:%

(a) = ROU, % = GKQ
(b) # = UQU, % = GOZ
(c) = IUU, % = GBQ
(d) # = RVU, % = GKJ

Q98. What should come in place of the question mark (?) in the given series?

277, 254, 221, ?, 125, 62

(a) 188
(b) 178
(c) 168
(d) 158

Q99. A and B complete a work in 18 days. If A alone can do it in 24 days, then B alone can do one-fourth of the same work in_____ days.

(a) 18
(b) 36
(c) 72
(d) 54

Q100. In January 2025, India mourned the loss of Dr K.S. Manilal, a pioneering scientist in which of the following fields?

(a) Botany
(b) Environmental Engineering
(c) Marine Biology
(d) Astronomy

ANSWER KEY

1	b	2	d	3	c	4	d	5	c	6	a	7	b	8	a	9	d	10	d
11	a	12	c	13	a	14	b	15	a	16	d	17	d	18	a	19	c	20	c
21	a	22	a	23	c	24	a	25	a	26	b	27	d	28	d	29	c	30	a
31	b	32	b	33	c	34	b	35	b	36	b	37	d	38	b	39	b	40	c

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41	c	42	a	43	b	44	d	45	b	46	d	47	a	48	b	49	d	50	a
51	a	52	a	53	d	54	d	55	c	56	d	57	a	58	d	59	a	60	d
61	d	62	c	63	d	64	d	65	b	66	b	67	d	68	d	69	b	70	c
71	a	72	b	73	b	74	a	75	b	76	d	77	c	78	b	79	a	80	a
81	b	82	a	83	b	84	a	85	d	86	c	87	d	88	a	89	b	90	d
91	c	92	b	93	b	94	a	95	a	96	b	97	d	98	b	99	a	100	a

SOLUTIONS

Q1. Answer: (b) Rs. 17,600

Shortcut Trick

Simplify the first cost equation to: 5 chairs + 1 table = Rs. 2,600.

Multiply this by 6 to match tables in the second case: 30 chairs + 6 tables = Rs. 15,600.

Difference with second equation: (30 − 14) chairs = Rs. 15,600 − Rs. 9,200 => 16 chairs = Rs. 6,400.

Cost of 1 chair = Rs. 400 and cost of 1 table = 2,600 − (5 × 400) = Rs. 600.

Required total cost = 17 × 400 + 18 × 600 = 6,800 + 10,800 = Rs. 17,600.

Therefore The correct answer is Rs. 17,600.

Alternate Method

Given:

15 chairs (C) + 3 tables (T) = Rs. 7,800

14 chairs (C) + 6 tables (T) = Rs. 9,200

Formula Used:

Linear Equation solving using the elimination method.

=> Let chair cost be C and table cost be T.

=> 15C + 3T = 7,800 => 5C + T = 2,600 ... (Equation 1)

=> 14C + 6T = 9,200 => 7C + 3T = 4,600 ... (Equation 2)

=> Multiply Equation 1 by 3: 15C + 3T = 7,800

=> Subtract Equation 2 from (Equation 1 × 3): (15C + 3T) − (7C + 3T) = 7,800 − 4,600

=> 8C = 3,200 => C = 400

=> Substitute C in Eq 1: 5(400) + T = 2,600 => T = 2,600 − 2,000 = 600

=> Cost of 17 chairs and 18 tables = 17 × 400 + 18 × 600

=> 6,800 + 10,800 = 17,600

Therefore The correct answer is Rs. 17,600.

Additional Information

Linear Equations in Two Variables

Equations of the form ax + by = c represent a straight line. Solving two such equations finds the intersection point (x, y).

Elimination Method

A process of eliminating one variable by making its coefficients equal in both equations through multiplication, then adding or subtracting.

Substitution Method

Expressing one variable in terms of the other from one equation and substituting it into the second equation to solve for one variable first.

Q2. Answer: (d) Mother's sister

Decoding symbols for Family Tree:

According to the given information Family Tree Representation:

Z is the wife of S.

M and C are daughters of S.

T is the daughter of C.

Thus, M is T's Mother's sister.

Hence, the correct answer is "Option 4"

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Q3. Answer: (c) Constitutional status and protection

The correct answer is Constitutional status and protection.

Key Points

• The 73rd Constitutional Amendment Act of 1992 granted constitutional status to Panchayati Raj Institutions (PRIs), ensuring their legitimacy and protection under the Indian Constitution.

• The Act added Part IX to the Constitution, titled "The Panchayats," and introduced the Eleventh Schedule, listing 29 functional areas under the jurisdiction of PRIs.

• It mandated the establishment of a three-tier structure of Panchayati Raj in every state: village, intermediate, and district levels, except in states with a population of less than 20 lakhs.

• The Act ensured regular elections to Panchayats every five years and provided for the establishment of State Election Commissions to oversee the process.

• It also introduced the concept of reservation of seats for Scheduled Castes, Scheduled Tribes, and women (33%) in Panchayati Raj Institutions.

Additional Information

• Part IX of the Constitution

• Part IX was added by the 73rd Amendment and deals specifically with the Panchayati Raj system in rural India.

• It consists of Articles 243 to 243O, which outline the structure, powers, and responsibilities of PRIs.

• Eleventh Schedule

• Introduced by the 73rd Amendment, it contains a list of 29 subjects related to rural development, such as agriculture, health, education, and sanitation.

• PRIs have been empowered to prepare and implement plans for economic development and social justice for these subjects.

• Finance Commission for Panchayats

• The Act mandates that a State Finance Commission be constituted every five years to recommend financial allocations to PRIs.

• This ensures fiscal decentralization and financial autonomy for local self-governance.

• State Election Commission

• Article 243K provides for the establishment of a State Election Commission to conduct fair elections for PRIs.

• The Commission is tasked with preparing electoral rolls and supervising, directing, and controlling the electoral process.

• Significance of the 73rd Amendment

• The Act is a landmark in India’s history, as it institutionalized grassroots democracy by empowering rural local governance.

• It aims to decentralize power and promote participatory governance by involving local communities in decision-making processes.

Q4. Answer: (d) Civil Court decree

The correct answer is Civil Court decree.

Key Points

• An award made by a Lok Adalat is considered to have the same legal status as a decree of a Civil Court.

• It is deemed final and binding on all parties involved, and no appeal lies against it in any court of law.

• The Lok Adalat system works under the Legal Services Authorities Act, 1987, promoting alternative dispute resolution mechanisms.

• It resolves disputes through conciliation and compromise, offering an accessible and cost-effective mechanism for justice.

• Once a dispute is settled by Lok Adalat, it is enforceable as a Civil Court decree under Section 21 of the Legal Services Authorities Act, 1987.

Additional Information

• Lok Adalat

• Lok Adalat translates to "People's Court" and is an integral part of the Indian judicial system.

• It is an alternative dispute resolution forum aimed at reducing the burden on regular courts.

• It is free of cost and does not require payment of court fees by the disputing parties.

• Lok Adalats are organized at various levels, including state, district, and taluk levels.

• Legal Services Authorities Act, 1987

• This Act provides the statutory basis for the establishment of Lok Adalats in India.

• The Act aims to provide free and competent legal services to weaker sections of society.

• It promotes the resolution of disputes amicably and ensures that justice is accessible to all.

• Types of Cases Handled by Lok Adalats

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• Cases related to civil disputes, including matrimonial and property disputes.
• Compoundable criminal cases and cases under the Motor Vehicles Act.
• Disputes related to bank recovery, labor matters, and public utility services.
• Benefits of Lok Adalats
• Ensures speedy justice and reduces the backlog of cases in regular courts.
• It is a cost-effective and informal forum for dispute resolution.
• Encourages amicable settlement through mutual consent and eliminates procedural complexities.

Q5. Answer: (c) Provincial officials

The correct answer is Provincial officials.

Key Points

• The 'Rajukas' during the Mauryan period were provincial officials responsible for administration and justice in their designated regions.
• They were appointed by the central authority and were often tasked with overseeing matters of governance, including maintaining law and order.
• Rajukas played a pivotal role in implementing the policies and edicts of Emperor Ashoka, especially concerning Dhamma or moral governance.
• The Mauryan administration was highly centralized, and Rajukas formed part of the administrative machinery that ensured the smooth functioning of provincial governance.
• Inscriptions like Ashoka's edicts mention Rajukas as being entrusted with both administrative duties and judicial responsibilities.

Additional Information

• Centralized Administration in Mauryan Empire:
• The Mauryan Empire, established by Chandragupta Maurya, was known for its efficient and centralized administrative structure.
• Provinces were governed by officials like Rajukas and were directly accountable to the Emperor.
• Dhamma of Ashoka:
• Emperor Ashoka's policy of Dhamma emphasized ethical conduct, non-violence, and social welfare.
• Rajukas were instrumental in promoting Dhamma and ensuring its implementation across the empire.
• Administrative Hierarchy:
• The Mauryan administrative structure included officials like Amatyas (ministers), Rajukas (provincial officials), and Yuktas (subordinate officers).
• This hierarchy ensured the smooth functioning of governance from the central authority down to local levels.
• Edicts of Ashoka:
• Ashoka's inscriptions, such as the Rock and Pillar Edicts, provide valuable insights into the role of Rajukas in governance and justice.
• These edicts also highlight the emperor's emphasis on compassionate and moral administration.

Q6. Answer: (a) 1499

The logic followed here is:

Thus, the missing term in the series is 1499.

Hence, the correct answer is "Option 1";

Q7. Answer: (b) The cis-double bonds introduce kinks, reducing van der Waals interactions.

The correct answer is The cis-double bonds introduce kinks, reducing van der Waals interactions..

Key Points

• Unsaturated fatty acids have cis-double bonds that introduce kinks in their hydrocarbon chains.
• These kinks prevent tight packing of the fatty acid molecules, thereby reducing van der Waals interactions.
• As a result, unsaturated fatty acids have lower melting points compared to saturated fatty acids, making them liquid at room temperature.
• The inability to tightly pack molecules leads to a more fluid structure, which is characteristic of oils derived from unsaturated fatty acids.
• The degree of unsaturation (number of double bonds) further influences the extent of fluidity in these molecules.

Additional Information

• Van der Waals interactions:
• These are weak forces of attraction between molecules due to temporary dipoles.

• In saturated fatty acids, tight packing results in stronger van der Waals forces, contributing to solid state at room temperature.
• Cis and trans configurations:
• Cis-double bonds introduce bends or kinks in the fatty acid chains, while trans-double bonds allow linear structures.
• Trans fats behave more like saturated fats and are often solid at room temperature.
• Saturated vs Unsaturated Fatty Acids:
• Saturated fatty acids lack double bonds, allowing tighter molecular packing.
• Unsaturated fatty acids contain one or more double bonds, which disrupt packing and increase fluidity.
• Role in cell membranes:
• Unsaturated fatty acids contribute to membrane fluidity, essential for cellular functions.
• Phospholipids with unsaturated fatty acid tails are a key component of biological membranes.
• Melting points of fatty acids:
• Saturated fatty acids like stearic acid have higher melting points.
• Unsaturated fatty acids like oleic acid are liquid at room temperature due to disrupted packing.

Q8. Answer: (a) Brahmins

The correct answer is Brahmins.

Key Points

• In the post-Gupta period, the practice of granting land to Brahmins increased substantially, enhancing their social and economic importance.
• Land grants to Brahmins were often tax-free and hereditary, leading to their domination in rural areas and control over village resources.
• Brahmins were seen as custodians of religious knowledge and traditions, which justified their elevated status in society.
• This practice strengthened the Brahminical social order and contributed to the spread of Hindu religion and culture during this period.
• The land grants were typically accompanied by the responsibility of maintaining temples and performing rituals, further solidifying Brahmins' central role in religious and social life.

Additional Information

• Land Grants:
• Land grants, known as "Agrahara," were often given to Brahmins as a mark of respect and recognition of their religious status.
• These grants exempted the recipient from paying taxes and often included rights over the produce and labor of the land.
• Brahminical Social Order:
• The Brahmins were at the top of the Varna system, which structured society into hierarchical groups.
• This period saw the consolidation of the caste system, with Brahmins maintaining dominance in religious, educational, and administrative spheres.
• Post-Gupta Period:
• The post-Gupta era (6th-12th century CE) witnessed feudal elements in Indian society, with land grants becoming a key feature of governance.
• This period marked the decline of central authority and the rise of regional powers, making land ownership a crucial aspect of political control.
• Impact on Rural Society:
• Land grants led to the emergence of Brahmins as powerful intermediaries between the rulers and the peasants.
• They played a significant role in managing village resources, resolving disputes, and maintaining social order.

Q9. Answer: (d) High Courts can issue writs for purposes beyond Fundamental Rights, unlike the Supreme Court.

The correct answer is High Courts can issue writs for purposes beyond Fundamental Rights, unlike the Supreme Court.

Key Points

• High Courts have broader writ jurisdiction as they can issue writs not only for the enforcement of Fundamental Rights but also for other legal rights.
• The Supreme Court’s writ jurisdiction under Article 32 of the Constitution is restricted to the enforcement of Fundamental Rights.
• High Courts derive their writ jurisdiction from Article 226, which explicitly allows them to issue writs for any other purpose besides Fundamental Rights.
• This expanded scope enables High Courts to address issues such as administrative orders, statutory duties, and violations of legal rights, providing greater flexibility.
• Both courts can issue writs like habeas corpus, mandamus, prohibition, certiorari, and quo warranto.

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Additional Information

• Writ Jurisdiction Terminologies:

• Habeas Corpus: Used to ensure a person's release from unlawful detention.

• Mandamus: Directs public officials or bodies to perform their duties.

• Prohibition: Prevents lower courts from exceeding their jurisdiction.

• Certiorari: Allows higher courts to quash orders of lower courts if they acted beyond their jurisdiction.

• Quo Warranto: Questions the legal authority of a person holding a public office.

• Article 32 vs Article 226:

• Article 32: Grants the Supreme Court exclusive powers to issue writs for Fundamental Rights enforcement.

• Article 226: Provides High Courts with expanded writ jurisdiction for both Fundamental Rights and other legal rights.

• Article 226 is considered broader in scope than Article 32.

• Fundamental Rights:

• Enshrined under Part III of the Constitution of India.

• Include rights such as equality, freedom of speech, protection against discrimination, and right to constitutional remedies.

• Writs are a mechanism to enforce these rights.

• Legal Rights:

• These are rights granted by statutes or laws, such as property rights, contract rights, etc.

• High Courts can issue writs for their enforcement under Article 226.

Q10. Answer: (d) LOT58

The pattern followed here is.

Thus, the missing term in the series is LOT58.

Hence, the correct answer is Option 4.

Q11. Answer: (a) Under the Eye of the Big Bird

The correct answer is Under the Eye of the Big Bird.

Key Points

• Hiromi Kawakami is a celebrated Japanese author renowned for her contributions to speculative fiction and literary works.

• Under the Eye of the Big Bird is her latest novel that explores themes of surrealism and human connection.

• The novel was shortlisted for the 2025 International Booker Prize, showcasing its global recognition and literary merit.

• Hiromi Kawakami's works often depict everyday life blended with fantastical elements, resonating deeply with readers worldwide.

