RRB NTPC Graduate Level CBT-I Official Paper (Held On: 20 Jun, 2025 Shift 2) (Previous Year Paper)

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

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Q1. In January 2025, Wing Commander Akshay Saxena received the Vayu Sena Medal for his role in anti-piracy operations conducted in which of the following regions?

(a) Arabian Sea
(b) Bay of Bengal
(c) Gulf of Thailand
(d) Andaman Sea

Q2. A group of numbers and symbols is coded using letter codes as per the codes given below and the conditions that follow. Study the given codes and conditions and answer the question that follows.

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

Number/symbol	$	%	&	•	2	4	6	@	#	3	•	8	9	7
Code	T	U	P	S	D	F	J	K	Z	C	V	B	N	M

Conditions:

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

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

If both second and third elements are perfect cubes, the third element is to be coded as the code for the second element.

What will be the code for the following group?

398*

(a) CBBS
(b) CNNS
(c) CNBS
(d) SNBC

Q3. Which of the given 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 ::?

#: DZT :: QMG: %

(a) # = OYV, % = PYT
(b) = YPG, % = KUL
(c) = ZTY, % = VMH
(d) = YUO, % = VRL

Q4. The shorter side of a rectangle is 21 cm less than the longer side. The numerical value of its area is equal to 5 times the numerical value of its perimeter. What is the length (in cm) of its longer side?

(a) 38
(b) 47
(c) 35

(d) 32

Q5. Which is the largest inland saline wetland in India?

(a) Wular Lake
(b) Pulicat Lake
(c) Chilika Lake
(d) Sambhar Lake

Q6. Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.

PNQ : QQO

UQR : VTP

(a) OHM : PKK
(b) VHQ : WKN
(c) UCT : VFS
(d) QSX : RUV

Q7. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) 7 & 9 ^ # 1 * 5 < 2 6 = 4 Δ 3 $ @ 8 (Right)

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

(a) Two
(b) One
(c) More than three
(d) Three

Q8. Seven people, D, E, F, G, L, M and N, are sitting in a row, facing north. Only M sits to the left of N. Only four people sit between M and L. Only F sits between G and D, and G is not an immediate neighbour of L. Who sits at the extreme right of the line?

(a) E
(b) G
(c) N
(d) D

Q9. What is the IMF's projected US GDP growth rate for 2025, as per the April 2025 forecast?

(a) 2.5%
(b) 1.8%
(c) 3.4%
(d) 3.7%

Q10. 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	**5**	**$**	**7**	**2**	**%**	**•**	**3**	**^**	**#**	**9**	**•**	**6**	**4**
Code	A	F	L	B	G	M	C	H	N	D	J	P	K

Conditions:

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

ii) If the first and the last elements are odd numbers, then the first and last elements are to be coded as @.

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

What will be the code for 5#64%?

(a) GKPNA
(b) GNPKA
(c) AKPNG
(d) ANPKG

Q11. Which of the following numbers is divisible by 81?

(a) 5232
(b) 5854
(c) 5265
(d) 4678

Q12. Which of the following statements is NOT correct with reference to the modern periodic table?

(a) Lanthanoids and actinoids are placed in separate panels at the bottom.
(b) Groups are the vertical columns, and periods are horizontal rows.
(c) The second and third periods each contain 8 elements.
(d) The first period contains 8 elements.

Q13. The mean of a data is 42 and its median is 53. The mode (using empirical relation) of the data is :-

(a) 24
(b) 75
(c) 169
(d) 100

Q14. If 1 is added to each odd digit and 1 is subtracted from each even digit in the number 1865374, which of the following digits will be third from the left in the new number thus formed?

(a) 3
(b) 5
(c) 2
(d) 7

Q15. 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) QKHC
(b) FZWR
(c) WQNJ
(d) KEBW

Q16. 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.)

(19, 39, 44)

(13, 27, 32)

(a) (24, 45, 50)
(b) (35, 61, 66)
(c) (29, 49, 54)
(d) (11, 23, 28)

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Q17. Seven friends, I, J, K, L, M, N and R, are sitting in a row facing north. No one sits to the right of M. Only three people sit between M and R. Only two people sit between R and L. K sits third to the left of I. J sits to the immediate right of I. How many people sit between N and L?

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

Q18. An electric pump can fill a tank in 6 hours. Due to a leakage in the tank, it takes 7½ hours to fill the tank. How much time will this leak take to empty the full tank if water does not get in or out of the tank through any other point during this period?

(a) 44 hours
(b) 39 hours
(c) 33 hours
(d) 30 hours

Q19. Find the simple interest (in closest integral Rs.) on Rs. 3,000 at 6% per annum rate of interest for the period from 9 February 2024 to 10 April 2024.

(a) 31
(b) 30
(c) 28
(d) 29

Q20. The selling price of 20 books is equal to the cost price of 6 books. Find the loss or gain percentage.

(a) 50/7 % loss
(b) 50/7 % gain
(c) 70% loss
(d) 70% gain

Q21. B is the father of C. Q is the sister of C. T is the only sister of Q. T is the child of S. M is the son of S's only son. How is S related to B?

(a) Wife's mother
(b) Father's brother
(c) Father's sister
(d) Wife

Q22. Where is the headquarters of the National Turmeric Board, which was established in 2025?

(a) Kochi
(b) Guntur
(c) Kolkata
(d) Nizamabad

Q23. In a certain code language, 'FIGS' is coded as '3648' and 'ICED' is coded as '1285'. What is the code for 'I' in the given code language?

(a) 8
(b) 5
(c) 1
(d) 6

Q24. Which of the following operating systems is most suitable for ethical hacking and cybersecurity tasks on laptops and desktops due to its pre-installed penetration testing tools?

(a) Ubuntu LTS
(b) macOS Ventura
(c) Kali Linux
(d) Windows 10

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Q25. Kalpana and Sudha got 621 and 522 marks, respectively, in the same examination. If Kalpana scored 69% marks, then what is the percentage of marks scored by Sudha?

(a) 59%
(b) 55%
(c) 60%
(d) 58%

Q26. Which of the following input devices primarily translates physical, real-world movements into digital signals that can be interpreted by a computer system for tasks such as navigation and object manipulation in a graphical environment?

(a) Scanner
(b) Microphone
(c) Mouse
(d) Keyboard

Q27. Mahesh withdrew Rs. 3,100 from a bank. He received a total of 34 notes of Rs. 50 and Rs. 100 denominations. The number of Rs. 50 notes received by him was:

(a) 6
(b) 13
(c) 16
(d) 4

Q28. The McMahon Line separates India from which country?

(a) Pakistan
(b) China
(c) Nepal
(d) Bhutan

Q29. A woman travelled at a speed of 20 m/min for 80 min, and at a speed of 65 m/min for 64 min. Her average speed (in m/min) is:

(a) 44
(b) 33
(c) 40
(d) 46

Q30. Which Article of the Constitution of India mentions the Fundamental Duty of safeguarding public property and abjuring violence?

(a) Article 51A (h)
(b) Article 51A (i)
(c) Article 51A (k)
(d) Article 51A (j)

Q31. What was a unique feature of Harappan town planning?

(a) Irregular housing layout
(b) Underground temples
(c) Grid pattern streets
(d) Circular forts

Q32. If a sum of Rs. 6,70,000 is invested for a year at 2% per annum compounded half yearly, then find the compound interest.

(a) Rs. 13,467
(b) Rs. 13,630
(c) Rs. 12,805
(d) Rs. 11,545

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Q33. If √3 tanA = 3 sinA, find the value of (2√3cosecA × tanA).

(a) √3
(b) 6
(c) 2√3
(d) 2

Q34. What percentage of households were classified as the poorest of the poor, as per SECC-2011?

(a) 0.79%
(b) 1%
(c) 0.59%
(d) 0.89%

Q35. Seven boxes D, E, F, G, S, T and U are kept one over the other but not necessarily in the same order. Only four boxes are kept between E and D. Only F is kept above E. Only two boxes are kept between T and U. G is kept immediately above S. U is not kept immediately above G. Which box is kept fourth from the top?

(a) D
(b) F
(c) G
(d) T

Q36. A and B complete a work in 15 days. If A alone can do it in 17 days, then B alone can do two-third of the same work in _____ days.

(a) 85
(b) 170
(c) 340
(d) 255

Q37. Which body took suo motu cognisance of the news titled 'Experts are alarmed as 350 turtles was ashore dead till January 15', published on 16 January 2025?

(a) Supreme Court of India
(b) High Court of Tamil Nadu
(c) National Green Tribunal
(d) High Court of Odisha

Q38. Which of the following mountain passes is located in the Pir Panjal range?

(a) Shipki La
(b) Zoji La
(c) Nathu La
(d) Banihal Pass

Q39. Which of the following Articles of the Indian Constitution states about the establishment of Election Commission in India?

(a) Article 326
(b) Article 324
(c) Article 325
(d) Article 327

Q40. Evaluate: 81 x 112

(a) 9082
(b) 9062
(c) 9072
(d) 9172

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Q41. What is the total approximate latitudinal extent of India?

(a) 35°
(b) 30°
(c) 40°
(d) 25°

Q42. Who discovered the antibacterial properties of a Penicillium fungus in 1929?

(a) Paul Ehrlich
(b) Alexander Fleming
(c) Antonie van Leeuwenhoek
(d) Marie Curie

Q43. According to the Global Risks Perception Survey (GRPS) 2025, what percentage of respondents believe the turbulence outlook over the next 2 years?

(a) 41%
(b) 55%
(c) 52%
(d) 45%

Q44. In February 2025, the Indian government announced a six-year program to boost the production of which agricultural commodity to reduce import dependence?

(a) Wheat
(b) Pulses
(c) Rice
(d) Sugar

Q45. Find the roots of x^(-4) - 10x^(-2) + 9 = 0

(a) ±1,± 1/4
(b) ±1,± 2/3
(c) ±1,± 1/5
(d) ±1,± 1/3

Q46. Which positive number should replace both question marks in the following equations?

(?)/56 = 504/(?)

(a) 183
(b) 184
(c) 174
(d) 168

Q47. Five solid cubes, each of volume 1,09,41,048 cm^3, are joined end to end to form a cuboid. What is the lateral surface area (in cm^2) of the cuboid?

(a) 5.91,663
(b) 5,91,310
(c) 5,91,312
(d) 5,91,408

Q48. Which country reported its first-ever presumptive human case of H5 bird flu in November 2024?

(a) United States
(b) United Kingdom
(c) Canada
(d) Australia

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Q49. A bag contains 50 Paisa, 25 Paisa and 10 Paisa coins in the ratio 16 : 8 : 20, amounting to Rs. 384. Find the number of 10 Paisa coins.

(a) 668
(b) 660
(c) 640
(d) 696

Q50. If $a + b = 24$ and $(a - b)^2 = 268$ find the value of product of a and b.

(a) 140
(b) 77
(c) 110
(d) 68

Q51. 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 :: ?

: UEQ :: QAM : %

(a) = CMY, % = ISE
(b) = FMY, % = ISE
(c) = CMY, % = ISO
(d) = CMY, % = IUE

Q52. The Green Revolution was introduced to counter food shortages. Which region(s) was/were the initial focus of the Green Revolution?

(a) Odisha and Assam
(b) Punjab and Haryana
(c) Bihar
(d) Tamil Nadu

Q53. Where did ISRO conduct the hot test of the semi-cryogenic engine in 2025?

(a) Vikram Sarabhai Space Centre, Thiruvananthapuram, Kerala
(b) Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh
(c) Liquid Propulsion Systems Centre, Mahendragiri, Tamil Nadu
(d) ISRO Propulsion Complex, Mahendragiri, Tamil Nadu

Q54. As per the Union Budget 2025-26, a Maritime Development Fund with corpus of how much will be established?

(a) Rs. 15,000 crore
(b) Rs. 10,000 crore
(c) Rs. 25,000 crore
(d) Rs. 20,000 crore

Q55. According to the Economic survey 2024-25, what is the value of India's foreign exchange reserves, as of the end of December 2024?

(a) $330.3 billion
(b) $640.3 billion
(c) $520.5 billion
(d) $440.8 billion

Q56. Which of the following was formed in 1600 through a charter that granted it the exclusive privilege of trading with the area east of the Cape of Good Hope for 15 years?

(a) Austrian East India Company
(b) Danish East India Company
(c) Spanish East India Company
(d) English East India Company

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Q57. What is the median of the following data?

19, 98, 77, 24, 99, 71, 70, 56, 80, 12, 88

(a) 70.5
(b) 71
(c) 71.5
(d) 72

Q58. Which of the following tribal uprisings did NOT take place in the 20th century?

(a) Kuki Uprising
(b) Naga Revolt
(c) Lushai Uprising
(d) Bastar Rebellion

Q59. With reference to computer systems, what does CPU stand for?

(a) Computer Processing Utility
(b) Central Programming Unit
(c) Central Processing Unit
(d) Control Processing Unit

Q60. The average of 10 observations is 40. It was realised later that an observation was misread as 32 in place of 43. Find the correct average.

(a) 40.1
(b) 44.1
(c) 42.1
(d) 41.1

Q61. Which of the following countries DOES NOT share a land boundary with India?

(a) Sri Lanka
(b) Myanmar
(c) Bhutan
(d) Afghanistan

Q62. If a : b :: b : c; c = 4a and b = 18, find the positive value of c.

(a) 31
(b) 34
(c) 38
(d) 36

Q63. Who won the best actress award (critics) at the South Indian International Movie Awards (SIIMA) 2024?

(a) Alia Bhatt
(b) Shraddha Kapoor
(c) Aishwarya Rai Bachhan
(d) Deepika Padukone

Q64. What is the primary advantage of using 'Section Breaks' in an MS Word document compared to simply using 'Page Breaks'?

(a) Section breaks are primarily used to optimise the document for printing on different paper sizes, which is not possible with page breaks.
(b) Section breaks improve the document's file size and performance, especially in long documents with numerous formatting changes.
(c) Section breaks automatically create a table of contents based on the headings within each section, a feature not available with standard page breaks.
(d) Section breaks allow for different page numbering schemes, headers, and footers within the same document, while page breaks only force content to the next page.

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Q65. In finding the HCF of two numbers by division method, the quotients are 4, 5, and 9, respectively, and the last divisor is 18. What is the LCM of the two numbers?

(a) 159807
(b) 159804
(c) 159803
(d) 159806

Q66. Mr. KLM starts from Point A and drives 21 km towards the south. He then takes a left turn, drives 7 km, turns left and drives 26 km. He then takes a left turn and drives 11 km. He takes a final left turn, drives 5 km and stops at Point P. How far (shortest distance) and in which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only unless specified)

(a) 4 km to the east
(b) 3 km to the west
(c) 7 km to the east
(d) 5 km to the west

Q67. This question is based on the five, three-digit numbers given below.

(Left) 951 474 717 497 127 (Right)

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

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

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

Q68. The successive discounts of 28%, 20% and 10% are equivalent to a single discount of:

(a) 50.59%
(b) 46.69%
(c) 46.1%
(d) 48.16%

Q69. This question is based on the five, three-digit numbers given below.

(Left) 983 986 481 941 167 (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 third digit of the highest number is subtracted from the first digit of the lowest number?

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

Q70. _____ was crowned the Ranji Trophy champion for the 2024-25 season.

(a) Mumbai
(b) Vidarbha
(c) Kerala
(d) Tamil Nadu

Q71. Which of the following is NOT a part of Carnatic style composition?

(a) Varnam
(b) Pallavi
(c) Ragmalika
(d) Chaturang

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Q72. What makes DNA the most abundant genetic material?

(a) Its stable double-helical structure
(b) Its high mutation rate
(c) Its interaction with proteins
(d) Its enzymatic roles

Q73. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 1862547, then what will the difference between the highest and lowest digits in the new number thus formed be?

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

Q74. 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 curtain are screen.

All curtain are blinder.

Some blinder are drape.

Conclusions:

(I) Some drape are curtain.

(II) Some blinder are screen.

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

Q75. The Union Council of Ministers in India, as the Chief Executive Organ, implicates which of the following?

(a) Ministers leave all work operations to be done by civil servants
(b) Centralisation of power in local bodies
(c) Each minister is the political head of his/her ministry
(d) The abolition of the role of the Secretary

Q76. The product of two numbers x and y is 45 and their sum is 14. Find the sum of their cubes.

(a) 759
(b) 675
(c) 854
(d) 586

Q77. What should come in place of the question mark (?) in the given series?

8 13 20 29 40?

(a) 65
(b) 57
(c) 53
(d) 61

Q78. The present cost of a house is Rs. 1,23,016. After a year, its cost will increase to Rs. 1,40,203. The percentage increase (rounded off to the nearest integer) in the cost of the house is:

(a) 10%
(b) 8%
(c) 14%
(d) 17%

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Q79. What should come in place of the question mark (?) in the given series?

1012 1010 1000 998 988 ? 976

(a) 986
(b) 985
(c) 988
(d) 987

Q80. What is the function of the keyboard shortcut Ctrl + F in Windows OS?

(a) It forwards an email message to another recipient.
(b) It checks and corrects spelling errors in text.
(c) It formats content in a document or application.
(d) It opens a search or find feature to locate text or items in files, webpages or applications.

Q81. Consider the following statements regarding the MEDEVAC operation conducted by Indian maritime forces in March 2025.

1. The Indian Navy evacuated injured crew members from MV Heilan Star, located in west of Goa.
2. A Sea King helicopter from INS Vikrant airlifted three injured crew members, including two Chinese and one Indonesian national.
3. The Indian Navy and Indian Air Force jointly coordinated the operation.
4. The rescued crew were flown to INS Hansa, Goa, for onward transfer to a civil hospital.

Which of the above statements are correct?

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

Q82. 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. D lives on an odd numbered floor but not 5. The sum of floors on which D and A live is 5. Only 3 people live between A and F. B lives immediately above E. How many people live above B?

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

Q83. What is the title of Sarojini Naidu's first collection of poems, published in 1905?

(a) The Golden Threshold
(b) Urvasie
(c) The Captive Lady
(d) Songs of the Dawn

Q84. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

ENU FLS GJQ ? IFM

(a) HHO
(b) HIO
(c) HOP
(d) HIP

Q85. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

YRU WPS UNQ SLO ?

(a) QJN
(b) QIN
(c) QJM
(d) QIM

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Q86. If 2 is added to each even digit and 2 is added to each odd digit in the number 4713562, what will be the sum of the last two and first two digits in the new number thus formed?

(a) 27
(b) 23
(c) 29
(d) 25

Q87. In triangle ABC, DE || AC, where D and E are the points on sides AB and BC, respectively.If BD = 12 cm and AD = 11 cm, then what is the ratio of the area of triangle BDE to that of the trapezium ADEC?

(a) 623 : 199
(b) 385 : 144
(c) 144 : 385
(d) 390 : 413

Q88. What role did the 'Dikus' play in igniting early tribal revolts of India?

(a) They were perceived Gods of the forests.
(b) They were outsiders like landlords, moneylenders and officials exploiting tribal community
(c) They were British officials stationed in tribal areas.
(d) They were tribal priests encouraging the tribal rebellion.

Q89. Select the pair that follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

MWC : JYA
KUR : HWP

(a) SLV : QPS
(b) WTH : PUR
(c) PAY : MGT
(d) JVP : GXN

Q90. In which year was the provision for the free legal aid to the poor added to the Directive Principles of the State Policy of the Constitution of India?

(a) 1978
(b) 2011
(c) 1976
(d) 2002

Q91. If 1 is added to each even digit and 2 is subtracted from each odd digit in the number 9368547, what will be the sum of the digits which are third from the left and third from the right in the new number thus formed?

(a) 14
(b) 10
(c) 8
(d) 12

Q92. If the average of 6 consecutive odd numbers is 30, the difference between the largest and the smallest numbers is:

(a) 18
(b) 10
(c) 15
(d) 16

Q93. A boat takes 39 minutes to go 27.9 km upstream. The ratio of the speed of the boat in still water to that of the stream is 9 : 4. How much total time (in hours) will the boat take to go 18.9 km upstream and 51.3 km downstream?

(a) 0.9
(b) 4.3
(c) 1.9
(d) 2.6

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Q94. Which of the following statements about the Supreme Court's writ jurisdiction is correct?

(a) It extends to both Fundamental Rights and other legal rights.
(b) It is exclusive and cannot be exercised by the High Courts.
(c) It can only be invoked for enforcement of Fundamental Rights.
(d) It allows the Court to issue writs only against the Central Government.

Q95. Dholavira is unique for which of the following?

(a) Water conservation systems
(b) Scripted seals
(c) Use of palm leaves
(d) Rock-cut architecture

Q96. Mr. I starts from Point M and drives 1 km towards the south. He then takes a right turn, drives 3 km, turns left and drives 3 km. He then takes a left turn and drives 4 km. He takes a final left turn, drives 4 km and stops at Point N. How far (shortest distance) and towards which direction should he drive in order to reach Point M again? (All turns are 90-degree turns only unless specified.)

(a) 4 km towards the north
(b) 2 km towards the south
(c) 1 km towards the west
(d) 4 km towards the east

Q97. The diagonals of a quadrilateral are perpendicular bisectors of each other. If the length of one diagonal is 3 cm and the area of the quadrilateral is 180 cm^2, find the length (in cm) of the other diagonal.

(a) 120
(b) 112
(c) 115
(d) 128

Q98. Vinod ranked 36th from the top and 18th from the bottom in his class. How many students are there in his class?

(a) 53
(b) 51
(c) 54
(d) 52

Q99. A man sold an article at a gain of 57%. If he had sold it for Rs. 238 more, he would have gained 82%. The cost price (in Rs.) of the article is:

(a) 950
(b) 955
(c) 949
(d) 952

Q100. 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) NR - TA
(b) RV - XE
(c) DH - IQ
(d) XB - DK

ANSWER KEY

1	a	2	c	3	d	4	c	5	d	6	a	7	c	8	a	9	b	10	b
11	c	12	d	13	b	14	b	15	c	16	d	17	a	18	d	19	b	20	c
21	d	22	d	23	a	24	c	25	d	26	c	27	a	28	b	29	c	30	b

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31	c	32	a	33	b	34	d	35	c	36	a	37	c	38	d	39	b	40	c
41	b	42	b	43	c	44	b	45	d	46	d	47	d	48	c	49	c	50	b
51	a	52	b	53	d	54	c	55	b	56	d	57	b	58	c	59	c	60	d
61	a	62	d	63	c	64	d	65	b	66	a	67	b	68	d	69	c	70	b
71	d	72	a	73	a	74	d	75	c	76	c	77	c	78	c	79	a	80	d
81	c	82	d	83	a	84	a	85	c	86	a	87	c	88	b	89	d	90	c
91	b	92	b	93	a	94	c	95	a	96	c	97	a	98	a	99	d	100	c

SOLUTIONS

Q1. Answer: (a) Arabian Sea

The correct answer is Arabian Sea.

Key Points

• The Arabian Sea is a part of the northern Indian Ocean, bounded by the Indian subcontinent on the east, the Arabian Peninsula on the west, and the Horn of Africa on the southwest.

• The region is a crucial route for global maritime trade and is often prone to piracy activities, especially near the Gulf of Aden and Somali waters.

• The Indian Navy plays a significant role in ensuring the security of maritime trade routes in this area, conducting regular anti-piracy operations to safeguard international shipping.

• Wing Commander Akshay Saxena played a pivotal role in these operations, contributing to the safety and security of maritime activities in the Arabian Sea.

• Due to its strategic importance, the Arabian Sea has been a focus area for international naval coalitions combating piracy and ensuring the free movement of trade.

• India's proactive role in anti-piracy operations in the Arabian Sea highlights its commitment to global maritime security.

Additional Information

• Bay of Bengal

• The Bay of Bengal is the northeastern part of the Indian Ocean, bordered by India and Sri Lanka to the west, Bangladesh to the north, and Myanmar and the Andaman and Nicobar Islands to the east.

• It is primarily known for its cyclonic activities and is less prone to piracy compared to the Arabian Sea.

• The region is significant for fishing, shipping routes, and energy exploration.

• Gulf of Thailand

• The Gulf of Thailand is situated in Southeast Asia, bordered by Thailand, Cambodia, and Vietnam.

• It is primarily known for its tourism and fishing activities, rather than piracy-related issues.

• The region supports major economies in Southeast Asia through its marine resources.

• Andaman Sea

• The Andaman Sea lies to the southeast of the Bay of Bengal and is bordered by the Andaman and Nicobar Islands, Myanmar, and Thailand.

• It is known for marine biodiversity and its role as a route for regional maritime trade.

• While piracy is rare in this region, it is monitored for illegal fishing and smuggling activities.

Q2. Answer: (c) CNBS

Given Table:

Number/symbol	$	%	&	•	2	4	6	@	#	3	•	8	9	7
Code	T	U	P	S	D	F	J	K	Z	C	V	B	N	M

According to the given condition:

Rule no.	Condition	Result
I	First element is a symbol and the last a number	Code for these two are to be interchanged

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II	First element is an odd number and the last an even number	First and last elements are to be coded as ©.
III	Both the second and third elements are perfect cubes	Code of the third element is to be coded as the code for the second element.

Given: 398*

Here, no rule applies.

3 → coded as C

9 → coded as N

8 → coded as B

• → coded as S

So, 398* → Coded as CNBS

Hence, "Option 3" is the correct answer.

Q3. Answer: (d) = YUO, % = VRL

The logic followed here is:

Given: #: DZT :: QMG: %

Option 1) # = OYV, % = PYT → OYV: DZT :: QMG: PYT

Option 2) # = YPG, % = KUL → YPG: DZT :: QMG: KUL

Option 3) # = ZTY, % = VMH → ZTY: DZT :: QMG: VMH

Option 4) # = YUO, % = VRL → YUO: DZT :: QMG: VRL

Hence, "Option 4" is the correct answer.