• The International Booker Prize celebrates works translated into English, emphasizing the importance of global literary contributions.

Additional Information

• Hiromi Kawakami's notable works:

• The Nakano Thrift Shop: A novel exploring human relationships through interactions in a quirky thrift shop.

• Strange Weather in Tokyo: A poignant story about companionship and love between a woman and her former teacher.

• The Ten Loves of Nishino: A narrative centered around the romantic escapades of a mysterious protagonist.

• International Booker Prize:

• An annual award recognizing the finest translated works of fiction from around the globe.

• It highlights the contribution of translators alongside authors, emphasizing the collaborative effort in bringing stories to a wider audience.

• Speculative Fiction:

• A genre encompassing imaginative and futuristic elements, often blending reality with fantasy.

• Hiromi Kawakami's works are known for incorporating speculative fiction to explore profound themes.

• Literary Themes:

• Hiromi Kawakami frequently delves into themes of solitude, human connection, and the surreal.

• Her unique storytelling style appeals to readers seeking depth and nuance in contemporary fiction.

Q12. Answer: (c) 3

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) C lives on the top floor.

This means C is on Floor 6.

6	C
5	
4	
3	
2	
1	

2) B lives on an odd numbered floor but not 3.

Possible odd floors for B are 1 or 5.

3) The sum of floors on which B and D live is 7.

• Case 1: B is on Floor 1. Then D must be on Floor 6 (1 + 6 = 7). But C is already on Floor 6. So, this case is not possible.

• Case 2: B is on Floor 5. Then D must be on Floor 2 (5 + 2 = 7). This is a valid pair.

Therefore, B lives on Floor 5 and D lives on Floor 2.

6	C
5	B
4	
3	
2	D
1	

4) E lives immediately below F.

5) The only remaining person is A, and the only remaining floor is 1. So, A lives on Floor 1.

6	C
5	B
4	F
3	E
2	D
1	A

Thus, Three people live above E.

Hence, the correct answer is "Option 3".

Q13. Answer: (a) 5

Shortcut Trick

Downstream speed (D) = 91 ÷ 13 = 7 km/hr

Upstream speed (U) = 39 ÷ 13 = 3 km/hr

Speed of boat in still water = (D + U) ÷ 2 = (7 + 3) ÷ 2 = 5 km/hr

Therefore The correct answer is 5 km/hr.

Alternate Method

Given:

Downstream Distance = 91 km, Upstream Distance = 39 km, Time = 13 hours

Formula Used:

Speed = Distance ÷ Time

Speed of boat (u) = (Downstream speed + Upstream speed) ÷ 2

Calculations:

=> Downstream speed (v + s) = 91 ÷ 13 = 7 km/hr

=> Upstream speed (v − s) = 39 ÷ 13 = 3 km/hr

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=> Adding both equations: 2v = 7 + 3

=> 2v = 10

=> v = 5 km/hr

Therefore The correct answer is 5 km/hr.

Additional Information

Speed of Stream

The speed of the current or stream is calculated as (Downstream speed − Upstream speed) ÷ 2.

Average Speed in Still Water

If a boat travels the same distance downstream and upstream, the average speed in still water is the arithmetic mean of the two speeds.

Relative Speed in Water

Downstream speed = Speed of boat + Speed of stream. Upstream speed = Speed of boat − Speed of stream.

Q14. Answer: (b) Skill India Mission

The correct answer is Skill India Mission.

Key Points

• The Skill India Mission was launched by Prime Minister Narendra Modi on 15 July 2015.

• This flagship program aims to train over 40 crore people in India in various skills by 2022.

• It focuses on enhancing employability by providing industry-relevant skill training to the youth.

• The initiative encompasses a range of schemes such as Pradhan Mantri Kaushal Vikas Yojana (PMKVY), National Skill Development Mission, and Skill Loan Scheme.

• The program emphasizes creating a skilled workforce aligned with market demand and economic needs, fostering entrepreneurship and job creation.

Additional Information

• Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

• PMKVY is a key component of Skill India Mission and was launched in 2015.

• It provides short-term skill development training and certification to boost employability.

• Focuses on sectors with high growth potential identified by the National Skill Development Corporation (NSDC).

• Offers monetary rewards to trainees post-certification to encourage participation.

• National Skill Development Corporation (NSDC)

• NSDC is a public-private partnership organization established in 2009 under the Ministry of Skill Development and Entrepreneurship.

• Its goal is to promote skill development by catalyzing the creation of large, quality vocational training institutions.

• It supports private sector initiatives in skill development through funding and capacity building.

• Skill Loan Scheme

• Launched under Skill India Mission, it provides loans ranging from Rs. 5,000 to Rs. 1.5 lakh for skill training programs.

• The scheme aims to make skill development affordable and accessible to the youth.

• Loan repayment begins one year after the completion of the course.

• National Skill Qualification Framework (NSQF)

• NSQF is a competency-based framework that organizes qualifications based on levels of knowledge, skills, and aptitude.

• It aims to standardize and integrate skill development programs across various sectors.

• The framework facilitates mobility between vocational and academic streams.

Q15. Answer: (a) 23

Shortcut Trick

Convert the given period into standard day fractions: 73 days is exactly 1/5 of a year (73 × 5 = 365).

Net Rate for the period = 5.75% ÷ 5 = 1.15%.

Simple Interest = 1.15% of Rs. 2,000 = 1.15 × 20 = Rs. 23.

Therefore The correct answer is Rs. 23.

Alternate Method

Given:

Principal (P) = Rs. 2,000

Rate (R) = 5.75% per annum

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Time Period = 15 February 2023 to 29 April 2023

Formula Used:

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

Calculations:

=> Number of days in February (Non-leap year) = 28 − 15 = 13 days

=> Number of days in March = 31 days

=> Number of days in April = 29 days

=> Total days = 13 + 31 + 29 = 73 days

=> Time (T) in years = 73 ÷ 365 = 1/5 years

=> SI = (2000 × 5.75 × 1/5) ÷ 100

=> SI = (400 × 5.75) ÷ 100

=> SI = 4 × 5.75

=> SI = Rs. 23

Therefore The correct answer is Rs. 23.

Additional Information

Time Calculation Rule

While calculating the number of days, the day on which money is deposited is usually excluded and the day on which money is withdrawn is included.

Leap Year Consideration

If the period includes 29 February, the total days in the year are taken as 366 instead of 365.

Amount Formula

The total Amount (A) to be paid at the end of the term is the sum of Principal and Simple Interest: A = P + SI.

Q16. Answer: (d) TMJF

The logic followed here is:

Option (1): BURM

Option (2): QJGB

Option (3): HAXS

Option (4): TMJF

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

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

Q17. Answer: (d) New Delhi

html

The correct answer is New Delhi.

Key Points

• The 9th edition of the Global Technology Summit (GTS) was held from 10 to 12 April 2025 in New Delhi.

• GTS is organized by the Ministry of External Affairs (MEA) in partnership with Carnegie India.

• The summit brings together global technology leaders, policymakers, and innovators to discuss critical technological advancements and challenges.

• The theme of the 2025 summit focused on “Global Governance in the Age of Technology”.

• It serves as a platform for fostering international collaboration in technology governance and innovation.

Additional Information

• Global Technology Summit (GTS):

• GTS is an annual flagship event that promotes dialogue on global technology trends and their implications.

• The summit emphasizes the importance of technology-driven solutions for sustainable development.

• It features discussions on topics like AI, cybersecurity, digital infrastructure, and emerging technologies.

• Speakers include policymakers, industry leaders, academics, and innovators from across the globe.

• Carnegie India:

• Carnegie India is part of the global network of Carnegie Endowment for International Peace.

• It focuses on policy research and analysis in areas such as technology, economy, and international relations.

• Collaborates with the Indian government and private entities to address challenges in technology governance.

• Technology Governance:

• Refers to the policies, regulations, and frameworks that ensure responsible use and development of technology.
• Involves addressing ethical concerns, data privacy, and equitable access to technology.
• Key topics include AI regulation, cybersecurity protocols, and digital inclusion.
• India’s Role in Global Technology:
• India is one of the fastest-growing technology markets, contributing significantly to global IT services.
• The government has launched initiatives like Digital India to boost digital infrastructure and technological innovation.
• India's startup ecosystem ranks among the top globally, fostering innovation in AI, fintech, and healthtech.

Q18. Answer: (a) 60

Shortcut Trick
Semi-perimeter (s) = (109 + 171 + 100) ÷ 2 = 190 cm
Area = √[190 × (190 − 109) × (190 − 171) × (190 − 100)]
Area = √[190 × 81 × 19 × 90] = 5130 cm²
Altitude (h) = (2 × Area) ÷ Base = (2 × 5130) ÷ 171 = 60 cm
Therefore The correct answer is 60 cm.
Alternate Method
Given: Sides a = 109 cm, b = 171 cm, c = 100 cm.
Formula Used: Heron's Formula Area = √[s(s − a)(s − b)(s − c)] and Area = (1/2) × base × height.
=> Semi-perimeter s = (109 + 171 + 100) / 2 = 380 / 2 = 190 cm
=> Area = √[190 × (190 − 109) × (190 − 171) × (190 − 100)]
=> Area = √[190 × 81 × 19 × 90] = √[19 × 10 × 9² × 19 × 9 × 10]
=> Area = 19 × 9 × 10 × 3 = 5130 cm²
=> 5130 = (1/2) × 171 × h
=> h = (5130 × 2) / 171 = 10260 / 171 = 60 cm
Therefore The correct answer is 60 cm.
Additional Information
Heron's Formula
Used to find the area of a triangle when all three sides are known: Area = √[s(s−a)(s−b)(s−c)], where s is the semi-perimeter.
Altitude of a Triangle
The perpendicular segment from a vertex to the opposite side. Height h = (2 × Area) ÷ base.
Incircle Radius (Inradius)
The radius of the circle inscribed inside a triangle is given by r = Area ÷ s.

Q19. Answer: (c) One

Given : Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.
1) V has the exam on Wednesday.
2) Only one person has the exam after T.

Weekday	Person
Monday	
Tuesday	
Wednesday	V
Thursday	
Friday	
Saturday	T
Sunday	

3) P has the exam immediately after R, but not on Tuesday.
So, R has an exam on Thursday and P has an exam on Friday.

Weekday	Person

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Monday	
Tuesday	
Wednesday	V
Thursday	R
Friday	P
Saturday	T
Sunday	

4) S has the exam immediately before U.

So, S has an exam on Monday and U has an exam on Tuesday. This leaves Q as the last person for Sunday.

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

There is 1 person who has an exam between P and Q.

Hence, the correct answer is "Option 3".

Q20. Answer: (c) 32.22

Shortcut Trick

Apply the Inverse Proportion rule: M1 × T1 = M2 × T2

Where M is the number of pipes and T is the time taken.

39 × 19 = 23 × T2

T2 = 741 ÷ 23 ≈ 32.22

Therefore The correct answer is 32.22 minutes.

Alternate Method

Given:

Initial number of pipes (P1) = 39 pipes

Initial time taken (T1) = 19 minutes

Final number of pipes (P2) = 23 pipes

Formula Used:

Total Work = Number of Pipes × Time taken

Calculations:

=> Total Capacity of Tank = 39 × 19 = 741 units

=> Required Time (T2) = Total Capacity ÷ Number of Pipes

=> T2 = 741 ÷ 23

=> T2 = 32.21739...

=> T2 ≈ 32.22 minutes (rounded off to two decimal places)

Therefore The correct answer is 32.22 minutes.

Additional Information

Inverse Variation in Work

When the efficiency of each unit is constant, the time required is inversely proportional to the number of units (pipes/men). If pipes decrease, time increases.

Chain Rule Formula

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The general relation is M1D1H1/W1 = M2D2H2/W2, where M is power, D/H is time, and W is work.

Q21. Answer: (a) Chhota Nagpur Plateau

The correct answer is Chhota Nagpur Plateau.

Key Points

• Convectional rainfall occurs due to intense heating of the earth's surface, causing warm air to rise, cool, and condense to form precipitation.

• In India, this phenomenon is common during the pre-monsoon period in regions like the Chhota Nagpur Plateau, especially in summer.

• This region experiences high temperatures during the pre-monsoon months (March to May), which leads to the formation of cumulus clouds and subsequent rainfall.

• The rainfall is often accompanied by thunderstorms and is locally known as "Nor'westers" or "Kal Baisakhi" in eastern India.

• These rains are vital for agriculture in the region, especially for crops like rice and maize.

Additional Information

• Convectional Rainfall:

• This type of rainfall occurs when the sun heats the earth's surface intensely, causing moisture-laden air to rise rapidly.

• As the air rises, it cools and condenses to form clouds, eventually leading to precipitation.

• It is most common in equatorial regions but can also occur in specific areas during summer months.

• Chhota Nagpur Plateau:

• Located in eastern India, covering parts of Jharkhand, Odisha, and West Bengal.

• Known for its rich mineral resources and dense forest cover.

• The plateau experiences extreme weather conditions, including hot summers and convectional rains during pre-monsoon periods.

• Nor'westers (Kal Baisakhi):

• These are violent local storms accompanied by strong winds, rain, and occasional hail.

• They are common in eastern India, especially in West Bengal, Bihar, Jharkhand, and Odisha, during the pre-monsoon season.

• The term "Kal Baisakhi" translates to "Calamity of Baisakh" (a month in the Hindu calendar).

• Impact on Agriculture:

• The convectional rainfall during the pre-monsoon period provides crucial water for kharif crops.

• The accompanying thunderstorms can sometimes damage standing crops due to hail or strong winds.

Q22. Answer: (a) 6 months

The correct answer is 6 months.

Key Points

• The maximum time limit for a co-operative society to conduct its annual general meeting after the close of the financial year is 6 months.

• This provision ensures transparency and accountability in the functioning of co-operative societies.

• The requirement is governed under the Co-operative Societies Act, which varies slightly across different states in India.

• The AGM is crucial for presenting audited financial statements, electing office bearers, and discussing key resolutions.

• Non-compliance with the stipulated time frame may result in penalties or legal consequences for the society.

Additional Information

• Co-operative Societies Act:

• The Act provides the legal framework for the registration, management, and functioning of co-operative societies in India.

• While the Central Co-operative Societies Act exists, states have their own laws to govern co-operative societies within their jurisdiction.

• Annual General Meeting (AGM):

• An AGM is a statutory meeting where members review the society's performance and financial health.

• Key agenda items include approval of audited accounts, election of office bearers, and discussion of future plans.

• Audited Financial Statements:

• Financial statements must be audited by a certified auditor before being presented at the AGM.

• Auditing ensures accuracy and compliance with accounting standards.

• Penalties for Non-Compliance:

• Failure to conduct the AGM within the stipulated timeframe may attract penalties under the respective Co-operative Societies

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Act.

• Such penalties can include fines, suspension of society operations, or removal of office bearers.

Q23. Answer: (c) 10

Given:

1 is added to each odd digit and 2 is subtracted from each even digit in the number 1845637.

Given	1	8	4	5	6	3	7
Operation	+1	-2	-2	+1	-2	+1	+1
New number	2	6	2	6	4	4	8

The new number formed is 2626448.

The second digit from the left is 6.

The second digit from the right is 4.

The sum of these two digits is 6 + 4 = 10.