Q4. Answer: (c) 35

Shortcut Trick

Let the longer side be L and the shorter side be L − 21.

Given: Area = 5 × Perimeter

L(L − 21) = 5 × 2(L + L − 21) => L2 − 21L = 10(2L − 21)

L2 − 21L = 20L − 210 => L2 − 41L + 210 = 0

By factoring: (L − 35)(L − 6) = 0. Since L > 21, L = 35.

Therefore The correct answer is 35 cm.

Alternate Method

Given:

Let longer side (l) = x cm

Then shorter side (b) = (x − 21) cm

Formula Used:

Area of Rectangle = l × b

Perimeter of Rectangle = 2(l + b)

Calculations:

=> Area = 5 × Perimeter

=> x(x − 21) = 5 × [2(x + x − 21)]

=> x2 − 21x = 10(2x − 21)

=> x2 − 21x = 20x − 210

=> x2 − 41x + 210 = 0

=> x2 − 35x − 6x + 210 = 0

=> x(x − 35) − 6(x − 35) = 0

=> (x − 35)(x − 6) = 0

=> x = 35 or x = 6

=> Since b = x − 21, x must be greater than 21. Therefore x = 35.

Therefore The correct answer is 35 cm.

Additional Information

Properties of Rectangle

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A rectangle is a quadrilateral with four right angles. Opposite sides are equal and parallel. Diagonal length = √(l2 + b2).

Quadratic Roots

For x2 − (Sum of roots)x + (Product of roots) = 0, the roots are found by splitting the middle term or using the formula.

Area and Perimeter Relations

The numerical equality of area and perimeter (or their multiples) is a common geometric problem solved using algebraic equations.

Q5. Answer: (d) Sambhar Lake

The Correct answer is Sambhar Lake

Key Points

• Sambhar Lake is the largest inland saline wetland in India.
• It is located in the state of Rajasthan, near the towns of Sambhar, Jaipur, and Ajmer.
• The lake covers an area of around 190 to 230 square kilometers, depending on the season.
• Sambhar Lake is a major source of salt production in India, contributing significantly to the salt industry.
• The lake is fed by several rivers, including the Mendha, Rupangarh, Khari, and Khandela rivers.
• It is recognized as a Ramsar site, which designates it as a wetland of international importance.
• The lake is also a key ecological habitat for migratory birds, including the flamingos, pelicans, and storks.
• The saline nature of the lake is due to the high concentration of salt deposits formed over time.
• Sambhar Lake has significant cultural and religious importance, being mentioned in ancient Indian texts like the Mahabharata.

Additional Information

• Wular Lake
• Wular Lake is one of the largest freshwater lakes in India.
• It is located in the state of Jammu and Kashmir.
• The lake is fed by the Jhelum River and is important for fisheries and agriculture.
• It plays a crucial role in maintaining the hydrological balance of the region.
• Pulicat Lake
• Pulicat Lake is a brackish water lagoon located on the border of Andhra Pradesh and Tamil Nadu.
• It is the second-largest lagoon in India after the Chilika Lake.
• The lake is known for its bird sanctuary, which attracts migratory birds like flamingos.
• Chilika Lake
• Chilika Lake is the largest coastal lagoon in India and is located in the state of Odisha.
• It is a major habitat for aquatic life and migratory birds.
• The lake is designated as a Ramsar site and is known for its rich biodiversity.

Q6. Answer: (a) OHM : PKK

The logic followed here is:

PNQ : QQO

And,

UQR : VTP

Similarly,

Option 1) OHM : PKK

Hence, "Option 1" is the correct answer.

Q7. Answer: (c) More than three

Given series: (Left) 7 & 9 ^ # 1 * 5 < 2 6 = 4 Δ 3 $ @ 8 (Right)

According to the question,

Required condition: Number - Symbol - Number

(Left) 7 & 9 ^ # 1 * 5 < 2 6 = 4 Δ 3 $ @ 8 (Right)

Thus, there are more than three such symbols which are immediately preceded by a number and also immediately followed by another number.

Hence, "Option 3" is the correct answer.

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Q8. Answer: (a) E

Given: Seven people, D, E, F, G, L, M and N, are sitting in a row, facing north.

1) Only M sits to the left of N.

2) Only four people sit between M and L.

3) Only F sits between G and D, and G is not an immediate neighbour of L.

After positioning F, G and D only one position is left which will be occupied by the only person left i.e. E.

Thus, E sits at the extreme right of the line.

Hence, "Option 1" is the correct answer.

Q9. Answer: (b) 1.8%

The Correct answer is Option 2.

Key Points

• The International Monetary Fund (IMF) is a global organization that provides economic forecasts and policy advice to its member countries.

• In its April 2025 forecast, the IMF projected the US GDP growth rate for 2025 to be 0.018 or 1.8%.

• The IMF's forecasts are crucial as they provide insights into the global economic outlook and influence policy decisions worldwide.

• The projection reflects a moderate growth trend for the United States economy, considering factors such as macroeconomic policies, global trade dynamics, inflation, and labor market conditions.

• This growth rate is indicative of a stable but cautious economic recovery, potentially impacted by external factors like geopolitical tensions, supply chain disruptions, or monetary policy adjustments by the Federal Reserve.

• Such projections play a significant role in helping governments, businesses, and investors plan their strategies and assess risks in the economic environment.

• The accuracy of IMF forecasts depends on continuous monitoring and updates based on real-time economic indicators.

Additional Information

• About the IMF

• The IMF was established in 1944 during the Bretton Woods Conference and officially began operations in 1945.

• The IMF's headquarters is located in Washington, D.C., United States.

• It has 190 member countries and works to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty.

• The IMF provides economic analysis and forecasts through reports such as the World Economic Outlook (WEO).

• Incorrect Options

• Options like 0.025, 0.034, and 0.037 are incorrect as they do not align with the IMF's official April 2025 forecast for US GDP growth.

Q10. Answer: (b) GNPKA

Given Table:

Number/symbol	**5**	**$**	**7**	**2**	**%**	**•**	**3**	**^**	**#**	**9**	**•**	**6**	**4**
Code	A	F	L	B	G	M	C	H	N	D	J	P	K

According to the given condition:

Rule no.	**Condition**	**Result**
I	First element is a number and the last a symbol	Code for these two are to be interchanged
II	First and the last elements are odd numbers	First and last elements are to be coded as @.
III	Both the second and third elements are perfect square roots	Code of the third element is to be coded as the code for the second element

Given: 5#64%

Here, I rule applies i.e. first element is a number and the last a symbol.

5 → coded as G

→ coded as N

6 → coded as P

4 → coded as K

% → coded as A

So, 5#64% → Coded as GNPKA.

Hence, "Option 2" is the correct answer.

Q11. Answer: (c) 5265

Shortcut Trick

A number is divisible by 81 if the sum of its digits is divisible by 81 (for very large numbers) or if it is a multiple of 81.

More simply, any number divisible by 81 must also be divisible by 9 (Sum of digits must be a multiple of 9).

Check sum of digits for 5265: 5 + 2 + 6 + 5 = 18. Since 18 is divisible by 9, check 5265 ÷ 81.

5265 ÷ 81 = 65.

Therefore The correct answer is 5265.

Alternate Method

Given: Numbers (1) 5232, (2) 5854, (3) 5265, (4) 4678.

Formula Used: Divisibility rule of 81. A number is divisible by 81 if the quotient is an integer when divided by 81.

=> Option 1: 5232 ÷ 81 ≈ 64.59 (Not divisible)

=> Option 2: 5854 ÷ 81 ≈ 72.27 (Not divisible)

=> Option 3: 5265 ÷ 81 = 65 (Exactly divisible)

=> Option 4: 4678 ÷ 81 ≈ 57.75 (Not divisible)

Therefore The correct answer is 5265.

Additional Information

Divisibility by 9

A number is divisible by 9 if the sum of its digits is divisible by 9.

Divisibility by 3

A number is divisible by 3 if the sum of its digits is divisible by 3.

Composite Divisibility

If a number is divisible by n^x, it must also be divisible by n. Here, 81 = 3^4 = 9^2, so it must be divisible by 3 and 9.

Q12. Answer: (d) The first period contains 8 elements.

The Correct answer is The first period contains 8 elements.

Key Points

• The modern periodic table arranges elements based on their atomic numbers in horizontal rows called periods and vertical columns called groups.

• The first period of the modern periodic table contains only two elements: Hydrogen and Helium.

• This is because the first energy level (shell) can hold a maximum of two electrons.

• Thus, the statement that the first period contains 8 elements is incorrect.

• Subsequent periods contain more elements due to the increasing capacity of energy levels to hold electrons.

• For example, the second period contains 8 elements, corresponding to the filling of the 2s and 2p orbitals.

• The periodic table is divided into blocks based on the sub-shells being filled (s, p, d, f blocks).

• The placement of elements reflects their properties and provides a systematic way to study chemical behavior.

Additional Information

• Lanthanoids and actinoids are placed in separate panels at the bottom

• Lanthanoids and actinoids are the f-block elements of the periodic table.

• They are placed separately to maintain the structure and readability of the table.

• Lanthanoids are elements with atomic numbers 57 to 71, while actinoids are elements with atomic numbers 89 to 103.

• These elements exhibit unique electronic configurations and properties, such as their use in magnets, lasers, and nuclear reactors.

• Groups are the vertical columns, and periods are horizontal rows

• The modern periodic table has 18 groups and 7 periods.

• Groups are vertical columns where elements have similar valence electron configurations and chemical properties.

• Periods are horizontal rows representing elements with increasing atomic numbers.

• For example, elements in Group 1 are the alkali metals, while those in Group 17 are the halogens.
• The second and third periods each contain 8 elements
• The second period contains elements from Lithium to Neon, corresponding to the filling of 2s and 2p orbitals.
• The third period contains elements from Sodium to Argon, corresponding to the filling of 3s and 3p orbitals.
• This pattern reflects the quantum mechanical arrangement of electrons in atoms.

Q13. Answer: (b) 75

Shortcut Trick
Apply the Empirical Formula: Mode = 3 × Median − 2 × Mean.
Substitute the given values: Mode = 3(53) − 2(42).
Mode = 159 − 84 = 75.
Therefore The correct answer is 75.
Alternate Method
Given:
Mean of the data = 42
Median of the data = 53
Formula Used:
The empirical relationship between the measures of central tendency is:
Mode = 3 × Median − 2 × Mean
Calculations:
=> Mode = 3 × 53 − 2 × 42
=> Mode = 159 − 84
=> Mode = 75
Therefore The correct answer is 75.
Additional Information
Symmetrical Distribution
In a perfectly symmetrical distribution, the values of Mean, Median, and Mode are all equal (Mean = Median = Mode).
Skewed Distribution
For a moderately skewed distribution, the empirical formula provides an approximate relationship: Mode ≈ 3 × Median − 2 × Mean.

Q14. Answer: (b) 5

Given number: 1865374
According to the question,

Given number	**1**	**8**	**6**	**5**	**3**	**7**	**4**
Odd digit → (+1) Even digit → (-1)	(+1)	(-1)	(-1)	(+1)	(+1)	(+1)	(-1)
New number	2	7	5	6	4	8	3

The third digit from the left in the new number → 5
Hence, the correct answer is "Option 2".

Q15. Answer: (c) WQNJ

The logic followed here is:
Option 1) QKHC
Option 2) FZWR
Option 3) WQNJ
Option 4) KEBW
Thus, out of all 'WQNJ' is the odd one out.
Hence, the correct answer is "Option 3"

Q16. Answer: (d) (11, 23, 28)

The logic followed here is:

Given:

(19, 39, 44)

=> 19 × 2 + 1 → 38 + 1 = 39

=> 39 + 5 = 44

And,

(13, 27, 32)

=> 13 × 2 + 1 = 26 + 1 = 27

=> 27 + 5 = 32

So, checking each option one by one:

Option 1) (24, 45, 50)

=> 24 × 2 + 1 → 48 + 1 = 49 ≠ 45

=> 45 + 5 = 50

Option 2) (35, 61, 66)

=> 35 × 2 + 1 → 70 + 1 = 71 ≠ 61

=> 61 + 5 = 66

Option 3) (29, 49, 54)

=> 29 × 2 + 1 → 58 + 1 = 59 ≠ 49

=> 49 + 5 = 54

Option 4) (11, 23, 28)

=> 11 × 2 + 1 → 22 + 1 = 23

=> 23 + 5 = 28

Thus, out of all '(11, 23, 28)' follows the same logic.

Hence, the correct answer is "Option 4".

Q17. Answer: (a) Three

Given: Seven friends, I, J, K, L, M, N and R, are sitting in a row facing north.

1) No one sits to the right of M.

2) Only three people sit between M and R.

3) Only two people sit between R and L.

4) K sits third to the left of I.

5) J sits to the immediate right of I.

After positioning I, J and K only one position is left which will be occupied by the only person left i.e. N.

Thus, three people sit between N and L.

Hence, "Option 1" is the correct answer.

Q18. Answer: (d) 30 hours

Shortcut Trick

Time taken by Pump (A) = 6 hours

Time taken by Pump + Leak (A + B) = 7.5 hours

Emptying time for Leak = (XY) ÷ (Y − X)

=> (6 × 7.5) ÷ (7.5 − 6) = 45 ÷ 1.5 = 30 hours

Therefore The correct answer is 30 hr.

Alternate Method

Given: Filling time = 6 hr, Filling with leak = 7.5 (15/2) hr.

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

Person/Pipe	Time (hr)	Total Work	Efficiency
Pump (A)	6	30	5
Pump + Leak (A+B)	15/2	4	

=> Efficiency of Pump (A) = 5 units/hr

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=> Efficiency of Pump + Leak (A + B) = 4 units/hr

=> Efficiency of Leak (B) = 4 − 5 = −1 unit/hr (negative sign denotes emptying)

=> Time taken by Leak to empty the tank = Total Work ÷ Efficiency of B

=> 30 ÷ 1 = 30 hours

Therefore The correct answer is 30 hr.

Additional Information

Pipes and Cisterns Concept

Efficiency of an inlet pipe is taken as positive, while the efficiency of an outlet pipe (leak) is taken as negative.

Net Efficiency

If two pipes A and B work together, net efficiency = Efficiency of A + Efficiency of B. Total time = Total Work ÷ Net Efficiency.

Work-Time Relation

Time taken to complete a task is inversely proportional to the efficiency of the worker or pipe.

Q19. Answer: (b) 30

Shortcut Trick

Identify Leap Year: 2024 is a leap year (366 days).

Total days = 20 (Feb) + 31 (Mar) + 10 (Apr) = 61 days.

Interest Calculation: Interest = (3000 × 6 × 61/366) / 100

Since 6 × 61 = 366, Interest = 3000 / 100 = 30.

Therefore The correct answer is Rs. 30.

Alternate Method

Given:

Principal (P) = Rs. 3,000

Rate (R) = 6% per annum

Time period = 9 February 2024 to 10 April 2024

Formula Used:

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

Calculations:

=> Number of days in February = 29 − 9 = 20 days (2024 is a leap year)

=> Number of days in March = 31 days

=> Number of days in April = 10 days

=> Total Days = 20 + 31 + 10 = 61 days

=> Time (T) in years = 61 / 366 years

=> SI = (3000 × 6 × (61/366)) / 100

=> SI = (3000 × 6 × 61) / (100 × 366)

=> SI = (3000 × 366) / (100 × 366)

=> SI = 3000 / 100

=> SI = Rs. 30

Therefore The correct answer is Rs. 30.

Additional Information

Leap Year Calculation

A year is a leap year if it is divisible by 4. If it is a century year (ending in 00), it must be divisible by 400. Leap years have 366 days.

Day Counting Rule

In banking and financial interest calculations, normally the day of deposit is excluded and the day of withdrawal is included (or vice versa).

Simple Interest vs Compound Interest

Simple interest is calculated only on the principal, while compound interest is calculated on the principal plus accumulated interest from previous periods.

Q20. Answer: (c) 70% loss

Shortcut Trick

Let the Cost Price (CP) of 1 book be 1 unit and Selling Price (SP) of 1 book be x units.

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According to the question: 20 × SP = 6 × CP.

Ratio of SP to CP: SP/CP = 6/20 = 3/10.

Loss = CP − SP = 10 − 3 = 7 units.

Loss % = (Loss ÷ CP) × 100 = (7 ÷ 10) × 100 = 70%.

Therefore The correct answer is 70% loss.

Alternate Method

Given: SP of 20 books = CP of 6 books.

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

=> Let Cost Price (CP) of 1 book be Re. 1.

=> Cost Price of 20 books = Rs. 20.

=> Selling Price (SP) of 20 books = Cost Price of 6 books = Rs. 6.

=> Loss = CP − SP = 20 − 6 = Rs. 14.

=> Loss % = (Loss ÷ CP) × 100 = (14 ÷ 20) × 100.

=> Loss % = 7 × 10 = 70%.

Therefore The correct answer is 70% loss.

Additional Information

Loss and Gain Percent

Profit or Loss is always calculated on the Cost Price unless otherwise stated in the problem.

Ratio Method

If CP of 'a' articles = SP of 'b' articles, then Profit or Loss % = ((a − b) ÷ b) × 100. Positive result denotes Profit, negative denotes Loss.

Q21. Answer: (d) Wife

Given:

1) B is the father of C.

2) Q is the sister of C.

3) T is the only sister of Q.

4) T is the child of S.

5) M is the son of S's only son.

Thus, S is B's wife.

Hence, the correct answer is "Option 4".

Q22. Answer: (d) Nizamabad

The Correct answer is Nizamabad.

Key Points

• The headquarters of the National Turmeric Board, established in 2025, is located in Nizamabad.

• Nizamabad is a city in the state of Telangana, India, and is well-known for its turmeric production.

• The region is often referred to as the "Turmeric City" due to its significant contribution to the cultivation and trade of turmeric.

• The establishment of the National Turmeric Board aims to promote the turmeric industry, encourage better farming practices, and enhance the global market presence of Indian turmeric.

• Nizamabad has a strategic advantage due to its proximity to turmeric-growing regions and its established trade links for exporting turmeric products.

• The board is expected to work on enhancing research and development for turmeric, improving farmer incomes, and ensuring sustainable farming practices.

Additional Information

• Kochi

• Kochi, located in the state of Kerala, is known as the "Queen of the Arabian Sea." It is a major port city and a hub for the spice trade in India.

• While Kochi plays a significant role in the spice industry, it is not specifically associated with turmeric production.

• Guntur

• Guntur is located in the state of Andhra Pradesh and is famous for the production of chili peppers.

• Although it is an important agricultural region, it is more associated with chili production than turmeric.

• Kolkata

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• Kolkata, the capital of West Bengal, is known for its cultural heritage and as a major economic and trade center in eastern India.
• It does not have a direct or major role in turmeric production or trade.

Q23. Answer: (a) 8

According to the given information,
Thus, 'I' is coded as '8'.
Hence, "Option 1" is the correct answer.

Q24. Answer: (c) Kali Linux

The Correct answer is Kali Linux.
Key Points
• Kali Linux is a specialized operating system widely used in ethical hacking, penetration testing, and cybersecurity tasks.
• It is based on Debian Linux and comes with a wide array of pre-installed tools designed for digital forensics and information security.
• Kali Linux is maintained and developed by Offensive Security, a leading organization in cybersecurity training and solutions.
• Some of the popular tools included in Kali Linux are Nmap, Wireshark, Metasploit, John the Ripper, and Aircrack-ng.
• It supports a variety of platforms, including laptops, desktops, Raspberry Pi, and mobile devices.
• Kali Linux allows ethical hackers and security professionals to efficiently perform vulnerability assessments, security audits, and penetration testing.
• The operating system is open-source and provides strong community support, making it an excellent choice for cybersecurity enthusiasts and professionals.
• Kali Linux also includes advanced features such as customizable penetration testing environments, live boot options, and multi-language support.
Additional Information
• Ubuntu LTS
• Ubuntu is a popular Linux distribution based on Debian, known for its user-friendly interface and robust performance.
• It is primarily used for general computing tasks, software development, and server management.
• Ubuntu LTS (Long Term Support) versions receive regular updates and security patches for up to five years, making it ideal for stable and reliable systems.
• While it is versatile, it lacks the specialized tools pre-installed in Kali Linux that are essential for penetration testing and ethical hacking.
• macOS Ventura
• macOS Ventura is the latest version of Apple's operating system for Mac computers.
• It is known for its seamless integration with Apple’s ecosystem, smooth user experience, and advanced features like Stage Manager and Continuity Camera.
• macOS is primarily designed for general computing tasks, creative work, and software development.
• While macOS supports some cybersecurity tools, it is not specifically tailored for penetration testing or ethical hacking.
• Windows 10
• Windows 10 is one of the most widely used operating systems globally, developed by Microsoft.
• It is primarily designed for general computing tasks, gaming, and office productivity.
• Windows supports third-party cybersecurity tools but lacks the pre-installed penetration testing features found in Kali Linux.
• It is not an ideal choice for ethical hacking due to its closed-source nature and limited customization options for security professionals.

Q25. Answer: (d) 58%

Shortcut Trick
Compare marks directly with percentages since the Maximum Marks are the same.
621 marks → 69%
1 mark → 69 ÷ 621 %
522 marks → (69 ÷ 621) × 522 %
522 marks → (1 ÷ 9) × 522 = 58%
Therefore The correct answer is 58%.
Alternate Method
Given: Marks of Kalpana = 621, Percentage of Kalpana = 69%, Marks of Sudha = 522.

Formula Used: Maximum Marks = (Obtained Marks ÷ Percentage) × 100

=> Let the Maximum Marks be M.

=> 69% of M = 621

=> (69 ÷ 100) × M = 621

=> M = (621 × 100) ÷ 69 = 900

=> Sudha's Percentage = (Marks Scored ÷ Maximum Marks) × 100

=> Percentage = (522 ÷ 900) × 100

=> Percentage = 522 ÷ 9 = 58%

Therefore The correct answer is 58%.

Additional Information

Percentage Change

Percentage change = (Difference ÷ Original Value) × 100. Useful for comparing growth or decline.

Passing Marks Concept

Passing Marks = Total Marks × Passing Percentage. Often used in exam-based word problems.

Base Value consistency

When the base (Total Marks) is the same, values and percentages are directly proportional.

Q26. Answer: (c) Mouse

The Correct answer is Mouse.

Key Points

• A mouse is a crucial input device that translates physical movement, such as dragging or clicking, into digital signals for a computer system.

• It is widely used for tasks like navigation, object selection, and manipulation in graphical environments (e.g., operating systems, video games).

• The movement of the mouse is detected by either mechanical components (in older models) or advanced optical sensors (in modern devices).

• These movements are then converted into corresponding cursor movements on the computer screen, allowing precise control.

• The mouse often comes with additional buttons and a scroll wheel, enabling users to execute commands such as clicking, dragging, scrolling, and double-clicking.

• It can be connected to a computer via a USB cable or wirelessly through Bluetooth.

• The mouse has become an essential tool for interactive user interfaces and is pivotal in various fields such as designing, gaming, and data management.

Additional Information

• Scanner

• A scanner is an input device used to convert physical documents or images into digital format.

• It is not used for real-time navigation or object manipulation, but rather for digitizing printed material.

• Examples of scanners include flatbed scanners and barcode scanners.

• Microphone

• A microphone captures audio signals (sound) and converts them into digital signals for processing by a computer.

• It is used primarily for applications such as voice recording, speech recognition, and communication.

• However, it does not assist in navigation or graphical tasks.

• Keyboard

• A keyboard is an input device that allows users to input text, commands, and shortcuts into a computer system.

• It is primarily used for typing and interacting with software but does not convert physical movement into digital signals for graphical tasks.

• Modern keyboards often come with additional function keys and media controls.

Q27. Answer: (a) 6

Shortcut Trick

Assume all 34 notes are of Rs. 100 denomination.

Total amount → 34 × 100 = Rs. 3,400.

Excess amount → 3,400 − 3,100 = Rs. 300.

Difference in denomination → 100 − 50 = Rs. 50.

Number of Rs. 50 notes → 300 ÷ 50 = 6.

Therefore The correct answer is 6.

Alternate Method

Given:

Total amount = Rs. 3,100

Total number of notes = 34

Denominations = Rs. 50 and Rs. 100

Calculations:

=> Let the number of Rs. 50 notes be x and Rs. 100 notes be y.

=> x + y = 34 --- (Equation 1)

=> 50x + 100y = 3,100

=> 50(x + 2y) = 3,100

=> x + 2y = 62 --- (Equation 2)

=> Subtracting (Equation 1) from (Equation 2): (x + 2y) − (x + y) = 62 − 34

=> y = 28

=> x = 34 − 28 = 6

Therefore The correct answer is 6.

Additional Information

Linear Equation Method

Standard algebraic approach using variables to represent quantities and equating them to the total value and count.

Alligation Method

A faster way to find ratios by comparing weighted averages of two different groups to the overall mean value.

Denomination Problems

Total Value = (Quantity1 × Face Value1) + (Quantity2 × Face Value2).

Q28. Answer: (b) China

The Correct answer is China.

Key Points

• The McMahon Line is the boundary line that separates India from China.

• It was drawn during the Simla Convention of 1914, between British India and Tibet, with the presence of China.

• The line is named after Sir Henry McMahon, the then Foreign Secretary of British India, who represented India in the negotiations.

• This line is situated in the northeastern region of India, specifically along the state of Arunachal Pradesh, which China often claims as part of its territory.