Hence, the correct answer is "Option 3".

Q24. Answer: (a) ((a² - 5)/4)m²

Shortcut Trick

Area of a rectangle = Length × Breadth

Simplify length: (2a + 2√5) / 4 = 2(a + √5) / 4 = (a + √5) / 2

Area = [(a + √5) / 2] × [(a − √5) / 2]

Using (x + y)(x − y) = x² − y² => (a² − (√5)²) / 4 = (a² − 5) / 4

Therefore The correct answer is (a² − 5)/4 m².

Alternate Method

Given:

Length (L) = ((2a+2√5)/4) m

Breadth (B) = ((a-√5)/2) m

Formula Used:

Area of Rectangle = Length × Breadth

Calculations:

=> First, simplify the Length (L):

=> L = 2(a + √5) / 4

=> L = (a + √5) / 2 m

=> Now, calculate Area:

=> Area = [(a + √5) / 2] × [(a − √5) / 2]

=> Area = [(a + √5)(a − √5)] / (2 × 2)

=> Using identity (a + b)(a − b) = a² − b²:

=> Area = (a² − (√5)²) / 4

=> Area = (a² − 5) / 4 m²

Therefore The correct answer is (a² − 5)/4 m².

Additional Information

Algebraic Identities

The identity (x + y)(x − y) = x² − y² is frequently used to simplify products involving square roots.

Rectangle Properties

Perimeter of a rectangle = 2(Length + Breadth). Diagonal of a rectangle = √(Length² + Breadth²).

Q25. Answer: (a) Presentation of best electoral practices awards

The correct answer is Presentation of best electoral practices awards.

Key Points

• The National Voters' Day is celebrated every year on 25th January to mark the foundation day of the Election Commission of India.

• The 15th National Voters' Day in 2025 focused on enhancing voter awareness and celebrating electoral democracy in India.

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• One of the major highlights of the event was the presentation of best electoral practices awards to election officials and institutions for their outstanding contributions.

• The awards recognize innovative practices and efforts made to enhance voter participation and ensure free and fair elections.

• The event saw the participation of dignitaries, including the Chief Election Commissioner and other election officials, emphasizing the importance of voter empowerment.

Additional Information

• Election Commission of India (ECI):

• Established on 25th January 1950, the ECI is responsible for administering elections to Parliament, State Legislatures, and the offices of the President and Vice-President of India.

• It is a constitutional authority under Article 324 of the Indian Constitution.

• National Voters' Day:

• Started in 2011, it aims to encourage young voters to participate in the electoral process.

• The theme of the day varies annually, focusing on voter awareness and engagement.

• Best Electoral Practices Awards:

• These awards are presented annually to election officials and teams for their exemplary work in conducting elections.

• The awards cover categories such as voter education, technology implementation, and innovation in election management.

• Voter Awareness Campaigns:

• Initiatives such as SVEEP (Systematic Voters' Education and Electoral Participation) are run by the ECI to increase voter turnout.

• These campaigns focus on educating citizens about their electoral rights and responsibilities.

Q26. Answer: (b) Half of a Yellow Sun

The correct answer is Half of a Yellow Sun.

Key Points

• Half of a Yellow Sun is a novel written by Chimamanda Ngozi Adichie, published in 2006.

• The book portrays the lives of four central characters during the Nigerian Civil War (1967–1970), also known as the Biafran War.

• The narrative focuses on the interconnected lives of Ugwu (a houseboy), Olanna (a professor), Richard (a British expatriate), and Kainene (Olanna's twin sister).

• The title of the novel refers to the flag of Biafra, which features a half sun, symbolizing the struggle for independence during the war.

• It won the Orange Prize for Fiction in 2007 and is considered a landmark work in African literature.

Additional Information

• Chimamanda Ngozi Adichie

• An acclaimed Nigerian author known for her works exploring themes of identity, feminism, and post-colonialism.

• Other notable works include Purple Hibiscus, Americanah, and her essay We Should All Be Feminists.

• Nigerian Civil War

• Also referred to as the Biafran War, it was a conflict from 1967 to 1970 between Nigeria and the Republic of Biafra, which sought independence.

• The war resulted in significant casualties, with famine and humanitarian crises affecting millions.

• Orange Prize for Fiction

• Now known as the Women’s Prize for Fiction, it is an annual award celebrating excellence in women’s writing worldwide.

• Adichie won this prestigious award for Half of a Yellow Sun in 2007.

• Impact of the Novel

• Half of a Yellow Sun brought global attention to the Nigerian Civil War and its aftermath.

• The novel has been adapted into a film, released in 2013, starring Thandie Newton and Chiwetel Ejiofor.

Q27. Answer: (d) 27.2

Shortcut Trick

Downstream Speed (D) = 17 + 16 = 33 km/hr

Upstream Speed (U) = 17 − 16 = 1 km/hr

Total Time = (Distance ÷ D) + (Distance ÷ U)

Total Time = (26.4 ÷ 33) + (26.4 ÷ 1) = 0.8 + 26.4 = 27.2 hours

Therefore The correct answer is 27.2 hours.

Alternate Method

Given:

Speed of boat (u) = 17 km/hr

Speed of stream (v) = 16 km/hr

Distance (d) = 26.4 km

Formula Used:

Time = Distance ÷ Speed

Downstream Speed = u + v

Upstream Speed = u − v

Calculations:

=> Downstream Speed = 17 + 16 = 33 km/hr

=> Upstream Speed = 17 − 16 = 1 km/hr

=> Time taken downstream (t1) = 26.4 ÷ 33 = 0.8 hours

=> Time taken upstream (t2) = 26.4 ÷ 1 = 26.4 hours

=> Total Time = t1 + t2 = 0.8 + 26.4 = 27.2 hours

Therefore The correct answer is 27.2 hours.

Additional Information

Downstream Speed

When the boat moves in the direction of the stream, its effective speed is the sum of the boat speed and stream speed (u + v).

Upstream Speed

When the boat moves against the direction of the stream, its effective speed is the difference between the boat speed and stream speed (u − v).

Average Speed for Round Trip

The average speed for a boat going to a point and returning is given by: Average Speed = (Downstream Speed × Upstream Speed) ÷ Speed of Boat in Still Water.

Q28. Answer: (d) 3 and 8

BODMAS Rule:

The given equation is:

24 x 3 + (32 ÷ 4) - 10 x 8 + 26 = 196

1) Interchange 24 and 32

New Equation: 32 × 3 + (24 ÷ 4) - 10 × 8 + 26 = ?

=> 32 × 3 + (24 ÷ 4) - 10 × 8 + 26

=> 96 + 6 - 80 + 26

=> 102 - 80 + 26

=> 22 + 26

=> 48 ≠ 196 (Incorrect)

2) Interchange 4 and 8

New Equation: 24 × 3 + (32 ÷ 8) - 10 × 4 + 26 = ?

=> 24 × 3 + (32 ÷ 8) - 10 × 4 + 26

=> 72 + 4 - 40 + 26

=> 76 - 40 + 26

=> 36 + 26

=> 62 ≠ 196 (Incorrect)

3) Interchange 26 and 24

New Equation: 26 × 3 + (32 ÷ 4) - 10 × 8 + 24 = ?

=> 26 × 3 + (32 ÷ 4) - 10 × 8 + 24

=> 78 + 8 - 80 + 24

=> 86 - 80 + 24

=> 6 + 24

=> 30 ≠ 196 (Incorrect)

4) Interchange 3 and 8

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New Equation: 24 × 8 + (32 ÷ 4) - 10 × 3 + 26 = ?

Perform operations according to BODMAS:

=> 24 × 8 + (32 ÷ 4) - 10 × 3 + 26

=> 192 + 8 - 30 + 26

=> 200 - 30 + 26

=> 170 + 26

=> 196

196 = 196 (Correct)

Hence, the correct answer is "Option 4".

Q29. Answer: (c) 2√58

Shortcut Trick

Let half-chords be a = 7 cm and b = 3 cm, and distance between them d = 4 cm.

Distance of the longer chord from the center x = $(a^2 - b^2 - d^2) \div (2d)$.

=> x = $(7^2 - 3^2 - 4^2) \div (2 \times 4) = (49 - 9 - 16) \div 8 = 3$ cm.

Radius r = $\sqrt{(x^2 + a^2)} = \sqrt{(3^2 + 7^2)} = \sqrt{(9 + 49)} = \sqrt{58}$ cm.

Diameter = 2 × r = $2\sqrt{58}$ cm.

Therefore The correct answer is $2\sqrt{58}$ cm.

Alternate Method

Given: Chords AB = 14 cm, CD = 6 cm, and distance between them MN = 4 cm.

Formula Used: In a circle, $r^2 = (\text{chord}/2)^2 + (\text{distance from center})^2$.

O

Q30. Answer: (a) Ragamalika

The correct answer is Ragamalika.

Key Points

• In Carnatic music, Ragamalika refers to a composition in which multiple ragas are used sequentially.

• The concluding part of the Pallavi, often called "Ragamalika," showcases the artist's creativity and mastery of various ragas.

• Ragamalika is typically performed in the final segment of a Pallavi during a concert, adding variety and vibrancy to the performance.

• This segment often involves transitions between ragas, requiring technical precision and aesthetic understanding.

• Ragamalika compositions are highly regarded for their melodic richness and lyrical beauty.

Additional Information

• Pallavi:

• The Pallavi is the first section of a Carnatic music composition and serves as the thematic base.

• It is known for its structured melody and rhythm, setting the tone for improvisation.

• The Pallavi often highlights the raga and tala chosen for the composition.

• Anu Pallavi:

• The Anu Pallavi follows the Pallavi and acts as a bridge to the next section.

• It is typically shorter but complements the Pallavi in terms of melody and rhythm.

• Thanam:

• Thanam refers to rhythmic improvisation in a raga, often performed during Ragam Thanam Pallavi.

• It showcases the artist's mastery over rhythm and melody.

• Ragamalika Compositions:

• Ragamalika compositions are a unique feature of Carnatic music, blending multiple ragas into a single piece.

• Famous composers like Muthuswami Dikshitar and Tyagaraja have contributed to Ragamalika compositions.

Q31. Answer: (b) 620 nautical miles

The correct answer is 620 nautical miles.

Key Points

• The Hansa NG (Next Generation) trainer aircraft has a range of 620 nautical miles, making it suitable for training and short missions.

• It is an advanced version of the original Hansa aircraft, developed by the National Aerospace Laboratories (NAL), Bengaluru.

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• The aircraft is designed for pilot training, surveillance, and general aviation purposes.
• Hansa NG features a fuel-efficient engine, lightweight design, and state-of-the-art avionics.
• The aircraft is expected to play a significant role in boosting India's aviation training infrastructure and promoting indigenously developed technology.
Additional Information
• National Aerospace Laboratories (NAL):
• It is a premier aerospace research center in India under the Council of Scientific and Industrial Research (CSIR).
• NAL focuses on development of civil aircraft, advanced technologies, and aerospace systems.
• Hansa NG is one of its flagship projects in the domain of general aviation.
• Trainer Aircraft:
• Trainer aircraft are specifically designed for pilot training.
• They feature dual controls, allowing instructors to assist trainees during flight.
• Hansa NG is considered ideal for basic flight training due to its compact size and efficiency.
• Avionics:
• Avionics refers to electronic systems used in aircraft for navigation, communication, and monitoring.
• Hansa NG is equipped with modern avionics to enhance pilot training and operational capabilities.
• General Aviation:
• General aviation covers all civilian flying activities outside of commercial airline operations.
• Hansa NG aims to strengthen India's general aviation sector by offering an indigenously developed solution.

Q32. Answer: (b) 20°

Shortcut Trick
In congruent triangles ΔABC ~= ΔPQR, corresponding parts are equal (CPCT).
angle ABC = angle PQR => 77 = 3x − 4 => 3x = 81 => x = 27.
AC = PR => 48 = x + 3y => 48 = 27 + 3y => 3y = 21 => y = 7.
angle QRP = angle BCA = (x − y) = 27 − 7 = 20°.
Therefore The correct answer is 20°.
Alternate Method
Given: ΔABC ~= ΔPQR, angle ABC = 77°, angle BCA = (x − y)°, AC = 48 cm, angle PQR = (3x − 4)°, PR = x + 3y.
Formula Used: Corresponding parts of congruent triangles (CPCT) are equal.
Since &

Q33. Answer: (c) 63.38%

Shortcut Trick
Let the Marked Price (MP) be 100.
Successive multipliers for discounts: (100 − 8)% = 0.92, (100 − 17)% = 0.83, and (100 − 17)% = 0.83.
Effective Price % = 100 × 0.92 × 0.83 × 0.83.
Effective Price % = 92 × 0.6889 = 63.3788%.
Rounding up to two decimal places, we get 63.38%.
Therefore The correct answer is 63.38%.
Alternate Method
Given: Three consecutive discounts of 8%, 17%, and 17%.
Formulas: Selling Price (SP) = MP × (1 − d1/100) × (1 − d2/100) × (1 − d3/100) | Effective Price % = (SP ÷ MP) × 100.
=> Let MP = 100.
=> Price after 1^(st) discount = 100 − (8% of 100) = 92.
=> Price after 2^(nd) discount = 92 − (17% of 92) = 92 − 15.64 = 76.36.
=> Price after 3^(rd) discount = 76.36 − (17% of 76.36) = 76.36 − 12.9812 = 63.3788.
=> Effective price percentage = (63.3788 ÷ 100) × 100 = 63.3788%.
=> Final Answer = 63.38% (Rounded).
Therefore The correct answer is 63.38%.
Additional Information
Effective Discount vs Effective Price

Effective Price % is the final Selling Price as a percentage of MP, whereas Effective Discount % is (100 − Effective Price %).

Successive Discount Formula

For two discounts a% and b%, Net Discount = a + b − (ab ÷ 100). This can be applied iteratively for three discounts.

Q34. Answer: (b) ROKS

The logic followed here is:

NKGO : LIEM

QNJR : OLHP

Applying the logic to TQMU:

Thus, TQMU is related to ROKS.

Hence, the correct answer is "Option 2".

Q35. Answer: (b) 36

Shortcut Trick

Arrange the given 11 observations in ascending order:

15, 25, 33, 34, 36, 36, 37, 54, 70, 74, 78

Since the number of terms (N = 11) is odd, the median is the middle-most term:

Median = ((N + 1) ÷ 2)^(th) term = 6^(th) term = 36

Therefore The correct answer is 36.

Alternate Method

Given data: 15, 70, 34, 37, 25, 36, 74, 36, 54, 78, 33

Total number of observations (N): 11

Formula:

When N is odd, Median = ((N + 1) ÷ 2)^(th) observation (after sorting in ascending order).

Calculations:

Step 1: Arrange the given data in ascending order:

=> 15, 25, 33, 34, 36, 36, 37, 54, 70, 74, 78

Step 2: Count the total number of observations (N):

=> N = 11 (which is an odd number)

Step 3: Apply the median formula for odd N:

=> Median = ((11 + 1) ÷ 2)^(th) observation

=> Median = (12 ÷ 2)^(th) observation

=> Median = 6^(th) observation

Step 4: Identify the 6^(th) observation from the sorted list:

=> 6^(th) observation = 36

Why other options are incorrect:

• Option (1) 36.5: This would be the median if the number of observations was even and the two middle terms averaged to 36.5. Since N is odd (11), the median must be an actual term from the dataset.