• The McMahon Line runs for approximately 550 miles (885 kilometers).

• While India recognizes the McMahon Line as its legal boundary, China disputes this line, leading to border tensions between the two nations.

• The region around the McMahon Line is geopolitically sensitive and has been the site of conflicts, including the Sino-Indian War of 1962.

Additional Information

• Pakistan

• India shares its western border with Pakistan, marked primarily by the Radcliffe Line.

• The Radcliffe Line was drawn during the partition of India in 1947.

• The border between India and Pakistan is highly sensitive, with disputes over regions such as Kashmir.

• Nepal

• India shares an open border with Nepal, which is marked by the Mahakali River in certain regions.

• The India-Nepal Treaty of Peace and Friendship (1950) governs the bilateral relationship between the two countries.

• Citizens of both countries can travel across the border without requiring a visa or passport.

• Bhutan

• India shares its northeastern border with Bhutan.

• The border is defined by geographical features such as the Himalayas.

• India and Bhutan maintain strong diplomatic ties, and India assists Bhutan in its development projects.

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Q29. Answer: (c) 40

Shortcut Trick

Ratio of time = 80 : 64 = 5 : 4

Weighted Average Speed = [(Speed1 × Time Ratio1) + (Speed2 × Time Ratio2)] ÷ Total Ratio

Average Speed = [(20 × 5) + (65 × 4)] ÷ (5 + 4)

Average Speed = [100 + 260] ÷ 9 = 360 ÷ 9 = 40 m/min

Therefore The correct answer is 40 m/min.

Alternate Method

Given:

Speed1 = 20 m/min, Time1 = 80 min

Speed2 = 65 m/min, Time2 = 64 min

Formula Used:

Average Speed = Total Distance ÷ Total Time

Distance = Speed × Time

Calculations:

=> Distance1 = 20 × 80 = 1600 m

=> Distance2 = 65 × 64 = 4160 m

=> Total Distance = 1600 + 4160 = 5760 m

=> Total Time = 80 + 64 = 144 min

=> Average Speed = 5760 ÷ 144

=> Average Speed = 40 m/min

Therefore The correct answer is 40 m/min.

Additional Information

Average Speed (Equal Distances)

When two equal distances are covered at speeds u and v, Average Speed = (2 × u × v) ÷ (u + v).

Relative Speed

If two objects move in the same direction, relative speed is |u − v|. In opposite directions, it is (u + v).

Unit Conversion

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

Q30. Answer: (b) Article 51A (i)

The correct answer is Article 51A (i).

Key Points

• Article 51A outlines the Fundamental Duties of citizens under Part IV-A of the Indian Constitution.

• Article 51A (i) specifically mentions the duty of every citizen of India to safeguard public property and to abjure violence.

• The Fundamental Duties were added to the Constitution through the 42nd Amendment Act, 1976, based on the recommendations of the Swaran Singh Committee.

• These duties aim to remind citizens of their responsibility to contribute to the nation's well-being and ensure a harmonious social environment.

• The provision under Article 51A (i) is crucial for promoting a sense of responsibility among citizens to protect public assets and ensure that violence is avoided in public life.

• Public property refers to assets owned collectively by society, such as parks, government buildings, public transport, and infrastructure.

• Abjuring violence is essential for maintaining peace and order in society, ensuring that differences are resolved through non-violent means.

Additional Information

• Article 51A (h)

• Article 51A (h) mandates citizens to develop the scientific temper, humanism, and the spirit of inquiry and reform.

• This duty emphasizes fostering a culture of critical thinking and rationality among Indian citizens.

• Article 51A (k)

• Article 51A (k) obligates parents or guardians to provide opportunities for education to their children or wards between the ages of six and fourteen years.

• This duty is in alignment with the Right to Education (RTE) Act, 2009.

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• Article 51A (j)

• Article 51A (j) enjoins citizens to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of achievement.

• This duty encourages citizens to work towards both personal growth and the nation's development.

Q31. Answer: (c) Grid pattern streets

The Correct answer is Grid pattern streets.

Key Points

• The Harappan Civilization, also known as the Indus Valley Civilization, is renowned for its advanced urban planning and architectural design.

• One of the most unique and distinguishing features of Harappan town planning was the use of a grid pattern for streets.

• In this grid system, the streets were laid out in a structured pattern, intersecting at right angles, which created a well-organized city layout.

• This planning allowed for the division of the city into blocks or sectors, with separate areas designated for residential, commercial, and public activities.

• The grid system facilitated efficient drainage systems, as the streets were often equipped with advanced sewage channels and covered drains made of burnt bricks.

• This level of planning reflects the technical and engineering skills of the Harappan people, who prioritized hygiene, organization, and accessibility.

• Examples of cities with this type of layout include Mohenjo-Daro, Harappa, and Lothal.

• The grid pattern streets also indicate that the civilization had a centralized authority to regulate and implement urban planning policies.

Additional Information

• Irregular housing layout

• The Harappan Civilization's urban planning was the opposite of irregular housing layouts. Houses were built in a standardized manner using baked bricks, with uniform sizes and layouts.

• Each house had access to a private well and drainage system, indicating a focus on uniformity and hygiene.

• Underground temples

• There is no evidence of underground temples in the Harappan Civilization. The Harappan culture is not known for monumental temple structures, unlike later Indian civilizations.

• Instead, they focused on functional urban structures like the Great Bath at Mohenjo-Daro, which may have had a ritualistic or communal purpose.

• Circular forts

• The Harappans did not construct circular forts. Instead, they built rectangular fortified areas or citadels for administrative and protective purposes.

• These citadels were often raised on mud-brick platforms to safeguard against flooding.

Q32. Answer: (a) Rs. 13,467

Shortcut Trick

For half-yearly compounding, the Rate is halved and Time is doubled.

New Rate = 2% ÷ 2 = 1% per half-year | Periods (n) = 1 × 2 = 2

Effective Rate for 2 periods = x + y + (xy/100) => 1 + 1 + (1 × 1)/100 = 2.01%

Compound Interest = 2.01% of Rs. 6,70,000 => 6,70,000 × 0.0201 = Rs. 13,467

Therefore The correct answer is Rs. 13,467.

Alternate Method

Given: Principal (P) = Rs. 6,70,000, Annual Rate (R) = 2%, Time (T) = 1 year.

Formula Used: Amount (A) = $P(1 + r/100)^n$ and CI = A − P

=> Half-yearly rate (r) = 2% ÷ 2 = 1%

=> Number of half-years (n) = 1 × 2 = 2

=> $A = 6,70,000 \times (1 + 1/100)^2$

=> $A = 6,70,000 \times (1.01)^2$

=> A = 6,70,000 × 1.0201 = Rs. 6,83,467

=> CI = 6,83,467 − 6,70,000

=> CI = Rs. 13,467

Therefore The correct answer is Rs. 13,467.

Additional Information

Half-Yearly Compounding Rule

When interest is compounded half-yearly, the annual rate R becomes R/2 and the time T becomes 2T.

Effective Rate Formula

For two periods with rate r%, the effective percentage rate is calculated as [r + r + (r×r)/100] %.

CI vs SI for 2 Years

The difference between Compound Interest and Simple Interest for 2 years is $P(R/100)^2$.

Q33. Answer: (b) 6

Shortcut Trick

Given: $\sqrt{3}\tan A = 3\sin A$

=> $\sqrt{3}(\sin A/\cos A) = 3\sin A$

=> $\cos A = \sqrt{3}/3 = 1/\sqrt{3}$

Value required: $2\sqrt{3}\operatorname{cosec}A \times \tan A = 2\sqrt{3}(1/\sin A) \times (\sin A/\cos A) = 2\sqrt{3}/\cos A$

=> $2\sqrt{3} \div (1/\sqrt{3}) = 2\sqrt{3} \times \sqrt{3} = 6$

Therefore The correct answer is 6.

Alternate Method

Given: $\sqrt{3}\tan A = 3\sin A$

Formula Used: $\tan A = \sin A/\cos A$, $\operatorname{cosec}A = 1/\sin A$

=> $\sqrt{3}(\sin A/\cos A) = 3\sin A$

=> $1/\cos A = 3/\sqrt{3}$

=> $\cos A = \sqrt{3}/3 = 1/\sqrt{3}$

=> Base (B) = 1, Hypotenuse (H) = $\sqrt{3}$

=> Perpendicular (P) = $\sqrt{(H^2 - B^2)} = \sqrt{(3 - 1)} = \sqrt{2}$

=> Target expression = $2\sqrt{3}\operatorname{cosec}A \times \tan A$

=> Target expression = $2\sqrt{3} \times (H/P) \times (P/B) = 2\sqrt{3} \times (H/B)$

=> Target expression = $2\sqrt{3} \times (\sqrt{3}/1)$

=> $2 \times 3 = 6$

Therefore The correct answer is 6.

Additional Information

Trigonometric Identities

Fundamental relations: $\tan A = \sin A/\cos A$, $\cot A = \cos A/\sin A$, and $\sin^2 A + \cos^2 A = 1$.

Reciprocal Ratios

$\operatorname{cosec}A = 1/\sin A$, $\sec A = 1/\cos A$, and $\cot A = 1/\tan A$.

Pythagoras Theorem

In a right-angled triangle, $P^2 + B^2 = H^2$ where P is perpendicular, B is base, and H is hypotenuse.

Q34. Answer: (d) 0.89%

The Correct answer is 0.89%.

Key Points

• As per the Socio-Economic Caste Census (SECC) 2011, a certain percentage of households were classified as the poorest of the poor.

• The SECC 2011 was a comprehensive survey conducted to identify households living below the poverty line and collect data about their socio-economic conditions.

• The classification as "poorest of the poor" is based on multiple indicators such as income levels, assets, housing conditions, and access to basic amenities.

• The correct percentage in this context is 0.0089, which denotes the proportion of households identified under this category.

• This data is crucial for the formulation of targeted policies and programs by the government to address extreme poverty and improve the living conditions of affected households.

• SECC 2011 not only aids in identifying beneficiaries for various welfare schemes but also provides a detailed understanding of socio-economic disparities across different regions of India.

Additional Information

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• Socio-Economic Caste Census (SECC) 2011

• SECC 2011 was conducted jointly by the Ministry of Rural Development, Ministry of Housing and Urban Poverty Alleviation, and the Registrar General of India.

• The SECC collected data on various aspects such as education, employment, caste, housing, and income levels.

• The SECC was instrumental in identifying beneficiaries for government schemes like Pradhan Mantri Awas Yojana and National Food Security Act.

• Indicators Used for Classification

• The classification of households under categories like "poorest of the poor" was based on indicators such as household income, access to drinking water, sanitation facilities, and employment type.

• These indicators help in determining the extent of deprivation and socio-economic challenges faced by households.

Q35. Answer: (c) G

Given: Seven boxes D, E, F, G, S, T and U are kept one over the other.

1) Only F is kept above E.

2) Only four boxes are kept between E and D.

Boxes
F
E
D

3) Only two boxes are kept between T and U.

Boxes
F
E
T/U
T/U
D

4) G is kept immediately above S.

5) U is not kept immediately above G.

Boxes
F
E
T
G
S
U
D

Thus, G box is kept fourth from the top.

Hence, the correct answer is "Option 3".

Q36. Answer: (a) 85

Shortcut Trick

Combined efficiency of A + B = 1/15

Efficiency of A = 1/17

Efficiency of B = 1/15 − 1/17 = 2/255

Time for B to do 2/3 work = (2/3) ÷ (2/255) = (2/3) × (255/2) = 85 days

Therefore The correct answer is 85 days.

Alternate Method

Given: Time taken by (A+B) = 15 days, Time taken by A = 17 days.

Formula Used: Total Work = LCM of days; Efficiency = Total Work ÷ Days

Person	Days	Total Work	Efficiency
A + B	15	255	17
A	17	15	

=> Efficiency of B = Efficiency of (A+B) − Efficiency of A

=> Efficiency of B = 17 − 15 = 2 units/day

=> Two-third of the total work = 2/3 × 255 = 170 units

=> Time taken by B alone = 170 ÷ 2 = 85 days

Therefore The correct answer is 85 days.

Additional Information

Work and Efficiency Relationship

Efficiency is inversely proportional to the time taken to complete a task. Efficiency = Work ÷ Time.

Fractional Work

To find the time for a fraction of work, multiply the total time required for the full work by that fraction: Time_(part) = Fraction × Total Time.

Pipes and Cisterns

This concept follows the same logic as Time and Work, where filling pipes have positive efficiency and outlet pipes have negative efficiency.

Q37. Answer: (c) National Green Tribunal

The Correct answer is National Green Tribunal.

Key Points

• The National Green Tribunal (NGT) is a specialized judicial body established under the National Green Tribunal Act, 2010.

• Its primary purpose is to handle cases related to environmental protection and the conservation of forests and other natural resources.

• The NGT has the authority to take suo motu cognisance of environmental issues, which means it can initiate action on its own based on media reports or other information, as in the case of the news about 350 turtles found dead on the shore.

• Such cases are critical for addressing violations of environmental laws and ensuring compliance with the principles of sustainable development and environmental justice.

• The tribunal is empowered to provide relief, compensation, and restitution of property and the environment in such cases.

• The NGT operates in a time-bound manner to ensure swift disposal of cases and is guided by principles of natural justice.

• This tribunal has jurisdiction over all civil cases where a substantial question relating to the environment is involved, including those arising under laws like the Environment (Protection) Act, 1986, Forest (Conservation) Act, 1980, and Air (Prevention and Control of Pollution) Act, 1981.

Additional Information

• Supreme Court of India

• The Supreme Court is the highest judicial authority in India, established under Article 124 of the Constitution.

• It primarily deals with constitutional matters, appeals from lower courts, and cases of national importance.

• While the Supreme Court can address environmental issues, it does not typically take suo motu cognisance of specific environmental cases like the NGT does.

• High Court of Tamil Nadu

• The High Court of Tamil Nadu is the principal civil court of original jurisdiction in Tamil Nadu and handles cases under its territorial jurisdiction.

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• Though High Courts can hear environmental cases, they generally do not have the specialized expertise or mandate of the NGT for addressing environmental violations.

• High Court of Odisha

• The High Court of Odisha is the highest judicial body in the state of Odisha.

• It can hear cases concerning environmental issues within its state jurisdiction but lacks the pan-India jurisdiction and specialized focus of the NGT.

Q38. Answer: (d) Banihal Pass

The correct answer is Banihal Pass.

Key Points

• Banihal Pass is located in the Pir Panjal range of the Himalayas.

• This pass lies at an altitude of approximately 2,832 meters (9,291 feet).

• It connects the Kashmir Valley with the outer Himalayas and is an important route for transportation.

• The Jawahar Tunnel, one of the largest tunnels in India, is situated near the pass and facilitates travel between Jammu and Srinagar.

• Historically, Banihal Pass served as a crucial pathway for traders and travelers moving between the Kashmir Valley and other parts of India.

• The pass is surrounded by breathtaking landscapes and is known for its scenic beauty.

Additional Information

• Shipki La

• Shipki La Pass is located in the Himachal Pradesh region of India.

• This pass is situated on the Indo-China border and serves as a trade route between India and Tibet.

• It is part of the Greater Himalayas, not the Pir Panjal range.

• The river Sutlej enters India through Shipki La Pass.

• Zoji La

• Zoji La Pass is located on the National Highway 1 in the Indian state of Jammu and Kashmir.

• It connects Srinagar and Leh, serving as a gateway to the Ladakh region.

• Zoji La lies in the Greater Himalayas and is one of the highest passes in the region.

• This pass is known for its challenging terrain and extreme weather conditions.

• Nathu La

• Nathu La Pass is located in the state of Sikkim, India.

• It is an important pass along the Indo-China border and serves as a trade route between the two countries.

• Nathu La is part of the Eastern Himalayas, not the Pir Panjal range.

• This pass is renowned for its strategic significance and high-altitude location.

Q39. Answer: (b) Article 324

The Correct answer is Article 324.

Key Points

• Article 324 of the Indian Constitution provides for the establishment of the Election Commission of India (ECI).

• The Election Commission is responsible for the superintendence, direction, and control of elections to the Parliament, State Legislatures, and offices of the President and Vice-President of India.

• This article vests the power of conducting free and fair elections in an independent constitutional body, ensuring the democratic framework of the country.

• The Election Commission is a permanent and independent body to ensure that elections are conducted in a fair and unbiased manner.

• The Commission consists of the Chief Election Commissioner (CEC) and other Election Commissioners as the President may appoint.

• The powers and functions under Article 324 ensure autonomy and authority to the Election Commission to maintain the integrity of the electoral process in India.

• It is a vital provision to safeguard the principle of free and fair elections, which is the cornerstone of a democratic system.

Additional Information

• Article 326

• Article 326 deals with the elections to the House of the People and to the Legislative Assemblies of States based on adult suffrage.

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• It provides that every citizen who is not less than 18 years of age and is not otherwise disqualified under the Constitution or law is entitled to vote.
• Article 325
• Article 325 prohibits discrimination on the grounds of religion, race, caste, or sex in the electoral process.
• It ensures that no person is ineligible for inclusion in the electoral rolls on these discriminatory grounds.
• Article 327
• Article 327 gives the Parliament the power to make laws with respect to all matters relating to elections to the Legislature.
• This includes the preparation of electoral rolls, the conduct of elections, and any other related matters.

Q40. Answer: (c) 9072

Given:
Evaluate: 81 × 112
Formula used:
Direct multiplication formula: Multiply the two numbers directly.
Calculation:
81 × 112
=> Break it into simpler parts: (81 × 100) + (81 × 12)
=> (8100) + (972)
=> 8100 + 972 = 9072
Therefore The correct answer is option (3).

Q41. Answer: (b) 30°

The Correct answer is 30°.
Key Points
• The total approximate latitudinal extent of India is 30°, ranging from 8°4'N to 37°6'N.
• This latitudinal span contributes significantly to the diverse climatic zones found across India, including tropical, subtropical, and temperate regions.
• The southernmost point of India is Indira Point, located at 6°45'N in the Nicobar Islands.
• The northernmost point of India lies in the Union Territory of Ladakh and is near 37°6'N.
• The latitudinal extent plays a crucial role in determining the duration of daylight hours across various regions of the country.
• This span also influences the distribution of natural vegetation, agriculture, and even monsoonal patterns.
• It is important for geographical studies and helps understand India's position in the global context.

Q42. Answer: (b) Alexander Fleming

The Correct answer is Alexander Fleming.
Key Points
• Alexander Fleming discovered the antibacterial properties of a Penicillium fungus in 1929.
• He observed that a mold, later identified as Penicillium notatum, had killed bacteria surrounding it in a petri dish.
• This discovery led to the development of penicillin, the world’s first widely effective antibiotic.
• Penicillin was instrumental in treating bacterial infections during World War II, saving countless lives.
• Fleming’s work earned him the Nobel Prize in Physiology or Medicine in 1945, shared with Ernst Boris Chain and Howard Florey, who helped mass-produce penicillin.
• Penicillin revolutionized medicine and is considered one of the greatest discoveries in the field of microbiology and pharmacology.
Additional Information
• Paul Ehrlich
• Paul Ehrlich was a German scientist known for his work on immunology and the development of the first chemotherapy agent.
• He discovered the drug Salvarsan, which was used to treat syphilis.
• Ehrlich introduced the concept of a "magic bullet"—a drug that could target disease-causing organisms without harming the host.
• Antonie van Leeuwenhoek
• Antonie van Leeuwenhoek was a Dutch scientist who is known as the "Father of Microbiology."
• He was the first to observe and describe microorganisms, such as bacteria and protozoa, using a microscope.
• His discoveries laid the foundation for the field of microbiology.

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• Marie Curie

• Marie Curie was a Polish-French scientist known for her groundbreaking research on radioactivity.

• She was the first woman to win a Nobel Prize and the only person to win Nobel Prizes in two different sciences (Physics and Chemistry).

• Her discoveries of radium and polonium were instrumental in the development of nuclear science and medicine.

Q43. Answer: (c) 52%

The Correct answer is 52%.

Key Points

• The Global Risks Perception Survey (GRPS) 2025 is a component of the Global Risks Report, which is published annually by the World Economic Forum (WEF).

• The survey gathers inputs from a wide range of stakeholders, including business leaders, economists, policymakers, and risk experts.

• As per the GRPS 2025, 52% of respondents believe that the turbulence outlook over the next two years will be significant.

• The term "turbulence outlook" refers to the anticipated volatility and uncertainty in global systems due to factors like geopolitical tensions, economic crises, climate change, and technological risks.

• This perception underscores the growing concerns about global instability and the need for robust mitigation strategies.

• The GRPS is a critical tool for identifying and prioritizing global risks, enabling policymakers and organizations to develop strategies to address these challenges effectively.

Additional Information

• Global Risks Report

• The Global Risks Report is published annually by the World Economic Forum (WEF).

• It highlights the most pressing risks facing the world and provides insights into their potential impact and interconnectedness.

• The report is based on data from the Global Risks Perception Survey and expert analysis.

• It covers risks across categories such as economic, environmental, geopolitical, societal, and technological risks.

• Importance of Understanding Risk Perception

• Risk perception is crucial for policymaking, as it helps governments and organizations prioritize and allocate resources effectively.

• It also aids in developing resilience strategies to mitigate the impact of potential crises.

• Understanding risk trends allows for better preparation in areas such as disaster management, economic policy, and environmental protection.

Q44. Answer: (b) Pulses

The Correct answer is Pulses.

Key Points

• In February 2025, the Indian government announced a six-year program to boost the production of pulses. This initiative was introduced to reduce India's reliance on imports for this essential commodity.

• Pulses are an important source of plant-based protein and play a vital role in the Indian diet, especially for vegetarians.

• India is the world's largest producer, consumer, and importer of pulses, but domestic production has often fallen short of demand, leading to significant imports.

• The six-year program is expected to include measures such as government incentives, support for farmers, and the introduction of advanced agricultural techniques to increase yield.

• Pulses include varieties like chickpeas, lentils, black gram, green gram, and pigeon peas, which are extensively cultivated across different regions of India.

• The initiative aligns with India's larger goal of achieving self-sufficiency in agricultural production and reducing dependency on imported goods.

• Efforts to promote pulse production also contribute to the sustainability of agriculture, as pulses are known to enhance soil fertility by fixing nitrogen, reducing the need for chemical fertilizers.

• This program could also help stabilize the market prices of pulses, making them more affordable for consumers.

• The government may also encourage research and development in pulse cultivation, introducing disease-resistant and high-yield varieties.

Additional Information

• Wheat

• Wheat is one of the staple crops in India and is mainly grown in the northern regions such as Punjab, Haryana, Uttar Pradesh, Bihar, and Madhya Pradesh.

• India is a leading producer of wheat, and the country exports this crop to various international markets.
• The focus on pulses is critical as wheat production is already significant, and there is less dependence on imports for wheat.
• Rice
• Rice is the primary food crop for a large part of India's population, especially in southern and eastern states like West Bengal, Odisha, Andhra Pradesh, and Tamil Nadu.
• India is a major exporter of rice, including Basmati and non-Basmati varieties, and does not heavily rely on rice imports.
• Sugar
• Sugar production in India is already robust, with the country being one of the largest producers globally.
• Major sugar-producing states include Maharashtra, Uttar Pradesh, Karnataka, and Tamil Nadu.
• India exports sugar to several countries, reducing import dependence in this commodity.

Q45. Answer: (d) ±1,± 1/3

Shortcut Trick

Treat the equation as a quadratic in terms of x^(−2).

The factors for the quadratic $y^2 - 10y + 9 = 0$ are 9 and 1 (since 9 × 1 = 9 and 9 + 1 = 10).

Set x^(−2) = 9 => $x^2 = 1/9$ => x = ± 1/3.

Set x^(−2) = 1 => $x^2 = 1$ => x = ± 1.

Therefore The correct answer is ± 1, ± 1/3.

Alternate Method

Given:

The equation is x^(−4) − 10x^(−2) + 9 = 0.

Formula Used:

For an equation of the form $ax^{2n} + bx^n + c = 0$, we use substitution ($t = x^n$) to solve it as a quadratic.

Calculations:

=> Let t = x^(−2). Then, x^(−4) = $(x^{(-2)})^2 = t^2$.

=> substituting these in the original equation: $t^2 - 10t + 9 = 0$

=> $t^2 - 9t - t + 9 = 0$

=> t(t − 9) − 1(t − 9) = 0

=> (t − 9)(t − 1) = 0

=> t = 9 or t = 1

=> When t = 9: x^(−2) = 9 => $1/x^2 = 9$ => $x^2 = 1/9$ => x = ± 1/3

=> When t = 1: x^(−2) = 1 => $1/x^2 = 1$ => $x^2 = 1$ => x = ± 1

Combining the results, the roots are ± 1 and ± 1/3.

Therefore The correct answer is ± 1, ± 1/3.

Additional Information

Substitution in Higher-Degree Equations

Equations like ax^4 + bx^2 + c = 0 or ax^(−4) + bx^(−2) + c = 0 are called equations reducible to quadratic form. They are solved by replacing the middle variable term with a single letter.

Discriminant Rule

The number of real roots depends on the discriminant ($D = b^2 - 4ac$). In this case, D = $(-10)^2$ − 4(1)(9) = 100 − 36 = 64, which is a perfect square, leading to rational roots for t.

Negative Exponents Property

Always remember that $x^{(-n)} = 1/x^n$. When solving for x after finding t, ensure to take the reciprocal before calculating the square root.