• Option (3) 35.5: This is not the middle value of the sorted dataset.

• Option (4) 37: This is the 7^(th) term in the sorted dataset, not the middle (6^(th)) term.

Therefore The correct answer is 36.

Additional Information

Median for Even Number of Observations

If the number of observations (N) is even, the median is the average of the (N ÷ 2)^(th) and ((N ÷ 2) + 1)^(th) terms after sorting.

Relation between Mean, Median, and Mode

For a moderately skewed distribution, the empirical relationship is: Mode = 3 × Median − 2 × Mean.

Effect of Outliers on Median

Unlike the mean, the median is highly robust and is not affected by extreme values (outliers) in the dataset.

Q36. Answer: (b) IMT Trilateral Highway

The correct answer is IMT Trilateral Highway.

Key Points

• The IMT Trilateral Highway is a significant transport initiative under India's Act East Policy that aims to connect India, Myanmar,

and Thailand.

• The project involves the construction and upgrading of a 1,360 km road network linking Moreh in Manipur (India) to Mae Sot in Thailand through Myanmar.

• This highway seeks to enhance regional connectivity, boost trade and economic integration among the three countries.

• The initiative is strategically important for improving India's relations with Southeast Asian nations and promoting economic growth in the Northeastern region.

• Key infrastructure development under this project includes road improvements and building bridges across the three countries.

Additional Information

• Act East Policy:

• Introduced by the Government of India in 1991, it aims to promote economic, strategic, and cultural relations with Southeast Asian countries.

• The policy emphasizes connectivity projects such as roads, railways, and air links to integrate India's Northeastern states with neighboring nations.

• Kaladan Multi-Modal Transit Transport Project:

• Another major initiative under India's Act East Policy, this project connects Kolkata Port with Sittwe Port in Myanmar and Mizoram via waterways and roadways.

• It aims to provide an alternative route for cargo transport to India's Northeastern region through Myanmar.

• Mekong-Ganga Cooperation:

• A framework for cooperation among India and five ASEAN countries (Myanmar, Thailand, Cambodia, Laos, and Vietnam).

• Focuses on areas such as tourism, culture, education, and transport links.

• Strategic Importance:

• Projects like the IMT Trilateral Highway enhance India's geopolitical influence in Southeast Asia.

• They help counterbalance China's Belt and Road Initiative and strengthen India's presence in the region.

Q37. Answer: (d) PCBs serve only desktop computers and not portable devices.

The correct answer is PCBs serve only desktop computers and not portable devices.

Key Points

• Printed Circuit Boards (PCBs) are used in a wide range of electronic devices, including both desktop computers and portable devices like smartphones, laptops, and tablets.

• The statement that PCBs serve only desktop computers is incorrect, as PCBs are ubiquitous in almost all modern electronic gadgets.

• Portable devices use smaller, thinner, and more compact PCBs designed for space efficiency and lightweight construction.

• Advancements in PCB technology, such as flexible and rigid-flex PCBs, have enabled their integration into portable and wearable devices.

• PCBs are essential for the functionality of all electronic devices, regardless of their form factor or portability.

Additional Information

• What are PCBs?

• Printed Circuit Boards (PCBs) are thin boards made of insulating materials with conductive pathways etched onto them to connect electronic components.

• They are the backbone of modern electronic devices, providing mechanical support and electrical connectivity.

• Types of PCBs:

• Single-layer PCBs: Contain one layer of conductive material, suitable for low-complexity devices.

• Multilayer PCBs: Have multiple layers of conductive material for complex and high-performance applications.

• Flexible PCBs: Made of flexible materials, ideal for compact or bendable devices.

• Applications of PCBs:

• Used in consumer electronics (smartphones, laptops), medical devices (heart monitors), and automotive systems (engine control units).

• Also critical in industrial equipment, aerospace systems, and telecommunications infrastructure.

• Advancements in PCB Technology:

• Increased use of rigid-flex PCBs for wearable devices and IoT applications.

• Development of high-frequency PCBs for 5G and advanced communication technologies.

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Q38. Answer: (b) Lord William Bentinck

The correct answer is Lord William Bentinck.

Key Points

• Lord William Bentinck was the Governor-General of India from 1828 to 1835.

• The practice of Sati, where widows were forced to self-immolate on their husband's funeral pyre, was officially abolished during his administration in 1829.

• The abolition was enforced through the Bengal Sati Regulation, Regulation XVII of 1829, which declared Sati as illegal and punishable by law.

• Bentinck took this reform initiative due to advocacy by social reformers like Raja Ram Mohan Roy, who strongly opposed the practice.

• The regulation applied initially to Bengal Presidency and was later extended to other parts of British India.

Additional Information

• Raja Ram Mohan Roy:

• A prominent social reformer who played a key role in advocating for the abolition of Sati.

• He argued that Sati had no religious sanction and was opposed to the core teachings of Hindu scriptures.

• He is often referred to as the "Father of Modern India" for his reformist efforts.

• Bengal Sati Regulation, 1829:

• It was enacted on December 4, 1829, by Lord William Bentinck.

• The regulation declared the practice of Sati as illegal, punishable by the courts, and equivalent to culpable homicide.

• Impact of Sati Abolition:

• The abolition marked a significant step in social reform during British rule in India.

• It helped pave the way for future reforms concerning women's rights and welfare.

• Lord William Bentinck's Legacy:

• Besides abolishing Sati, Bentinck introduced other reforms such as the promotion of Western education and suppression of Thuggee.

• He is remembered for his progressive approach toward governance and reform in India.

Q39. Answer: (b) 3344

Shortcut Trick

A number is divisible by 44 if it is divisible by both 4 and 11.

Check Divisibility by 4: Last two digits must be divisible by 4. Only 3344 (44 ÷ 4 = 11) satisfies this.

Check Divisibility by 11 for 3344: (3 + 4) − (3 + 4) = 0. Since the difference is 0, it is divisible by 11.

Therefore The correct answer is 3344.

Alternate Method

Given: Numbers 3379, 3344, 3550, 2967.

Condition: Number must be divisible by 44 (i.e., 4 × 11).

=> Divisibility by 4: Last two digits of 3344 are 44. 44 ÷ 4 = 11 (Divisible).

=> Divisibility by 11: Sum of odd place digits = 3 + 4 = 7; Sum of even place digits = 3 + 4 = 7.

=> Difference = 7 − 7 = 0. Since result is 0, it is divisible by 11.

=> Other options: 3379 (odd), 3550 (50 not div by 4), 2967 (odd) fail the test.

Therefore The correct answer is 3344.

Additional Information

Divisibility Rule of 4

A number is divisible by 4 if its last two digits are divisible by 4 or if the last two digits are 00.

Divisibility Rule of 11

The difference between the sum of digits at odd places and the sum of digits at even places must be 0 or a multiple of 11.

Composite Divisibility

To check divisibility by a composite number N, check divisibility by its co-prime factors (e.g., for 12, check 3 and 4).

Q40. Answer: (c) Deposition of alluvium

The correct answer is Deposition of alluvium.

Key Points

• The Northern Plains of India were formed due to the deposition of alluvial soil brought by the rivers originating from the

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Himalayas and the Peninsular Plateau.

• The plains are composed of layers of fine silt, sand, and clay deposited over millions of years.

• The three major Himalayan rivers—the Ganga, the Brahmaputra, and the Indus—along with their tributaries, played a crucial role in shaping these fertile plains.

• This region is known for its fertile soil, making it one of the most agriculturally productive areas in India.

• The Northern Plains are categorized into three sections—the Bhabar, the Terai, and the Alluvial Plains (Khadar and Bangar).

Additional Information

• Alluvium:

• Alluvium refers to the fine-grained fertile soil deposited by rivers over time.

• This type of soil is rich in minerals and nutrients, making it suitable for agriculture.

• Himalayan Rivers:

• The rivers originating from the Himalayas, such as the Ganga, Brahmaputra, and Indus, are perennial, meaning they flow throughout the year.

• These rivers are fed by glacial melt and monsoon rains.

• Bhabar and Terai:

• Bhabar: A narrow belt of coarse gravel and pebbles found at the foothills of the Himalayas.

• Terai: A marshy and swampy region south of the Bhabar, characterized by dense vegetation.

• Khadar and Bangar:

• Khadar: The newer, fertile alluvial soil found in the river's floodplains.

• Bangar: The older alluvial soil found further away from the riverbanks, less fertile than Khadar.

• Agricultural Significance:

• The Northern Plains are often referred to as the "Granary of India" due to their high agricultural output.

• Main crops grown in the region include wheat, rice, sugarcane, and pulses.

Q41. Answer: (c) 20

Shortcut Trick

For two numbers 40 and Z, if the third proportional is 10, then $Z^2 = 40 \times 10$.

=> $Z^2 = 400$

=> $Z = \sqrt{400} = 20$

Therefore The correct answer is 20.

Alternate Method

Given: First number (a) = 40, Second number (b) = Z, Third proportional (c) = 10.

Formula Used: If a, b, c are in continued proportion, then a/b = b/c, which means $b^2 = ac$.

=> 40 : Z :: Z : 10

=> 40 / Z = Z / 10

=> $Z \times Z = 40 \times 10$

=> $Z^2 = 400$

=> $Z = \sqrt{400}$

=> Z = 20

Therefore The correct answer is 20.

Additional Information

Mean Proportional

The mean proportional between two numbers a and b is calculated as $\sqrt{(a \times b)}$.

Fourth Proportional

If a, b, c, d are in proportion (a:b = c:d), then the fourth proportional d is $(b \times c) / a$.

Compound Ratio

The compound ratio of a:b and c:d is (ac):(bd), obtained by multiplying corresponding terms.

Q42. Answer: (a) 02 billion

The correct answer is 02 billion.

Key Points

• As of 2022, approximately 02 billion people in low- and middle-income countries lacked adequate social protection coverage, according to the World Bank's State of Social Protection Report 2025.

• Social protection refers to policies and programs designed to reduce poverty and vulnerability by promoting efficient labor markets, reducing people's exposure to risks, and enhancing their capacity to manage economic and social risks.

• The lack of adequate social protection impacts millions, leaving them vulnerable to financial shocks, unemployment, and poverty.

• The report highlights the importance of expanding social protection systems to achieve Sustainable Development Goals (SDGs), especially Goal 1 (No Poverty) and Goal 8 (Decent Work and Economic Growth).

• Efforts to improve social protection coverage include enhancing universal access, funding mechanisms, and the integration of informal sector workers.

Additional Information

• Social Protection

• It encompasses various programs, including social insurance (e.g., pensions, health insurance) and social assistance (e.g., cash transfers, food aid).

• Social protection systems aim to reduce poverty, inequality, and vulnerability, ensuring a safety net for individuals during economic hardships.

• Sustainable Development Goal (SDG) 1

• Focuses on eradicating poverty in all its forms globally.

• Social protection is a key component in achieving this goal by providing financial security to vulnerable populations.

• Challenges in Social Protection

• Limited coverage due to informal employment and lack of resources in low- and middle-income countries.

• Funding constraints and administrative inefficiencies often hinder the expansion of social protection systems.

• Examples of Social Protection Initiatives

• Universal Basic Income (UBI): A proposed model to provide regular, unconditional payments to citizens.

• Conditional Cash Transfers (CCTs): Payments provided to households in exchange for certain actions, such as children's school attendance.

Q43. Answer: (b) Both conclusions (1) and (II) follow

The least possible venn diagram is:

Conclusions:

(1) All pulse are corn → True (As, All pulse are rice, All rice are wheat, All wheat are corn. so, All pulse are corn holds true)

(II) Some corn are rice → True (As, All pulse are rice, All rice are wheat, All wheat are corn. so, Some corn are rice holds true)

Thus, Both conclusions (1) and (II) follow.

Hence, the correct answer is "Option 2".

Q44. Answer: (d) Printed Circuit Board

The correct answer is Printed Circuit Board.

Key Points

• A Printed Circuit Board (PCB) is a non-conductive board that holds and connects electronic components using conductive pathways, pads, and tracks etched from copper sheets.

• PCBs are used in almost all electronic devices, including mobile phones, computers, televisions, and industrial equipment.

• They are essential for simplifying and streamlining the manufacturing and assembly process of electronic circuits.

• PCBs can be single-layered, double-layered, or multi-layered, depending on the complexity of the circuit and application.

• PCBs replaced traditional wire-based circuits, making devices more compact, efficient, and reliable.

Additional Information

• Components of a PCB:

• Substrate: The base material, usually fiberglass, providing the board's rigidity.

• Copper Layer: Conductive layer used for electrical connections.

• Solder Mask: Protective layer applied over the copper to prevent short circuits.

• Silkscreen: Layer for labeling components and providing assembly guidance.

• Types of PCBs:

• Single-Sided PCBs: Copper traces are present only on one side of the board.

• Double-Sided PCBs: Copper traces exist on both sides, interconnected by vias.

• Multi-Layered PCBs: Composed of multiple layers of copper and insulating material.

• Advantages of PCBs:

• Compact and lightweight design, leading to smaller electronic devices.

• Increased reliability due to reduced wiring complexity and consistent manufacturing.
• Cost-effective in mass production.
• Applications of PCBs:
• Consumer electronics like smartphones, laptops, and televisions.
• Automotive systems, including sensors and control modules.
• Medical devices such as pacemakers and imaging systems.
• Industrial equipment used in manufacturing and robotics.

Q45. Answer: (b) 4√3/9

Shortcut Trick
Given: 3 cotA = 2 => cotA = 2/3.
The expression simplifies using trigonometric identities: $\text{cosec}^2A - 1 = \cot^2A$ and $\sec^2A - 1 = \tan^2A$.
Value = $\sqrt{[3 \times \cot^2A / \tan^2A]} = \sqrt{[3 \times \cot^4A]} = \cot^2A \times \sqrt{3}$.
Value = $(2/3)^2 \times \sqrt{3} = (4/9) \times \sqrt{3} = 4\sqrt{3}/9$.
Therefore The correct answer is $4\sqrt{3}/9$.
Alternate Method
Given: 3 cotA = 2
Formula Used: $1 + \cot^2A = \text{cosec}^2A$; $1 + \tan^2A = \sec^2A$; $\tan A = 1/\cot A$
=> cotA = 2/3
=> $\text{cosec}^2A - 1 = \cot^2A = (2/3)^2 = 4/9$
=> $\sec^2A - 1 = \tan^2A = (3/2)^2 = 9/4$
=> Expression = $\sqrt{[3 \times (4/9) / (9/4)]}$
=> Expression = $\sqrt{[3 \times (4/9) \times (4/9)]}$
=> Expression = $(4/9) \times \sqrt{3} = 4\sqrt{3}/9$
Therefore The correct answer is $4\sqrt{3}/9$.
Additional Information
Fundamental Identities
$\sin^2\theta + \cos^2\theta = 1$; $\sec^2\theta - \tan^2\theta = 1$; $\text{cosec}^2\theta - \cot^2\theta = 1$.
Reciprocal Relations
$\tan\theta = 1/\cot\theta$; $\sin\theta = 1/\text{cosec}\theta$; $\cos\theta = 1/\sec\theta$.

Q46. Answer: (d) PLIQ

The logic followed here is:
UQNV : SOLT
XTQY : VROW
Applying the logic to RNKS:
Thus, RNKS is related to PLIQ.
Hence, the correct answer is "Option 4".

Q47. Answer: (a) To empower drivers through a cooperative, profit-sharing model

The correct answer is To empower drivers through a cooperative, profit-sharing model.
Key Points
• The 'Sahkar' taxi service was launched by the Indian government in March 2025 to empower drivers through a cooperative model, ensuring equitable profit-sharing.
• It aims to provide a sustainable livelihood for drivers by eliminating intermediary exploitation and promoting transparency in the industry.
• The service functions as a driver-owned cooperative, where profits are distributed among the members, fostering social and financial inclusion.
• This initiative aligns with the government's agenda of promoting cooperative enterprises as a way to boost employment and self-reliance.
• The Sahkar taxi service is expected to encourage fair practices and improve working conditions for drivers in India, especially in urban areas.
Additional Information
• Cooperative Model:

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• A cooperative is a member-owned organization that operates for the benefit of its members rather than external shareholders.
• It is based on principles of voluntary participation, democratic governance, and equitable profit-sharing.
• Cooperatives often focus on improving livelihoods and promoting social equity.
• Indian Government Initiatives in Cooperative Sector:
• The government has been actively promoting cooperatives through schemes like the National Cooperative Development Corporation (NCDC).
• It has introduced legislative reforms to strengthen cooperative societies and improve their governance.
• Employment Generation through Cooperatives:
• Cooperative enterprises are known to create sustainable employment opportunities by reducing dependency on external funding.
• They empower individuals by offering them a stake in the organization and its profits.
• Urban Mobility Challenges:
• India's urban areas face significant challenges in mobility due to increasing population and traffic congestion.
• Initiatives like the 'Sahkar' taxi service aim to address these challenges while ensuring fair practices for drivers.

Q48. Answer: (b) 2

The given code language is:
Thus, 'E' is coded as '2'.
Hence, the correct answer is "Option 2".

Q49. Answer: (d) 2

Given series:
(Left) 4 $ 4 2 2 7 4 1 8 € 6 9 3 £ 3 £ 9 @ % 9 # £ (Right)
Condition to be checked:
Number → Number → Symbol
4 $ 4227 4 1 8 € 6 9 3 £ 3 £ 9 @%9 # £
There are three such numbers in the above arrangement (1 8 €, 9 3 £).
Hence, the correct answer is "Option 4".

Q50. Answer: (a) 49

Shortcut Trick
Ratio of Volume (V) to Curved Surface Area (CSA) gives radius directly: V / CSA = (πr²h) / (2πrh) = r / 2.
4851 / 462 = r / 2 => 10.5 = r / 2 => r = 21 cm.
Using CSA: 2 × (22/7) × 21 × h = 462 => 132 × h = 462 => h = 3.5 cm.
Perimeter of the rectangle = 2(l + b) = 2(h + r) = 2(3.5 + 21) = 49 cm.
Therefore The correct answer is 49 cm.
Alternate Method
Given: Volume (V) = 4851 cm³, Curved Surface Area (CSA) = 462 cm².
Formula Used: Volume = πr²h; CSA = 2πrh; Perimeter of rectangle = 2(length + breadth).
=> Dividing V by CSA: (πr²h) / (2πrh) = 4851 / 462
=> r / 2 = 10.5
=> r = 21 cm
=> Putting r in CSA: 2 × (22/7) × 21 × h = 462
=> 132 × h = 462
=> h = 3.5 cm
=> When a rectangle is rotated about its length, height of cylinder (h) = length (l) and radius (r) = breadth (b).
=> Perimeter = 2(l + b) = 2(3.5 + 21) = 2 × 24.5 = 49 cm.
Therefore The correct answer is 49 cm.
Additional Information
Rotation of Rectangle
If a rectangle is rotated about its length (l), then l becomes the height (h) and the breadth (b) becomes the radius (r).
Cylinder Formulas
Total Surface Area = 2πr(h + r). The ratio of Volume to CSA is always r/2.
Perimeter of Rectangle

The distance around the outside of a rectangle, calculated as 2 × (length + width).

Q51. Answer: (a) December 31, 2014

The correct answer is Wed Dec 31 2014 00:00:00 GMT+0530 (India Standard Time).

Key Points

• The Citizenship (Amendment) Act, 2019 (CAA) specifies December 31, 2014 as the cutoff date for eligibility of migrants seeking citizenship under its provisions.

• The Act allows citizenship for migrants from Afghanistan, Bangladesh, and Pakistan belonging to Hindu, Sikh, Buddhist, Jain, Parsi, and Christian communities.

• The CAA aims to provide citizenship to religious minorities who faced religious persecution in these countries before the cutoff date.

• It applies to migrants who entered India before December 31, 2014, without valid travel documents or overstayed their visas.

• The Act does not apply to Muslim migrants and has faced significant debates and protests over its exclusionary criteria.

Additional Information

• Citizenship Act, 1955

• The Citizenship Act of 1955 governs the acquisition and termination of Indian citizenship.

• It has been amended several times, including major changes through the Citizenship (Amendment) Act, 2019.

• Citizenship can be acquired by birth, descent, registration, naturalization, or incorporation of territory under the Act.

• Religious Persecution

• Religious persecution refers to systematic mistreatment of individuals based on their religious beliefs.

• The CAA was enacted to address the plight of religious minorities facing persecution in neighboring countries.

• Legal Challenges to CAA

• The Act has faced numerous petitions in the Supreme Court of India, questioning its constitutionality.

• Critics argue that it violates the secular principles of the Indian Constitution.

• National Register of Citizens (NRC)

• The NRC is a register of Indian citizens aimed at identifying illegal migrants.

• The CAA has been linked to the NRC, leading to concerns about discrimination against specific communities.

Q52. Answer: (a) Creating a logical folder structure that reflects the content, using clear, descriptive names

The correct answer is Creating a logical folder structure that reflects the content, using clear, descriptive names.

Key Points

• A logical folder structure makes it easier to locate files and organize data efficiently.

• Clear and descriptive names for folders and files help users identify their contents without opening them.

• Organizing files by categories such as project name, type, or date ensures systematic management.

• This method minimizes confusion and avoids redundancy, saving time during file retrieval.

• Consistent folder naming conventions promote collaboration and understanding in shared environments.

Additional Information

• File Naming Conventions:

• Use meaningful and descriptive names to enhance file recognition.

• Avoid special characters and spaces that could cause compatibility issues.

• Include version numbers or dates to track revisions effectively.

• Folder Hierarchy:

• Create parent folders for broad categories and subfolders for specific content.

• Organize folders based on projects, departments, or tasks for clarity.

• Ensure folders are labeled logically to represent their contents accurately.

• Backup and Security:

• Regularly back up files to prevent data loss.

• Store sensitive files in encrypted folders to ensure data security.

• Use cloud storage or external drives for redundancy and accessibility.

• File Management Software:

• Tools like Windows File Explorer, macOS Finder, or third-party software can assist in organizing files.

• Some applications offer tagging, search, and advanced sorting features.

• Regular maintenance helps optimize storage and remove unnecessary files.

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Q53. Answer: (d) Chakra Bisoi

The correct answer is Chakra Bisoi.

Key Points

• Chakra Bisoi was a key leader of the Khond Uprising that occurred in Odisha during the British colonial period.

• He was referred to as the 'Young Raja' by the Khond tribal people due to his leadership and resistance against British oppression.

• The Khond Uprising (1837-1856) was primarily a tribal resistance movement against British colonial policies, including the suppression of their cultural practices like Meriah sacrifices.

• Chakra Bisoi's leadership unified various Khond tribes in their fight against British interference, particularly in the regions of Ghumusar and Kandhamal.

• Despite significant resistance, Chakra Bisoi eventually had to retreat, and his fate remains uncertain, symbolizing the tribal people's enduring spirit of resistance.

Additional Information

• Khond Uprising (1837-1856):

• The Khonds were a tribal community in Odisha known for their unique socio-cultural traditions, including the Meriah system of human sacrifice.

• The uprising was a response to British suppression of tribal practices, imposition of land revenue systems, and exploitation by local zamindars and moneylenders.

• British Policies:

• The British outlawed the Meriah sacrifices, which were considered sacred by the Khonds, leading to widespread resentment.

• They also introduced zamindari systems, replacing the traditional tribal governance, further alienating the tribal population.

• Key Outcomes:

• The Khond Uprising highlighted the resistance of tribal communities to colonial exploitation and their desire to preserve their cultural identity.

• It also exposed the limitations of British administrative policies in understanding and managing tribal societies.

• Tribal Resistance in India:

• Similar tribal uprisings occurred across India, such as the Santhal Rebellion (1855-56) and the Birsa Munda Movement (1899-1900).

• These movements played a significant role in India's struggle against colonial rule, often serving as precursors to broader nationalist movements.

Q54. Answer: (d) 6

Shortcut Trick

For four numbers a, b, c, d to be in proportion, the product of extremes equals the product of means (ad = bc).

Given numbers: 14, 7, 12, y => 14 × y = 7 × 12

=> y = (7 × 12) ÷ 14 = 84 ÷ 14 = 6.

Therefore The correct answer is 6.

Alternate Method

Given: Numbers 14, 7, 12, and y are in proportion.

Formula Used: If a, b, c, d are in proportion, then a/b = c/d.

Calculations:

=> 14 ÷ 7 = 12 ÷ y

=> 2 = 12 ÷ y

=> y = 12 ÷ 2

=> y = 6

Therefore The correct answer is 6.

Additional Information

Mean Proportional

If a, b, c are in continued proportion, then b is the mean proportional where $b^2 = ac$ or $b = \sqrt{(ac)}$.

Third Proportional

In a continued proportion a:b :: b:c, the value c is called the third proportional, calculated as $c = b^2 \div a$.

Fourth Proportional

In the proportion a:b :: c:d, d is the fourth proportional and is calculated as d = (b × c) ÷ a.

Q55. Answer: (c) Dense evergreen forests

The correct answer is Dense evergreen forests.

Key Points

• The Thar Desert, also known as the Great Indian Desert, is characterized by arid and semi-arid conditions, making it unsuitable for the growth of dense evergreen forests.

• Typical features of the Thar Desert include shifting sand dunes, which are formed by strong winds common in the region.

• Inland drainage is a key feature, where rivers like Luni do not reach the sea but instead terminate in saline lakes or disappear into the ground.

• Oases are scattered across the desert and serve as vital sources of water and vegetation for local populations and wildlife.

• The absence of dense vegetation, including evergreen forests, is due to the extreme climatic conditions, such as high temperatures and low rainfall.

Additional Information

• Thar Desert Geography

• It spans across northwestern India and eastern Pakistan, covering an area of approximately 200,000 square kilometers.

• It is bounded by the Aravalli Hills in the east, the Indus River in the west, and the Rann of Kutch in the south.

• Climatic Conditions

• The desert experiences extreme temperatures, ranging from 0°C in winter to over 50°C in summer.

• Annual rainfall is sparse, typically less than 200 mm, contributing to its arid environment.

• Flora and Fauna

• Vegetation is sparse and consists mainly of shrubs, thorny bushes, and xerophytes adapted to arid conditions.

• Common wildlife includes camels, blackbucks, desert foxes, and various species of lizards and snakes.

• Human Adaptations

• The local population relies on traditional water conservation methods such as step wells and tankas to survive.

• The region's economy is supported by agriculture, livestock rearing, and salt mining in saline areas.

Q56. Answer: (d) 23.5°N

The correct answer is 23.5ºN.

Key Points

• The Tropic of Cancer, located at 23.5ºN latitude, passes through the Rann of Kutch in Gujarat, India.

• The Tropic of Cancer is one of Earth's major latitude lines, marking the northernmost point of the Sun's zenith during the summer solstice.

• India is one of the 16 countries through which the Tropic of Cancer passes, and it cuts across eight Indian states, including Gujarat.

• The Rann of Kutch is a salt marsh located in the Thar Desert region of Gujarat and is geographically significant due to its proximity to the Tropic of Cancer.

• This latitude plays a crucial role in the climatic variations and geographical positioning of the regions it crosses.

Additional Information

• Tropic of Cancer:

• The Tropic of Cancer is an imaginary line situated at 23.5ºN latitude, marking the boundary of the Earth's northern tropical zone.

• During the summer solstice (around June 21), the Sun is directly overhead at this latitude, making it a crucial marker in Earth's solar system dynamics.

• This latitude influences the climatic conditions of the regions it crosses, including arid zones and monsoon patterns.

• Rann of Kutch:

• The Rann of Kutch spans across Gujarat, India, and extends into Sindh, Pakistan.

• It is one of the largest salt deserts in the world, covering an area of approximately 10,000 square kilometers.

• The region is famous for the annual Rann Utsav, showcasing the rich culture and heritage of Gujarat.

• Climatic Influence of Tropic of Cancer:

• Regions close to the Tropic of Cancer experience tropical and subtropical climates.

• The latitude influences rainfall patterns, leading to distinct wet and dry seasons in many areas.

• It plays a role in agricultural practices due to its climatic impact on soil and vegetation.

• Geographic Importance:

• Countries through which the Tropic of Cancer passes include India, Mexico, Egypt, Saudi Arabia, and others.

• Its passage through India makes it a vital reference for geographical studies and climatic assessments.

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• The Tropic of Cancer marks the northern limit of the tropical zone, separating it from the temperate zone.

Q57. Answer: (a) WTQ 32

The pattern followed here is.

Thus, the missing term in the series is WTQ 32.

Hence, the correct answer is Option 1.

Q58. Answer: (d) -1

The given three-digit numbers are: 514, 414, 422, 875, 167.

Now,

The highest number is 875. Its second digit is 7.

The lowest number is 167. Its second digit is 6.

Subtract the second digit of the highest number 7 from the second digit of the lowest number 6.

6 - 7

= -1.

Hence, the correct answer is "Option 4".

Q59. Answer: (a) 65

Shortcut Trick

Subtract the remainders from the given numbers: (137 − 7) = 130 and (198 − 3) = 195.

Find the HCF of 130 and 195.

Factors of 130 = 65 × 2; Factors of 195 = 65 × 3.

The highest common factor is 65.

Therefore The correct answer is 65.

Alternate Method

Given: Numbers 137 and 198 with remainders 7 and 3 respectively.

Formula Used: Required Number = HCF(Number1 − Remainder1, Number2 − Remainder2)

=> First number to divide: 137 − 7 = 130

=> Second number to divide: 198 − 3 = 195

=> HCF(130, 195):

=> 130 = 2 × 5 × 13

=> 195 = 3 × 5 × 13

=> Common factors = 5 × 13 = 65

Therefore The correct answer is 65.

Additional Information

Highest Common Factor (HCF)

Also known as GCD (Greatest Common Divisor), it is the largest positive integer that divides each of the integers without leaving a remainder.

HCF with Remainders

To find the greatest number that divides a, b, c leaving remainders x, y, z, find HCF of (a−x), (b−y), and (c−z).