Q46. Answer: (d) 168

Formula used:

Cross-multiplication: a/b = c/d => a × d = b × c

Calculation:

=> ? × ? = 56 × 504

=> $?^2 = 28224$

=> ? = √28224

=> ? = 168

Therefore The positive number is 168.

Q47. Answer: (d) 5,91,408

Shortcut Trick

Side of cube a = $\sqrt[3]{}$(1,09,41,048) = 222 cm.

Joining 5 cubes end to end creates a cuboid where Length = 5a, Width = a, and Height = a.

Lateral Surface Area (LSA) of cuboid = 2 × (L + W) × H = 2 × (5a + a) × a = $12a^2$.

LSA = 12 × 222^2 = 12 × 49,284 = 5,91,408 cm^2.

Therefore The correct answer is 5,91,408 cm^2.

Alternate Method

Given: Volume of each cube = 1,09,41,048 cm^3, Number of cubes = 5.

Formula: Volume of cube = a^3 | LSA of cuboid = 2(l + b)h

=> a^3 = 1,09,41,048

=> a = $\sqrt[3]{}$(1,09,41,048) = 222 cm

=> For the cuboid: Length (l) = 5 × 222 = 1110 cm

=> Breadth (b) = 222 cm, Height (h) = 222 cm

=> LSA = 2 × (1110 + 222) × 222

=> LSA = 2 × 1332 × 222

=> LSA = 2664 × 222 = 5,91,408 cm^2

Therefore The correct answer is 5,91,408 cm^2.

Additional Information

Total Surface Area of Cuboid

TSA = 2(lb + bh + hl). For 5 cubes joined end to end, TSA = $22a^2$.

Cube Root Calculation Trick

For 1,09,41,048: the last digit 8 implies the unit digit of cube root is 2. The remaining part 10941 lies between 22^3 (10648) and 23^3 (12167), so the root is 222.

Volume of Cuboid

Volume = Length × Breadth × Height. Here, it is 5 × individual cube volume.

Q48. Answer: (c) Canada

The Correct answer is Canada.

Key Points

• In November 2024, Canada reported its first-ever presumptive human case of H5 bird flu.

• The H5 strain is a type of avian influenza virus that primarily affects birds but can occasionally infect humans.

• The case was classified as “presumptive” due to the need for further confirmation through comprehensive testing.

• This development marked a significant event as it raised concerns about the potential zoonotic transmission and health risks associated with the virus.

• The World Health Organization (WHO) and Canadian health authorities closely monitored the situation to assess the risks and provide guidance.

• Canada has a robust healthcare and surveillance system, which helped in identifying and managing the case promptly.

• The event underscored the importance of maintaining strict biosecurity measures to prevent the spread of avian influenza among birds and humans.

• Efforts were directed towards identifying the source of the infection and ensuring that similar cases were avoided in the future.

Additional Information

• United States

• The United States has previously reported human cases of other types of avian influenza, but it has not been the first to report a presumptive H5 bird flu human case in November 2024.

• The country is known for its advanced epidemiological research and biosecurity measures.

• United Kingdom

• The United Kingdom has a well-established public health system but has not been associated with reporting the first human case of H5 bird flu in November 2024.

• It regularly monitors and manages avian influenza outbreaks, particularly in poultry farms.

• Australia

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• Australia has a geographically isolated ecosystem, reducing the spread of diseases like avian influenza.
• While the country deals with biosecurity risks, it was not the first to report a human case of H5 bird flu in November 2024.

Q49. Answer: (c) 640

Shortcut Trick
Ratio of coins = 16 : 8 : 20
Ratio of values (in Paisa) = (16 × 50) : (8 × 25) : (20 × 10) = 800 : 200 : 200 = 4 : 1 : 1
Total value units = 4 + 1 + 1 = 6 units → Rs. 384
Value of 10 Paisa coins = (1/6) × 384 = Rs. 64 = 6400 Paisa
Number of 10 Paisa coins = 6400 ÷ 10 = 640 coins
Therefore The correct answer is 640 coins.
Alternate Method
Given: Ratio of 50P : 25P : 10P coins = 16 : 8 : 20. Total amount = Rs. 384.
Formula Used: Total Value = ∑(Number of coins × Denomination value)
=> Let the number of coins be 16x, 8x, and 20x respectively.
=> Total value in Paisa = (16x × 50) + (8x × 25) + (20x × 10) = 384 × 100
=> 800x + 200x + 200x = 38400
=> 1200x = 38400
=> x = 38400 ÷ 1200 = 32
=> Number of 10 Paisa coins = 20x = 20 × 32 = 640
Therefore The correct answer is 640 coins.
Additional Information
Coin Ratio vs Value Ratio
To convert coin ratio to value ratio, multiply each part by its face value. To convert value ratio to coin ratio, divide each part by its face value.
Unit Consistency
Always ensure both sides of the equation are in the same units (either all in Rs. or all in Paisa). Note: Rs. 1 = 100 Paisa.
Compound Ratio
The total value of a bag is the sum of the products of the number of coins of each denomination and their respective values.

Q50. Answer: (b) 77

Shortcut Trick
Use the direct algebraic identity: $4ab = (a + b)^2 - (a - b)^2$.
Substitute the given values: $4ab = (24)^2 - 268$.
$4ab = 576 - 268 = 308$.
$ab = 308 \div 4 = 77$.
Therefore The correct answer is 77.
Alternate Method
Given:
Sum of two numbers $(a + b) = 24$
Square of the difference $(a - b)^2 = 268$
Formula Used:
Standard expansion of binomial squares: $(a + b)^2 = a^2 + b^2 + 2ab$ and $(a - b)^2 = a^2 + b^2 - 2ab$.
Calculations:
=> $(a + b)^2 = 24^2 = 576$
=> $a^2 + b^2 + 2ab = 576$ --- (Equation 1)
=> $a^2 + b^2 - 2ab = 268$ --- (Equation 2)
Subtracting Equation 2 from Equation 1:
=> $(a^2 + b^2 + 2ab) - (a^2 + b^2 - 2ab) = 576 - 268$
=> $4ab = 308$
=> $ab = 308 \div 4$
=> $ab = 77$

The product of a and b is found to be 77, which matches Option (2).

Therefore The correct answer is 77.

Additional Information

Fundamental Algebraic Identities

The relation between the sum and difference squares is: $(a + b)^2 - (a - b)^2 = 4ab$.

Sum of Squares Identity

Another useful identity is the sum of squares: $(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$.

Difference of Squares

The difference of two squares is factored as: $a^2 - b^2 = (a - b)(a + b)$.

Q51. Answer: (a) = CMY, % = ISE

The logic followed here is:

Given: # : UEQ :: QAM : %

Option 1) # = CMY, % = ISE → CMY : UEQ :: QAM : ISE

Option 2) # = FMY, % = ISE → FMY : UEQ :: QAM : ISE

Option 3) # = CMY, % = ISO → CMY : UEQ :: QAM : ISO

Option 4) # = CMY, % = IUE → CMY : UEQ :: QAM : IUE

Hence, "Option 1" is the correct answer.

Q52. Answer: (b) Punjab and Haryana

The Correct answer is Punjab and Haryana.

Key Points

• The Green Revolution was introduced in India during the 1960s to address food shortages and achieve self-sufficiency in food production.

• Punjab and Haryana were the initial focus regions for the Green Revolution because of their favorable conditions for agriculture, including fertile soil, adequate irrigation facilities, and progressive farmers.

• The success of the Green Revolution in these regions was largely due to the introduction of high-yielding varieties (HYVs) of seeds, chemical fertilizers, and pesticides.

• The availability of modern irrigation techniques, such as tube wells and canals, further boosted agricultural productivity in Punjab and Haryana.

• These regions became the breadbasket of India, contributing significantly to the nation's food grain production, particularly in wheat and rice.

• The Green Revolution transformed Punjab and Haryana into hubs of intensive farming, leading to increased agricultural output and reduced dependence on food imports.

• However, while it brought short-term benefits, it also caused long-term concerns like soil degradation, water depletion, and environmental pollution.

Additional Information

• Odisha and Assam

• Odisha and Assam are regions in eastern India that are characterized by high rainfall and flood-prone areas, which make them less suitable for the initial implementation of the Green Revolution.

• These states primarily practice subsistence farming and have a significant dependence on traditional agricultural methods.

• Unlike Punjab and Haryana, they lacked the infrastructure and irrigation facilities required for the adoption of Green Revolution technologies during its early phase.

• Bihar

• Bihar has fertile land and significant agricultural potential, but during the initial phase of the Green Revolution, it faced challenges such as lack of irrigation facilities, low mechanization, and poor infrastructure.

• While Bihar eventually benefited from the Green Revolution, it was not among the regions initially targeted for its implementation.

• Tamil Nadu

• Tamil Nadu is located in southern India, where agriculture is largely dependent on monsoon rains and irrigation systems.

• Although Tamil Nadu later adopted Green Revolution practices, its initial focus was not as prominent as Punjab and Haryana due to different agricultural conditions and priorities.

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Q53. Answer: (d) ISRO Propulsion Complex, Mahendragiri, Tamil Nadu

The Correct answer is ISRO Propulsion Complex, Mahendragiri, Tamil Nadu.

Key Points

• The ISRO Propulsion Complex (IPRC) is located at Mahendragiri in the state of Tamil Nadu.

• It is a specialized facility of the Indian Space Research Organisation (ISRO) dedicated to the research, development, and testing of propulsion systems.

• The semi-cryogenic engine, an advanced technology, is being developed to enhance ISRO's launch vehicle capabilities for carrying heavier payloads.

• The hot test conducted at IPRC is a crucial step for verifying the engine's performance, efficiency, and reliability.

• IPRC is equipped with sophisticated infrastructure for testing liquid propulsion engines and stages, making it the ideal location for such advanced testing.

• The engine is expected to play a vital role in the future missions of ISRO, including human spaceflight programs and heavy satellite launches.

• Mahendragiri has been a key site for ISRO's propulsion system development, contributing significantly to India's space exploration capabilities.

Additional Information

• Vikram Sarabhai Space Centre, Thiruvananthapuram, Kerala

• It is named after Dr. Vikram Sarabhai, the father of the Indian space program.

• Located in Thiruvananthapuram, Kerala, it is ISRO's primary center for the development of launch vehicles, spacecraft systems, and payloads.

• This center specializes in the development and testing of solid propulsion systems, unlike the IPRC, which focuses on liquid propulsion.

• Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh

• This is ISRO's primary launch site, located on an island in Andhra Pradesh.

• It is responsible for the assembly, integration, and launch of satellite launch vehicles.

• While it plays a crucial role in launches, it does not specialize in propulsion system testing like IPRC.

• Liquid Propulsion Systems Centre, Mahendragiri, Tamil Nadu

• This center is also involved in the development of liquid propulsion systems for launch vehicles and satellites.

• However, the ISRO Propulsion Complex (IPRC) at Mahendragiri is the specific facility for conducting hot tests of semi-cryogenic engines.

Q54. Answer: (c) Rs. 25,000 crore

The Correct answer is Rs. 25,000 crore.

Key Points

• The Union Budget 2025-26 announced the establishment of a Maritime Development Fund.

• This fund will have a total corpus of Rs. 25,000 crore.

• The primary objective of this fund is to boost the development and modernization of India's maritime sector.

• The maritime sector is crucial for India's economy as it handles approximately 95% of India's trade by volume and 70% by value.

• The establishment of the fund is expected to enhance port infrastructure, improve logistics efficiency, and promote sustainable practices within the sector.

• The fund will also support initiatives aimed at achieving the goals outlined in the Maritime India Vision 2030, which focuses on making India a leader in global maritime trade.

• This move aligns with the government's broader vision of leveraging India's strategic location and vast coastline to emerge as a maritime power.

Q55. Answer: (b) $640.3 billion

The Correct answer is $640.3 billion.

Key Points

• According to the Economic Survey 2024-25, India's foreign exchange reserves stood at $640.3 billion at the end of December 2024.

• Foreign exchange reserves are crucial for a country's economic stability, as they help in managing exchange rate fluctuations, supporting imports, and maintaining confidence in the economy.

• India's foreign exchange reserves include foreign currency assets, gold reserves, Special Drawing Rights (SDRs), and Reserve Tranche Position (RTP) in the International Monetary Fund (IMF).

• The increase in foreign exchange reserves is indicative of India's strong economic performance, robust capital inflows, and a

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surplus in the balance of payments.

• Foreign exchange reserves serve as a buffer against external shocks, such as global financial crises or sudden capital outflows.

• India's reserves rank among the highest globally, reflecting its position as a resilient economy in the face of global uncertainties.

Q56. Answer: (d) English East India Company

The Correct answer is English East India Company.

Key Points

• The English East India Company was established on 31st December 1600 through a royal charter issued by Queen Elizabeth I.

• This charter granted the company a monopoly over trade with all countries to the east of the Cape of Good Hope for a period of 15 years.

• The company's primary objective was to engage in the lucrative spice trade from the East Indies (modern-day Southeast Asia).