Euclid's Division Lemma

States that for any two positive integers a and b, there exist unique integers q and r such that a = bq + r, where 0 ≤ r < b.

Q60. Answer: (d) 56 years

Shortcut Trick

Identify the Total Frequency (N) = 170, so N/2 = 85.

Calculate Cumulative Frequency (CF) until it reaches or exceeds 85: 11, 29, 51, 81 (for 45-55), 121 (for 55-65).

Since 85 lies in the 55-65 class, Median Class = 55-65.

Median = Lower Limit + [(Required remaining frequency ÷ Class frequency) × Class width].

Median = 55 + [(85 − 81) ÷ 40] × 10 = 55 + 1 = 56 years.

Therefore The correct answer is 56 years.

Alternate Method

Given:

Class Intervals (Age): 15-25, 25-35, 35-45, 45-55, 55-65, 65-75, 75-85

Frequencies (f): 11, 18, 22, 30, 40, 16, 33

Formula Used:

Median = L + [((N/2) − cf) ÷ f] × h

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

Step-by-step Calculation:

=> Total Frequency (N) = 11 + 18 + 22 + 30 + 40 + 16 + 33 = 170

=> N/2 = 170 ÷ 2 = 85

=> Cumulative Frequencies (CF):

15-25: 11 | 25-35: 29 | 35-45: 51 | 45-55: 81 | 55-65: 121

=> Since 81 < 85 ≤ 121, the Median Class is 55-65.

=> L = 55, cf = 81, f = 40, h = 10.

=> Median = 55 + [(85 − 81) ÷ 40] × 10

=> Median = 55 + [4 ÷ 40] × 10

=> Median = 55 + [1 ÷ 10] × 10

=> Median = 55 + 1 = 56 years.

Therefore The correct answer is 56 years.

Additional Information

Empirical Relationship

For a moderately skewed distribution, the relationship between Mean, Median, and Mode is: Mode = 3 Median − 2 Mean.

Median of Grouped Data

The median is the value that divides the data into two equal halves. It is calculated using the formula L + [((N/2) − cf) ÷ f] × h.

Cumulative Frequency Types

There are two types: 'Less than' type (adding frequencies from top) and 'More than' type (adding frequencies from bottom).

Q61. Answer: (d) 16

Given:

3 is added to each even digit and 2 is added to each odd digit in the number 413257.

Given	4	1	3	2	5	7
Operation	+3	+2	+2	+3	+2	+2
New number	7	3	5	5	7	9

The new number formed is 735579.

The first digit is 7.

The last digit is 9.

The sum of these two digits is 7 + 9 = 16.

Hence, the correct answer is "Option 4".

Q62. Answer: (c) 4

Given:

The number is 7234169.

Arranging the digits of the number 7234169 in ascending order from left to right:

Original Position	1st	2nd	3rd	4th	5th	6th	7th
Original Digit	7	2	3	4	1	6	9
Sorted Digit	1	2	3	4	6	7	9

Comparing the positions:

The positions of three digits (2, 3, 4 and 9) remain unchanged.

Hence, the correct answer is "Option 3".

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Q63. Answer: (d) 5 km to the South

Given:

Mr. Becks starts from Point A and drives 9 km towards the East.

He then takes a right turn, drives 16 km, turns right and drives 28 km. He then takes a right turn and drives 21 km.

He takes a final right turn, drives 19 km and stops at Point P.

Thus, Becks has to drive 5km south to reach point A.

Hence, the correct answer is "Option 4".

Q64. Answer: (d) Rs. 6,332

Shortcut Trick

Expenditure % = 100% − Savings %

Expenditure % = 100% − 20% = 80%

Expenditure = 7,915 × 0.8 = Rs. 6,332

Therefore The correct answer is Rs. 6,332.

Alternate Method

Given: Monthly Salary = Rs. 7,915, Savings % = 20%

Formula Used: Expenditure = Total Salary − Savings

=> Monthly Savings = 20% of 7,915

=> Savings = (20 ÷ 100) × 7,915 = 1,583

=> Monthly Expenditure = 7,915 − 1,583

=> Expenditure = Rs. 6,332

Therefore The correct answer is Rs. 6,332.

Additional Information

Percentage Change

If a value is decreased by x%, the new value is (100 − x)% of the original value.

Base Value Concept

In salary problems, the total salary is always considered the 100% base for calculations of savings and expenses.

Income Formula

Income = Expenditure + Savings. This basic arithmetic identity is used for all personal finance aptitude questions.

Q65. Answer: (b) Four

Given:

A, B, C, D, E, F, and G are sitting around a circular table facing the centre.

D sits to the immediate right of B.

Only three people sit between D and E when counted from the left of D.

Only three people sit between B and C. F sits to the immediate right of A.

Thus, 4 people sit between A and B when counted from the left of A.

Hence, the correct answer is "Option 2".

Q66. Answer: (b) R

Given:

Q, R, S, T, U, V and Y are sitting around a circular table facing the centre of the table.

Y sits fourth to the left of S. R sits fourth to the right of T.

Only two people sit between S and T when counted from the left of S.

V is not an immediate neighbour of R or T. U is not an immediate neighbour of V.

Thus, R sits third to the right of Q.

Hence, the correct answer is "Option 2".

Q67. Answer: (d) N

Given: N, I, G, H, T and S 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) Only H lives below G.

2) Only I lives above S.

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6	I
5	S
4	
3	
2	G
1	H

3) T lives immediately below S.

4) The only remaining person is N, and the only remaining floor is 3. So, N lives on Floor 3.

6	I
5	S
4	T
3	N
2	G
1	H

Thus, the person who lives on floor numbered 3 is N.

Hence, the correct answer is "Option 4".

Q68. Answer: (d) 66

Shortcut Trick

Let the numbers be 10x, 15x, and 13x.

Given: 10% of 10x = 66 => 1x = 66.

Required value: 50% of (15x − 13x) = 50% of 2x = 1x.

Since 1x = 66, the required value is 66.

Therefore The correct answer is 66.

Alternate Method

Given: Ratio = 10 : 15 : 13 | 10% of 1st number = 66

Calculations:

=> Let the numbers be 10x, 15x, and 13x.

=> 10% of 10x = (10/100) × 10x = 1x

=> x = 66

=> Difference between 2nd and 3rd number = 15x − 13x = 2x

=> 50% of the difference = (50/100) × 2x = 1x

=> Since x = 66, the value is 66.

Therefore The correct answer is 66.

Additional Information

Ratio and Proportion

If a : b : c is the ratio, then the numbers can be expressed as ax, bx, and cx where x is a common multiplier.

Percentage Calculation

To find p% of a number N, use the formula (p/100) × N. Note that 50% is equivalent to half (1/2) of the value.

Base Value Logic

When the percentage and the ratio part result in 1 unit of 'x', that value directly represents the scaling factor for all other calculations.

Q69. Answer: (b) Pradhan Mantri Jan Dhan Yojana (PMJDY)

The correct answer is Pradhan Mantri Jan Dhan Yojana (PMJDY).

Key Points

• Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched on 28th August 2014 to promote financial inclusion in India.

• The scheme aims to provide universal access to banking services, including savings accounts, remittance, credit, insurance, and

pension.

• Under PMJDY, individuals can open a zero-balance savings account with access to a RuPay debit card and accidental insurance cover.

• The scheme is an integral part of India's financial inclusion strategy and has resulted in the opening of millions of bank accounts, particularly in rural areas.

• PMJDY includes additional benefits such as overdraft facility of up to Rs. 10,000 for account holders and direct benefit transfer (DBT) integration.

Additional Information

• Financial Inclusion

• It refers to the process of ensuring access to financial services and adequate credit at affordable costs for all individuals, especially the marginalized and low-income groups.

• Financial inclusion helps reduce poverty by enabling people to save, borrow, and invest.

• RuPay Debit Card

• RuPay is India's indigenous payment network developed by the National Payments Corporation of India (NPCI).

• PMJDY account holders are provided with RuPay debit cards that offer accidental insurance cover.

• Direct Benefit Transfer (DBT)

• DBT ensures that subsidies and benefits are directly transferred to the bank accounts of beneficiaries.

• This reduces leakages and ensures transparency in government schemes.

• Impact of PMJDY

• As of 2023, PMJDY has helped open over 48 crore bank accounts, with a significant proportion in rural areas.

• The scheme has facilitated access to formal banking services for millions of previously unbanked individuals.

Q70. Answer: (c) DY-LE

The logic followed here is.

Option (1) 'UP-CW':

Option (2) 'BW-JD':

Option (3) 'DY-LE':

Option (4) 'JE - RL':

Thus, option 3 is odd one.

Hence, the correct answer is "Option 3".

Q71. Answer: (a) 37

Shortcut Trick

Ratio of Men : Women : Children = 20% : 30% : 50% = 2 : 3 : 5

Multiply the ratio units by their respective average weights:

Sum = (2 × 50) + (3 × 40) + (5 × 30) = 100 + 120 + 150 = 370

Average of the group = Total Sum ÷ Total Ratio units = 370 ÷ 10 = 37 kg

Therefore The correct answer is 37 kg.

Alternate Method

Given:

Percentage of Men = 20% | Average weight = 50 kg

Percentage of Women = 30% | Average weight = 40 kg

Percentage of Children = 100% − (20% + 30%) = 50% | Average weight = 30 kg

Formula Used:

Combined Average = (n1 × x1 + n2 × x2 + n3 × x3) ÷ (n1 + n2 + n3)

Calculations:

=> Let the total number of people in the group be 100.

=> Number of Men = 20, Women = 30, Children = 50.

=> Total weight of Men = 20 × 50 = 1000 kg.

=> Total weight of Women = 30 × 40 = 1200 kg.

=> Total weight of Children = 50 × 30 = 1500 kg.

=> Total weight of the group = 1000 + 1200 + 1500 = 3700 kg.

=> Average weight of the group = 3700 ÷ 100 = 37 kg.

Therefore The correct answer is 37 kg.

Additional Information

Weighted Average

It is used when components of a group have different weights or frequencies. Formula: $A_{(avg)} = (\Sigma n_i \times x_i) \div \Sigma n_i$.

Deviation Method

Assume a mean (e.g., 40) and calculate the net deviation: 20%(+10) + 30%(0) + 50%(−10). Net = +2 − 5 = −3. Final Avg = 40 − 3 = 37 kg.

Ratio Property of Averages

The average of a group remains unchanged if the number of members in each sub-group is scaled by the same ratio constant.

Q72. Answer: (b) Cut the text Paste the text at the desired location

The correct answer is Cut the text Paste the text at the desired location.

Key Points

• The "Cut" and "Paste" functions in MS Word allow users to efficiently move text or objects from one part of a document to another.

• When text is "Cut," it is removed from its original location and stored temporarily in the clipboard until "Paste" is executed.

• This method ensures that the original text does not remain duplicated in the document, unlike the "Copy" function.

• Users can move the cursor to the desired location before pasting the text, ensuring precise placement.

• Shortcut keys for this operation are Ctrl+X (Cut) and Ctrl+V (Paste), making the process faster and more convenient.

Additional Information

• Clipboard:

• The clipboard is a temporary storage area where data (text, images, etc.) is kept when "Cut" or "Copy" operations are performed.

• The clipboard content can be pasted multiple times unless overwritten by a new "Cut" or "Copy" action.

• Difference between Cut and Copy:

• "Cut" removes the selected content from its original location, while "Copy" leaves the content intact.

• Both operations store the selected content in the clipboard for future use.

• Shortcut Keys:

• Ctrl+X: Cut the selected text or object.

• Ctrl+C: Copy the selected text or object.

• Ctrl+V: Paste the content from the clipboard.

• Drag and Drop:

• Users can also move text using the "Drag and Drop" method by selecting it, holding the mouse button, and dragging it to the desired location.

• This method is useful for quick repositioning within the same document.

Q73. Answer: (b) 16.67

Shortcut Trick

Let initial Selling Price (SP1) be x and Cost Price (CP) be c.

Initial Profit (P1) = x − c.

New Selling Price (SP2) = 2x and New Profit (P2) = 8 × (x − c).

Since P2 = SP2 − CP, we have 8(x − c) = 2x − c.

8x − 8c = 2x − c => 6x = 7c => x/c = 7/6.

Initial Profit% = (x − c)/c × 100 = (7 − 6)/6 × 100 = 100/6 = 16.67%.

Therefore The correct answer is 16.67.

Alternate Method

Given: New SP = 2 × Old SP; New Profit = 8 × Old Profit.

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

=> Let Cost Price = C and initial Selling Price = S.

=> Initial Profit (P) = S − C.

=> According to the question: 8 × (S − C) = 2S − C.

=> 8S − 8C = 2S − C => 6S = 7C.

=> S = (7/6)C.

=> Initial Profit = (7/6)C − C = (1/6)C.

=> Initial Profit Percentage = ((1/6)C ÷ C) × 100 = 100/6 = 16.666...% ≈ 16.67%.

Therefore The correct answer is 16.67.

Additional Information

Profit and Loss Fundamentals

Profit occurs when SP > CP. Profit = SP − CP. Profit% is always calculated on the CP unless stated otherwise.

Effect of SP change on Profit

If CP remains constant, the increase in Profit is exactly equal to the increase in Selling Price.

Q74. Answer: (a) 16 km towards the east

Given:

Mr. Z starts from Point Y and drives 12 km towards the north. He then takes a left turn, drives 2 km, turns right and drives 1 km.

He then takes a left turn and drives 14 km. He takes a final left turn, drives 13 km and stops at Point X.

Thus, Z has to drive 16km east to reach point Y.

Hence, the correct answer is "Option 1".

Q75. Answer: (b) 1.5055 x 1023

The correct answer is 1.5055×10^{23}.

Key Points

• At standard temperature and pressure (STP), 1 mole of any ideal gas occupies a volume of 22.4 L.

• The number of molecules in 1 mole of a substance is given by Avogadro's number = 6.022×10^{23}.

• Given volume = 5.6 L, which corresponds to 5.6 ÷ 22.4 = 0.25 moles.

• The number of molecules in 0.25 moles can be calculated as $0.25 \times 6.022 \times 10^{23} = 1.5055 \times 10^{23}$.

• Thus, the correct answer is 1.05055×10^{23}, i.e., Option 4.

Additional Information

• Standard Temperature and Pressure (STP):

• STP refers to conditions where the temperature is 0°C (273.15 K) and the pressure is 1 atmosphere (101.325 kPa).

• Under these conditions, 1 mole of an ideal gas occupies a volume of 22.4 L.

• Avogadro's Number:

• It is the number of particles (atoms, molecules, ions) in 1 mole of a substance.

• The value of Avogadro's number is approximately 6.022×10^{23}.

• Mole Concept:

• A mole is a fundamental unit in chemistry representing the quantity of substance.

• It is used to relate the mass of a substance to the number of particles it contains.

• Ideal Gas Law:

• The ideal gas law is expressed as PV = nRT, where P = pressure, V = volume, n = moles, R = gas constant, and T = temperature.

• Under STP conditions, the molar volume of an ideal gas is fixed at 22.4 L.

Q76. Answer: (d) 400

Shortcut Trick

Difference (D) between CI and SI for 2 years = 41 − 40 = Rs. 1

SI for 1 year = 40 ÷ 2 = Rs. 20

Rate (R) = (Difference ÷ SI of 1 year) × 100 = (1 ÷ 20) × 100 = 5%

Principal (P) = (SI of 1 year × 100) ÷ R = (20 × 100) ÷ 5 = Rs. 400

Therefore The correct answer is Rs. 400.

Alternate Method

Given:

Total Simple Interest (SI) for 2 years = Rs. 40

Total Compound Interest (CI) for 2 years = Rs. 41

Time (T) = 2 years

Calculations:

=> Simple Interest for 1^(st) year = 40 ÷ 2 = Rs. 20

=> In Compound Interest, the interest for the 1^(st) year is the same as SI = Rs. 20

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=> CI for the 2^(nd) year = Total CI − 1^(st) year interest = 41 − 20 = Rs. 21
=> The extra Rs. 1 (21 − 20) is the interest earned on the 1^(st) year interest (Rs. 20)
=> Rate of Interest (R) = (1 ÷ 20) × 100 = 5% per annum
=> Now, using SI formula: SI = (P × R × T) ÷ 100
=> 40 = (P × 5 × 2) ÷ 100
=> 40 = (P × 10) ÷ 100
=> 40 = P ÷ 10
=> P = 40 × 10 = Rs. 400
Therefore The correct answer is Rs. 400.
Additional Information
Difference between CI and SI for 2 Years
The difference (D) is given by the formula $D = P(R \div 100)^2$.
Ratio of CI and SI for 2 Years
The relationship is expressed as CI ÷ SI = (200 + R) ÷ 200.
Effective Rate for Compound Interest
For a rate R% for 2 years, the effective CI rate is R + R + (R × R) ÷ 100.

Q77. Answer: (c) NE-14

The logic followed here is:
KX 3 : OV -9
IR 11 : MP -1
Applying the same logic to JG -2:
Thus, JG -2 is related to NE -14.
Hence, the correct answer is "Option 3".

Q78. Answer: (b) Less than 51%

The correct answer is Less than 51%.
Key Points
• A Public Sector Undertaking (PSU) is considered privatised when the government’s shareholding falls below 51%.
• This threshold ensures that the private sector holds a majority share, providing control and decision-making power.
• Privatisation can be partial or complete, depending on the percentage of shares divested by the government.
• Privatisation aims to improve efficiency, promote competition, and reduce the financial burden of PSUs on the government.
• Examples of privatised PSUs include Air India and Bharat Aluminium Company Limited (BALCO).
Additional Information
• Privatisation
• It refers to the transfer of ownership, management, or control of a government-owned enterprise to the private sector.
• It can occur through mechanisms like disinvestment, public-private partnerships, or outright sale of assets.
• Privatisation is often undertaken to enhance efficiency and reduce government expenditure.
• Disinvestment
• Disinvestment involves the sale or liquidation of government-owned shares in PSUs.
• It is aimed at raising revenue and encouraging private sector participation.
• Major disinvestment initiatives include Bharat Petroleum Corporation Limited (BPCL) and IDBI Bank.
• Types of Privatisation
• Partial Privatisation: Government retains a minority shareholding (more than 49%) while transferring control to the private sector.
• Complete Privatisation: Government sells 100% of its stake to the private sector, relinquishing all ownership rights.
• Benefits of Privatisation
• Improves operational efficiency due to private sector expertise.
• Promotes competition and innovation in industries.
• Reduces fiscal burden on the government.
• Enhances service quality for consumers.

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Q79. Answer: (a) 1

The given code language is:

Thus, 'A' is coded as '1'.

Hence, the correct answer is "Option 1".

Q80. Answer: (a) (53, 44, 58)

The logic followed here is:

Logic: First Number - 9 = Second number.

Second number + 14 = Third Number.

For, (36, 27, 41)

=> First to Second: 36 - 9 = 27.

=> Second to Third: 27 + 14 = 41.

For, (45, 36, 50)

=> First to Second: 45 - 9 = 36.

=> Second to Third: 36 + 14 = 50.

Option 1) (53, 44, 58)

=> First to Second: 53 - 9 = 44. (Matches)

=> Second to Third: 44 + 14 = 58. (Matches)

Here, logic followed.

Option 2) (28, 19, 43)

=> First to Second: 28 - 9 = 19. (Matches)

=> Second to Third: 19 + 14 = 33.

Here, logic not followed.

Option 3) (61, 52, 56)

=> First to Second: 61 - 9 = 52. (Matches)

=> Second to Third: 52 + 14 = 66.

Here, logic not followed.

Option 4) (74, 65, 89)

=> First to Second: 74 - 9 = 65. (Matches)

=> Second to Third: 65 + 14 = 79.

Here, logic not followed.

Hence, the correct answer is "Option 1".

Q81. Answer: (b) Soil salinity

The correct answer is Soil salinity.

Key Points

• Intensive use of chemical fertilizers during the Green Revolution led to an increase in soil salinity, negatively impacting agricultural productivity.

• High levels of fertilizers, especially nitrogen-based ones, can disrupt soil chemistry, reducing its ability to retain water and nutrients.

• Soil salinity affects crop growth by restricting the plants' ability to absorb water and essential nutrients due to osmotic stress.

• Regions practicing intensive farming with chemical inputs, such as Punjab and Haryana, reported significant degradation of soil health due to salinity.

• Efforts to mitigate soil salinity include techniques like organic farming, crop rotation, and the use of bio-fertilizers to restore soil health.

Additional Information

• Soil Salinity:

• It refers to the accumulation of soluble salts in the soil, which can harm plant growth and soil health.

• Saline soils are often characterized by white crusts and reduced agricultural yield.

• Green Revolution:

• A period during the 1960s-70s marked by increased agricultural production due to modern techniques, including high-yield crop varieties and chemical fertilizers.

• While it solved food shortages, it had environmental consequences such as soil degradation and water table depletion.

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• Impact of Chemical Fertilizers:
• Excessive use can lead to nutrient imbalance and pollution in nearby water bodies due to runoff.
• Prolonged use may reduce microbial diversity in soil, further degrading its quality.
• Sustainable Farming Practices:
• Techniques such as organic farming, agroforestry, and precision agriculture promote soil health.
• Bio-fertilizers and natural compost are alternatives to chemical fertilizers for sustainable agriculture.

Q82. Answer: (a) 34%

Shortcut Trick
Percentage is directly proportional to the marks obtained.
Marks 656 corresponds to 32%.
1 mark corresponds to 32 ÷ 656%.
697 marks correspond to (32 ÷ 656) × 697% = (1 ÷ 20.5) × 697% = 34%.
Therefore The correct answer is 34%.
Alternate Method
Given:
Marks of Kalpana = 656
Percentage of Kalpana = 32%
Marks of Sudha = 697
Formula Used:
Total Marks = (Obtained Marks × 100) ÷ Percentage
Calculations:
=> Let Total Marks be T.
=> 32% of T = 656
=> (32 ÷ 100) × T = 656
=> T = (656 × 100) ÷ 32
=> T = 20.5 × 100 = 2050
=> Sudha's Percentage = (Sudha's Marks ÷ T) × 100
=> Percentage = (697 ÷ 2050) × 100
=> Percentage = 6970 ÷ 205 = 34%
Therefore The correct answer is 34%.
Additional Information
Percentage Change
Percentage change = (Difference ÷ Original Value) × 100. Useful for comparing growth or reduction.
Base Change Property
If the total marks are constant, marks obtained are directly proportional to the percentage: M1/P1 = M2/P2.
Conversion of Fraction to Percentage
To convert any fraction x/y into percentage, multiply it by 100 and add the % symbol.

Q83. Answer: (b) Hiuen Tsang

The correct answer is Hiuen Tsang.
Key Points
• The Ajanta Caves were mentioned in the travel accounts of Hiuen Tsang, a Chinese Buddhist monk and traveler.
• Hiuen Tsang visited India during the reign of Harsha (7th century CE) and extensively documented Indian culture, religion, and architecture.
• He specifically described the Ajanta caves as a center of Buddhist learning and art, highlighting their significance in the spread of Buddhism.
• The caves are renowned for their exquisite frescoes and sculptures, which primarily depict the Jataka tales (stories of Buddha's previous births).
• Hiuen Tsang's detailed writings have been a valuable source for historians studying ancient Indian history and heritage.
Additional Information
• Ajanta Caves:
• The Ajanta Caves are a UNESCO World Heritage Site located in Maharashtra, India.

• The caves, numbering 30, were excavated between the 2nd century BCE and the 6th century CE.
• They are primarily Buddhist monasteries and prayer halls (chaityas and viharas).
• The paintings and sculptures are masterpieces of ancient Indian art, depicting Buddhist themes and narratives.
• Hiuen Tsang:
• Hiuen Tsang (Xuanzang) was a 7th-century Chinese Buddhist monk, scholar, traveler, and translator.
• His travelogue, "Great Tang Records on the Western Regions," provides detailed accounts of India during the Gupta and post-Gupta periods.
• He studied at Nalanda University, one of the most renowned learning centers of ancient India.
• His works remain a critical source for understanding India's ancient history, including art, religion, and society.
• Jataka Tales:
• The Jataka tales are a voluminous body of literature native to India concerning the previous births of Gautama Buddha.
• These stories are depicted in the Ajanta paintings, illustrating moral lessons and Buddhist values.
• The tales often involve themes of compassion, sacrifice, and wisdom.
• Other Travelers:
• Ibn Battuta: A Moroccan traveler who visited India during the reign of Muhammad bin Tughlaq (14th century CE).
• Domingo Paes: A Portuguese traveler who documented the Vijayanagara Empire (16th century CE).
• Megasthenes: A Greek ambassador in the court of Chandragupta Maurya (4th century BCE).

Q84. Answer: (a) Khan Abdul Ghaffar Khan

The correct answer is Khan Abdul Ghaffar Khan.

Key Points

• Khan Abdul Ghaffar Khan, also known as the "Frontier Gandhi," was the leader of the Red Shirt Movement (Khudai Khidmatgar) in the North-West Frontier Province (NWFP).
• The Khudai Khidmatgar, meaning "Servants of God," was a nonviolent freedom movement primarily advocating for the rights of Pashtuns and opposing British colonial rule.
• The Red Shirts were known for their distinctive red-colored uniforms, symbolizing their unity and commitment to the cause.
• Under the leadership of Khan Abdul Ghaffar Khan, the movement adopted Gandhian principles of nonviolence (Ahimsa) and worked closely with the Indian National Congress.
• The movement played a key role in fostering political awareness and unity among the Pashtun community in the NWFP during India's freedom struggle.

Additional Information

• Khan Abdul Ghaffar Khan:
• Born in 1890 in Utmanzai, NWFP, he was a prominent Indian independence activist and a close associate of Mahatma Gandhi.
• He is known as the "Frontier Gandhi" due to his adoption of Gandhian ideals of nonviolence and civil disobedience.
• Khan Abdul Ghaffar Khan was awarded the Bharat Ratna, India's highest civilian award, in 1987.
• Red Shirt Movement:
• The movement was formed in 1929 and was initially focused on social reforms, such as education, women's rights, and the eradication of oppressive practices.
• It later transformed into a political movement opposing British rule and supporting the Indian independence struggle.
• North-West Frontier Province (NWFP):
• This region, now part of Khyber Pakhtunkhwa in Pakistan, was a strategically important area during British rule in India.
• The Pashtun community, which predominantly inhabited the region, was initially resistant to external influences, including colonial powers.
• Nonviolence (Ahimsa):
• The principle of nonviolence was a cornerstone of the Red Shirt Movement's activities, inspired by Gandhi's philosophy.
• It emphasized peaceful protests, civil disobedience, and self-discipline as tools for achieving social and political goals.

Q85. Answer: (d) Ctrl + C

The correct answer is Ctrl + C.

Key Points

• Ctrl + C is the standard keyboard shortcut used to copy selected text or objects in MS Word 365.
• This shortcut is universally used across most Windows-based applications for the copy function.
• Once text or objects are copied using Ctrl + C, they are stored in the clipboard, which can be pasted elsewhere using Ctrl + V.

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• Other related shortcuts include Ctrl + X for cutting text and Ctrl + Z for undoing the last action.
• Ctrl + C ensures efficiency and speed in handling text, making it a core part of productivity in MS Word.
Additional Information
• Clipboard:
• The clipboard is a temporary storage area in the computer's memory used for copy and paste operations.
• It allows users to transfer text, images, or other data between different applications or within the same application.
• Keyboard Shortcuts:
• Keyboard shortcuts are combinations of keys that perform specific functions quickly without using menus.
• Examples include Ctrl + S (Save), Ctrl + P (Print), and Ctrl + A (Select All).
• MS Word 365:
• MS Word 365 is part of the Microsoft Office 365 suite, offering cloud-based productivity tools.
• It includes advanced features like real-time collaboration and AI-driven suggestions.
• Cut vs Copy:
• Ctrl + X: Removes the selected text or object and places it in the clipboard.
• Ctrl + C: Copies the selected text or object to the clipboard without altering the original content.

Q86. Answer: (c) AHLK

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

Number/ Symbol	4	@	7	#	3	&	8	•	2	^	9
Code	H	A	J	B	K	C	L	D	M	E	N

Given: 348@
Based on the applicable rule (i), the codes for the first and last elements are interchanged.
The code for 3 becomes the code for @, which is A.
The code for 4 is H.
The code for 8 is L.
The code for @ becomes the code for 3, which is K.
Thus, '348@' is coded as → AHLK.
Hence, the correct answer is "Option 3".

Q87. Answer: (d) 2500

Shortcut Trick
Identify the required value: $(a + b)^2$.
From the given data, $a + b = 50$.
Directly square the value of the sum: $50^2 = 50 \times 50$.
The result is 2500. (Note: $a - b = 21$ is extra information not needed for this calculation).
Therefore The correct answer is 2500.
Alternate Method
Given:
Sum of two numbers $(a + b) = 50$
Difference of two numbers $(a - b) = 21$
Formula Used:
The value to find is the square of the sum: $(a + b)^2$
Calculations:
=> $a + b = 50$
=> Square both sides of the equation:
=> $(a + b)^2 = 50^2$
=> $(a + b)^2 = 50 \times 50$
=> $(a + b)^2 = 2500$
Therefore The correct answer is 2500.
Additional Information

Square of a Sum Identity

The expansion of the square of a binomial is given by $(a + b)^2 = a^2 + 2ab + b^2$.

Square of a Difference Identity

The expansion for subtraction is $(a - b)^2 = a^2 - 2ab + b^2$.

Relation between Sum and Difference

The two identities are related by the formula: $(a + b)^2 - (a - b)^2 = 4ab$.

Redundant Information in Exams

Questions often provide more data than necessary (like $a - b = 21$) to test the student's ability to identify relevant values.

Q88. Answer: (a) -6

The given three-digit numbers are: 307, 485, 194, 237, 937.

Now,

The highest number is 937. Its third digit is 7.

The lowest number is 194. Its first digit is 1.

Subtract the third digit of the highest number 7 from the first digit of the lowest number 1.

1 - 7

= -6.

Hence, the correct answer is "Option 1".

Q89. Answer: (b) 117

Shortcut Trick

The average of the first n multiples of a number x is given by the formula: $x \times (n + 1) \div 2$.

In this question, $x = 13$ and $n = 17$.

=> Average = $13 \times (17 + 1) \div 2$

=> Average = $13 \times 18 \div 2 = 13 \times 9 = 117$

Therefore The correct answer is 117.

Alternate Method

Given:

Number of terms (n) = 17

Multiplier = 13

The sequence is: 13, 26, 39, ..., (13 × 17)

Formula Used:

For an Arithmetic Progression (AP), the Average = (First term + Last term) ÷ 2

Calculations:

=> First term (a) = 13 × 1 = 13

=> Last term (l) = 13 × 17 = 221

=> Average = (13 + 221) ÷ 2

=> Average = 234 ÷ 2

=> Average = 117

Therefore The correct answer is 117.

Additional Information

Average of AP

In any series with a common difference, the average is always the middle term if the number of terms is odd, calculated as (n + 1)/2 th term.

Sum of AP

The sum of an AP is $S_n = n/2 \times [2a + (n - 1)d]$ or $S_n = n/2 \times$ [first term + last term].

Average of first n Natural Numbers

The average of the first n natural numbers is $(n + 1) \div 2$. For multiples of k, just multiply this average by k.

Q90. Answer: (d) Only 1, 2 and 3

The correct answer is Option 4 (Only 1, 2, and 3).

Key Points

• Operation Brahma was launched in March 2025 by the Government of India to provide assistance to Myanmar and Thailand

following a major earthquake.

• Indian Navy ships Satpura and Savitri from the Eastern Naval Command carried relief materials to Yangon, Myanmar.

• The Indian Army deployed a 118-member medical task force from the Shatrujeet Brigade to support relief efforts in affected areas.

• The statement regarding a 60-bed Medical Treatment Centre being set up by the Indian Army in Thailand is not mentioned in the official records, making statement 4 incorrect.

• Thus, only statements 1, 2, and 3 are correct.

Additional Information

• Operation Brahma:

• It is part of India's Humanitarian Assistance and Disaster Relief (HADR) initiatives aimed at providing emergency support to neighboring countries during natural disasters.

• Such operations enhance India's role as a first responder in the Indian Ocean Region (IOR).

• Indian Navy's Role in Disaster Relief:

• The Indian Navy often deploys ships carrying essential supplies, medical teams, and equipment to disaster-stricken areas.

• Past operations include Operation Samudra Maitri (Indonesia, 2018) and Operation Vanilla (Madagascar, 2020).

• Shatrujeet Brigade:

• An elite airborne brigade of the Indian Army specializing in rapid deployment and disaster relief operations.

• It has a proven track record of responding to emergencies and humanitarian needs in both domestic and international scenarios.

• India's Humanitarian Diplomacy:

• India's assistance during natural disasters strengthens bilateral relations and promotes regional stability.

• Such operations align with India's "Neighborhood First" and "Act East" policies.

Q91. Answer: (c) 72%

Shortcut Trick

Ratio of Cost Price (CP) to Selling Price (SP) can be found directly.

MP = Rs. 1,032 and Discount = 50%.

SP = 50% of MP = 1,032 ÷ 2 = Rs. 516.

Profit = SP − CP = 516 − 300 = Rs. 216.

Profit% = (Profit ÷ CP) × 100 = (216 ÷ 300) × 100 = 72%.

Therefore The correct answer is 72%.

Alternate Method

Given: CP = Rs. 300, MP = Rs. 1,032, Discount% = 50%

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

=> First, calculate Selling Price (SP) = 1,032 × (100 − 50) ÷ 100

=> SP = 1,032 × 50 ÷ 100 = 516

=> Profit = SP − CP = 516 − 300 = 216

=> Profit Percentage = (216 ÷ 300) × 100

=> Profit Percentage = 72%

Therefore The correct answer is 72%.

Additional Information

Marked Price & Discount

The Marked Price (MP) is the price printed on the label. Discount is always calculated on the MP to reach the Selling Price: SP = MP − Discount.

Profit/Loss on Cost Price

Unless otherwise stated, Profit or Loss percentage is always calculated based on the Cost Price (CP).

Q92. Answer: (b) 19.5

Given:

[(26 ÷ 4/2) × {8 ÷ 2 × (12-2)/5} ÷ {4 × 4 ÷ 3}]

Calculation:

=> (26 ÷ (4 ÷ 2)) = 26 ÷ 2 = 13

=> {8 ÷ 2 × ((12 − 2) ÷ 5)} = 4 × (10 ÷ 5) = 4 × 2 = 8

=> {4 × 4 ÷ 3} = 16 ÷ 3 = 16/3

=> [13 × 8 ÷ (16/3)] = 104 ÷ (16/3) = 104 × 3/16

=> 312/16 = 19.5

Therefore Value = 19.5

Q93. Answer: (b) 6.5%

The correct answer is 6.5%.

Key Points

• The Reserve Bank of India (RBI) projected the GDP growth rate of India for the financial year 2025-26 at 6.5%.

• This projection is part of the RBI's assessment of the Indian economy, considering both domestic and global economic factors.

• The projection reflects optimism about India's economic recovery and resilience amid global uncertainties.

• RBI's projections are based on a combination of factors such as inflation trends, fiscal policies, external trade, and investment flows.

• The growth rate estimate aligns with India’s medium-term growth potential, supported by structural reforms and increasing investments.

Additional Information

• Gross Domestic Product (GDP):

• GDP is the total monetary or market value of all finished goods and services produced within a country in a specific time period.

• It serves as a comprehensive measure of a country’s economic activity and health.

• Role of RBI in Economic Projections:

• The Reserve Bank of India regularly publishes economic projections in its Monetary Policy Reports.

• These projections help policymakers and stakeholders make informed decisions regarding fiscal and monetary policies.

• Factors Affecting GDP Growth:

• Domestic consumption, government spending, private investments, and net exports play significant roles.

• Global economic conditions, inflation rates, and geopolitical developments also impact GDP growth.

• India’s Economic Resilience:

• India has been one of the fastest-growing major economies in the world.

• Structural reforms like GST implementation, digitalization, and production-linked incentive (PLI) schemes have contributed to growth.

Q94. Answer: (a) 1041

The correct answer is 1041.

Key Points

• As of February 2025, the Government of India has established 1041 Khelo India Centres (KICs) across the country.

• The initiative is part of the Khelo India Scheme, which aims to strengthen the grassroots sports ecosystem in India.

• Khelo India Centres are set up to identify and nurture young sporting talent, ensuring they receive proper training and facilities.

• The KICs are operational in partnership with state governments, sports academies, and private organizations.

• These centres focus on promoting sports among youth in both urban and rural areas, contributing to India's sports development goals.

Additional Information

• Khelo India Scheme

• Launched in 2018, the scheme aims to revive the sports culture in India at the grassroots level.

• It includes components such as Talent Identification, Sports Infrastructure, and Athlete Development.

• Under this scheme, selected athletes receive an annual scholarship of Rs. 5 lakh for 8 years.

• Significance of Grassroots Sports

• Grassroots sports play a vital role in building a sports-oriented culture and providing a foundation for future athletes.

• It helps in identifying and nurturing talent from a young age, especially in underrepresented regions.

• Fit India Movement

• Launched in 2019, this movement aims to encourage citizens to adopt a healthy and active lifestyle.

• It complements the Khelo India Scheme by promoting awareness about physical fitness.

• Sports Infrastructure in India

• The government has focused on building state-of-the-art sports facilities across the nation.

• Efforts include upgrading existing infrastructure and developing new facilities under the Khelo India initiative.

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Q95. Answer: (a) Metre

The correct answer is Metre.

Key Points

• Metre is the fundamental unit of length in the International System of Units (SI).

• It is defined as the distance traveled by light in a vacuum in 1/299,792,458 seconds.

• The metre is widely used for measuring distance, height, and dimensions in scientific and everyday applications.

• Other units of length such as kilometer, centimeter, and millimeter are derived from the metre.

• The adoption of the metre as the standard unit of length ensures consistency in measurements globally.

Additional Information

• International System of Units (SI):

• SI is the modern form of the metric system and is the most widely used system of measurement worldwide.

• It comprises seven base units: metre (length), kilogram (mass), second (time), ampere (electric current), kelvin (temperature), mole (amount of substance), and candela (luminous intensity).

• Derived Units:

• Units derived from the base units include area (square metre), volume (cubic metre), and velocity (metres per second).

• Derived units are used for more complex measurements and calculations in science and engineering.

• Non-SI Units:

• Non-SI units like inch, foot, and mile are still used in certain countries, primarily the United States.

• Conversion between SI and non-SI units is necessary for global standardization.

• Historical Evolution of the Metre:

• The metre was originally defined in 1793 as one ten-millionth of the distance from the equator to the North Pole along a meridian.

• Advancements in technology led to its redefinition based on the speed of light in 1983.

Q96. Answer: (b) 21

Shortcut Trick

From the quadratic equation $x^2 - (a - 1)x + 4a + 7 = 0$, use the relation between roots α and β.

Using Simon's Favorite Factoring Trick: $(\alpha - 4)(\beta - 4) = 4 + 7 + 16 = 27$.

Possible integer factors of 27 are (1, 27) and (3, 9).

Case (3, 9): $\alpha - 4 = 3 \Rightarrow \alpha = 7$ and $\beta - 4 = 9 \Rightarrow \beta = 13$.

Then, $a - 1 = \alpha + \beta \Rightarrow a - 1 = 20 \Rightarrow a = 21$.

Therefore The correct answer is 21.

Alternate Method

Given: Quadratic equation $x^2 - (a - 1)x + 4a + 7 = 0$ where a is an odd positive integer and roots are integers.

Formula Used: Sum of roots $(\alpha + \beta) = -b/a$ and Product of roots $(\alpha\beta) = c/a$.

$\Rightarrow \alpha + \beta = a - 1$

$\Rightarrow \alpha\beta = 4a + 7$

$\Rightarrow$ From the first equation, $a = \alpha + \beta + 1$. Substitute this into the second equation:

$\Rightarrow \alpha\beta = 4(\alpha + \beta + 1) + 7$

$\Rightarrow \alpha\beta - 4\alpha - 4\beta = 4 + 7$

$\Rightarrow \alpha\beta - 4\alpha - 4\beta + 16 = 11 + 16$

$\Rightarrow (\alpha - 4)(\beta - 4) = 27$

$\Rightarrow$ Factor pairs of 27 are (1, 27), (3, 9), (−1, −27), (−3, −9).

$\Rightarrow$ For (1, 27): $\alpha = 5, \beta = 31 \Rightarrow a = 5 + 31 + 1 = 37$.

$\Rightarrow$ For (3, 9): $\alpha = 7, \beta = 13 \Rightarrow a = 7 + 13 + 1 = 21$.

$\Rightarrow$ Negative pairs result in negative values for a (e.g., −19, −3), which are not positive integers.

$\Rightarrow$ Comparing 37 and 21, the least value is 21.

Therefore The correct answer is 21.

Additional Information

Integer Roots Condition

For a quadratic equation with integer coefficients to have integer roots, the Discriminant $(D = b^2 - 4ac)$ must be a perfect square.

Vieta's Formulas

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For $ax^2 + bx + c = 0$, the sum of roots is $-b/a$ and the product of roots is c/a.

Simon's Favorite Factoring Trick

The expression $xy + kx + my$ can be factored as $(x + m)(y + k) - km$. This is highly useful in solving equations with integer constraints.

Q97. Answer: (d) # = RVU, % = GKJ

The logic followed here is:

Option 1) # = ROU, % = GKQ

For # (ROU) to OSR

For JNM to % (GKQ)

Since the pattern for ROU to OSR (-3, +4, -3) is not the same as the pattern for JNM to GKQ (-3, -3, +4), Option 1 is incorrect.

Option 2) # = UQU, % = GOZ

For # (UQU) to OSR

For JNM to % (GOZ)

Since the pattern for UQU to OSR (-6, +2, -3) is not the same as the pattern for JNM to GOZ (-3, +1, +13), Option 2 is incorrect.

Option 3) # = IUU, % = GBQ

For # (IUU) to OSR

For JNM to % (GBQ)

Since the pattern for IUU to OSR (+6, -2, -3) is not the same as the pattern for JNM to GBQ (-3, -12, +4), Option 3 is incorrect.

Option 4) # = RVU, % = GKJ

For # (RVU) to OSR

For JNM to % (GKJ)

Option 4 is correct.

Hence, the correct answer is "Option 4".

Q98. Answer: (b) 178

The logic followed here is:

Thus, the missing number in the series is 178.

Hence, the correct answer is "Option 2".

Q99. Answer: (a) 18

Shortcut Trick

Efficiency of B = 1/18 − 1/24 = (4 − 3)/72 = 1/72

Time for B to do Full Work = 72 days

Time for B to do 1/4th Work = 72 ÷ 4 = 18 days

Therefore The correct answer is 18 days.

Alternate Method

Given: Time taken by (A + B) = 18 days, Time taken by A = 24 days.

Formula Used: Efficiency = Total Work ÷ Time; Time = Work ÷ Efficiency

Person	Days	Total Work (LCM)	Efficiency
A + B	18	72	4
A	24	3	

=> Efficiency of B = Efficiency of (A + B) − Efficiency of A

=> Efficiency of B = 4 − 3 = 1 unit/day

=> One-fourth of Total Work = 72 ÷ 4 = 18 units

=> Time taken by B for 1/4th work = 18 ÷ 1 = 18 days

Therefore The correct answer is 18 days.

Additional Information

Total Work Formula

If two people work together, their combined efficiency is the sum of their individual efficiencies: E_(total) = E1 + E2.

Work and Time Relation

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Time is inversely proportional to efficiency for a constant amount of work. Work = Time × Efficiency.

Q100. Answer: (a) Botany

The correct answer is Botany.

Key Points

• Dr. K.S. Manilal was an eminent Indian botanist renowned for his contributions to taxonomy, plant sciences, and history of botany.

• He specialized in the study of the flora of India, particularly focusing on the Western Ghats and Kerala region.

• Dr. Manilal is celebrated for his translation and commentary on the 17th-century work "Hortus Malabaricus," a comprehensive treatise on the medicinal plants of Malabar.

• His efforts in preserving and interpreting historical botanical manuscripts have contributed significantly to the understanding of India's biodiversity.

• Dr. Manilal has received numerous accolades for his pioneering work in botany, including national and international recognition.

Additional Information

• Taxonomy:

• Taxonomy is the science of classifying organisms based on their characteristics, origin, and evolutionary relationships.

• It plays a crucial role in understanding biodiversity and conservation efforts.

• Hortus Malabaricus:

• A landmark 17th-century botanical text documenting the medicinal plants of Malabar (modern-day Kerala).

• It was originally authored by Hendrik van Rheede and involved contributions from local physicians and botanists.

• Dr. Manilal's translation and commentary made this work accessible to a global audience.

• Western Ghats:

• A UNESCO World Heritage Site and one of the eight "hottest hotspots" of biological diversity in the world.

• Home to a wide variety of endemic flora and fauna, making it a focus area for botanical research.

• Medicinal Botany:

• The study of plants with therapeutic properties and their application in traditional and modern medicine.

• India has a rich heritage of medicinal botany, with Ayurveda being a prominent traditional system of healthcare.

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