• The establishment of the English East India Company marked the beginning of British commercial and later political dominance in India.

• The company eventually transitioned from a trading corporation to a governing authority, playing a significant role in the colonization of India.

• The English East India Company was also involved in triangular trade, dealing in commodities like spices, tea, silk, and cotton.

• This company also laid the foundation for British imperial rule in India, which lasted until 1947.

Additional Information

• Austrian East India Company

• The Austrian East India Company was established much later in the 18th century and was primarily focused on trade in the Indian Ocean region.

• It was not as influential or long-lasting as the English East India Company.

• Danish East India Company

• The Danish East India Company was founded in 1616 and focused on trade in India and Southeast Asia.

• The Danes had limited influence in India, with settlements like Tranquebar in Tamil Nadu.

• Spanish East India Company

• The Spanish East India Company is not a historically recognized entity. Spain was primarily involved in trade and colonization in the Americas rather than in India or Southeast Asia.

Q57. Answer: (b) 71

Shortcut Trick

Arrange the data in ascending order: 12, 19, 24, 56, 70, 71, 77, 80, 88, 98, 99.

Count the number of terms: n = 11 (which is odd).

The Median is the middle term: ((11 + 1) ÷ 2) = 6^(th) term.

The 6^(th) term in the sorted list is 71.

Therefore The correct answer is 71.

Alternate Method

Given: Data set = {19, 98, 77, 24, 99, 71, 70, 56, 80, 12, 88}

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

Q58. Answer: (c) Lushai Uprising

The correct answer is Lushai Uprising.

Key Points

• The Lushai Uprising took place in the 19th century, not in the 20th century.

• This uprising occurred in 1877-79 in the regions now known as Mizoram.

• It involved the Lushai tribes rebelling against the British administration due to their intrusion into tribal territories and measures that threatened their autonomy.

• The uprising was a response to the British efforts to regulate the tribal way of life and prevent tribal raids into British-controlled areas.

• The British eventually subdued the rebellion, and the region was formally brought under British control through the creation of the Lushai Hills District.

• The Lushai Uprising holds historical significance as it reflects tribal resistance to colonial exploitation and intervention in their traditional way of life.

Additional Information

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• Kuki Uprising
• The Kuki Uprising took place during 1917-1919 in the Manipur region of Northeast India.
• It was a tribal revolt against the British policy of recruiting tribal men as laborers for World War I.
• The Kukis resisted colonial policies that disrupted their social and economic systems.
• Naga Revolt
• The Naga Revolt refers to the long-standing insurgency movement in the Northeast region of India.
• It gained momentum in the 20th century, with demands for Naga sovereignty and recognition of their distinct identity.
• The movement led to the formation of the Naga National Council and later the National Socialist Council of Nagaland.
• Bastar Rebellion
• The Bastar Rebellion (1910) occurred in the Bastar region of present-day Chhattisgarh.
• It was a tribal revolt against British colonial policies, particularly the exploitation of forests and tribal resources.
• The rebellion was led by tribal leaders like Gunda Dhur.

Q59. Answer: (c) Central Processing Unit

The Correct answer is Central Processing Unit.

Key Points

• The Central Processing Unit (CPU) is often referred to as the "brain of the computer".
• It is responsible for performing arithmetic, logic, control, and input/output operations as specified by the instructions in a program.
• The CPU comprises three key components:
• Arithmetic Logic Unit (ALU): Performs arithmetic and logical operations.
• Control Unit (CU): Directs the operations of the processor and coordinates with other computer components.
• Registers: Small storage units within the CPU used for quick data access.
• It processes data received from input devices and sends the output to output devices.
• The CPU interacts with the memory unit (RAM) to fetch, decode, and execute instructions.
• Modern CPUs are designed with multiple cores, allowing them to process multiple tasks simultaneously, improving performance.
• Examples of CPUs include processors from companies like Intel (e.g., Core i5, i7) and AMD (e.g., Ryzen 5, Ryzen 7).
• The performance of a CPU is measured in terms of its clock speed (e.g., GHz) and the number of cores.

Additional Information

• Computer Processing Utility
• This term is incorrect as there is no such established term in computer science.
• The word "Utility" generally refers to software tools used for system maintenance or performance enhancement, not a hardware component like the CPU.
• Central Programming Unit
• This is an incorrect term. The CPU does not specifically deal with programming but rather the execution of instructions from programs.
• Programming is typically done using software tools like compilers, interpreters, or IDEs, not the CPU directly.
• Control Processing Unit
• This term is incorrect. While the CPU includes a Control Unit (CU), the entire unit is not referred to as the "Control Processing Unit."
• The Control Unit is just one of the components of the CPU, alongside the ALU and Registers.

Q60. Answer: (d) 41.1

Shortcut Trick

Net change in Sum = Correct value − Wrong value = 43 − 32 = +11

Change in Average = Net change in Sum ÷ Total observations = 11 ÷ 10 = +1.1

Correct Average = Old Average + Change in Average = 40 + 1.1 = 41.1

Therefore The correct answer is 41.1.

Alternate Method

Given:

Total observations (n) = 10 | Old Average = 40 | Wrong value = 32 | Correct value = 43

Formula: Correct Average = (Old Sum − Wrong Value + Correct Value) ÷ n

=> Old Sum = Average × Number of observations = 40 × 10 = 400

=> Correct Sum = 400 − 32 + 43

=> Correct Sum = 411

=> Correct Average = 411 ÷ 10

=> Correct Average = 41.1

Therefore The correct answer is 41.1.

Additional Information

Weighted Average

When two groups with averages A1 and A2 and sizes n1 and n2 are combined, the combined average is (n1A1 + n2A2) ÷ (n1 + n2).

Arithmetic Mean Property

If each observation is increased by a constant value 'k', the new average also increases by 'k'. If multiplied by 'k', the new average becomes old average × k.

Correction Formula

Correct Average = Old Average + (Sum of Correct items − Sum of Incorrect items) ÷ Total items.

Q61. Answer: (a) Sri Lanka

The Correct answer is Sri Lanka.

Key Points

• Sri Lanka is an island nation located in the Indian Ocean, southeast of India.

• It does not share a land boundary with India. Instead, it is separated from India by the Palk Strait and the Gulf of Mannar.

• The shortest distance between India and Sri Lanka is approximately 30 km, across the Adam's Bridge (Rama's Bridge or Ram Setu).

• Although there is no land boundary, the two nations share historical, cultural, and economic ties.

• Sri Lanka is often referred to as the "Pearl of the Indian Ocean" due to its unique shape and strategic location.

Additional Information

• Myanmar

• Myanmar shares a land boundary with India along the northeastern region.

• The border length between India and Myanmar is approximately 1,643 km.

• Four Indian states share borders with Myanmar: Arunachal Pradesh, Nagaland, Manipur, and Mizoram.

• Myanmar is a part of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), which includes India as well.

• Bhutan

• Bhutan is a landlocked country in the Himalayan region and shares a land boundary with India.

• The India-Bhutan border is approximately 699 km long.

• Indian states sharing borders with Bhutan include Arunachal Pradesh, Assam, West Bengal, and Sikkim.

• The relationship between India and Bhutan is guided by the Treaty of Friendship (1949, revised in 2007).

• Afghanistan

• Afghanistan shares a land boundary with India at the northeastern tip of Jammu and Kashmir (now part of Ladakh under Indian administration) through the Wakhan Corridor.

• The Durand Line separates Afghanistan from Pakistan, and indirectly, it has implications for the Indian border.

• However, the region near the India-Afghanistan border is remote and sparsely populated.

Q62. Answer: (d) 36

Shortcut Trick

For a continued proportion a : b :: b : c, the relation is $b^2 = ac$.

Given b = 18 and c = 4a → a = c ÷ 4.

Substitute: $18^2 = (c \div 4) \times c$ => $324 = c^2 \div 4$.

$c^2 = 324 \times 4 = 1296$.

$c = \sqrt{1296} = 36$.

Therefore The correct answer is 36.

Alternate Method

Given: a : b = b : c, c = 4a, b = 18

Formula Used: Product of means = Product of extremes

=> a/b = b/c

=> $b^2 = ac$

=> $(18)^2 = a \times (4a)$ [Since $c = 4a$]

=> $324 = 4a^2$

=> $a^2 = 324 \div 4 = 81$

=> $a = 9$

=> $c = 4 \times a = 4 \times 9$

=> $c = 36$

Therefore The correct answer is 36.

Additional Information

Mean Proportional

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

Third Proportional

In the proportion a : b :: b : c, c is known as the third proportional to a and b, calculated as $c = b^2/a$.

Fourth Proportional

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

Q63. Answer: (c) Aishwarya Rai Bachhan

The Correct answer is Aishwarya Rai Bachchan.

Key Points

• Aishwarya Rai Bachchan is one of the most accomplished actresses in Indian cinema and has won numerous awards throughout her career.

• She is a former Miss World (1994) and is globally recognized for her beauty, grace, and acting skills.

• She has acted in a variety of films across multiple languages, including Hindi, Tamil, Telugu, Bengali, and English.

• Some of her critically acclaimed performances include roles in movies like Devdas, Guru, Chokher Bali, Raincoat, and Ponniyin Selvan.

• She has also been awarded the Padma Shri by the Government of India for her contributions to the arts.

• At the South Indian International Movie Awards (SIIMA) 2024, she won the Best Actress Award (Critics), highlighting her outstanding performance and dedication to her craft.

• SIIMA is a prestigious award ceremony that celebrates the excellence of South Indian cinema and includes categories for Telugu, Tamil, Kannada, and Malayalam films.

Additional Information

• Alia Bhatt

• Alia Bhatt is a leading Bollywood actress known for her versatile performances in films such as Raazi, Gully Boy, and Gangubai Kathiawadi.

• She has also won several awards, including Filmfare Awards.

• In recent years, she has expanded her career internationally with her debut in Hollywood through the film Heart of Stone.

• Shraddha Kapoor

• Shraddha Kapoor is known for her roles in films like Aashiqui 2, Ek Villain, and Stree.

• She is popular for her charming screen presence and versatility in playing both romantic and thriller roles.

• She is also recognized for her singing abilities and has sung tracks in her movies.

• Deepika Padukone

• Deepika Padukone is a globally acclaimed actress known for her roles in films like Padmaavat, Bajirao Mastani, and Chennai Express.

• She has won multiple awards, including Filmfare Awards and has been named among the 100 most influential people in the world by Time magazine.

• She is also an advocate for mental health awareness and founded the Live Love Laugh Foundation.

Q64. Answer: (d) Section breaks allow for different page numbering schemes, headers, and footers within the same document, w...

The Correct answer is Section breaks allow for different page numbering schemes, headers, and footers within the same document, while page breaks only force content to the next page.

Key Points

• Section Breaks in MS Word allow users to divide a document into distinct sections, each with its own formatting.

• They facilitate the use of different page numbering styles such as Roman numerals, Arabic numbers, or no numbering in specific

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sections.

• Enable the customization of headers and footers for each section, making it possible to have unique content in these areas.

• Useful for documents where some pages require landscape orientation and others require portrait orientation, as section breaks allow for different page layouts.

• Provide flexibility to apply distinct margins, columns, and paper sizes to specific parts of a document.

• While Page Breaks only force the content to move to the next page, Section Breaks offer advanced formatting control that is essential in professional or lengthy documents.

• Ideal for creating reports, books, and proposals where formatting consistency and customizability are required across different sections.

Q65. Answer: (b) 159804

Shortcut Trick

Working backwards using successive quotients 4, 5, 9 and last divisor 18:

Third divisor (HCF) = 18

Second divisor = 18 × 9 = 162

First divisor (Number 2) = 162 × 5 + 18 = 828

Dividend (Number 1) = 828 × 4 + 162 = 3474

LCM = (3474 × 828) ÷ 18 = 3474 × 46 = 159804

Therefore The correct answer is 159804.

Alternate Method

Given: Quotients = 4, 5, 9; Last divisor = 18.

Formula Used: Dividend = (Divisor × Quotient) + Remainder; LCM × HCF = Product of two numbers.

=> Step 3: Last divisor is 18 and quotient is 9. Remainder is 0.

=> Divisor in Step 3 = 18 × 9 + 0 = 162. (This was the remainder of Step 2)

=> Step 2: Quotient is 5 and remainder is 18.

=> Divisor in Step 2 = 162 × 5 + 18 = 810 + 18 = 828. (This was the remainder of Step 1)

=> Step 1: Quotient is 4 and remainder is 162.

=> Dividend = 828 × 4 + 162 = 3312 + 162 = 3474.

=> Two numbers are 3474 and 828. HCF = 18.

=> LCM = (3474 × 828) ÷ 18 = 3474 × 46 = 159804.

Therefore The correct answer is 159804.

Additional Information

Long Division Method for HCF

Also known as the Euclidean Algorithm, where the divisor of the last step (where remainder is zero) is the HCF.

LCM and HCF Relationship

For any two numbers 'a' and 'b', Product of numbers = HCF(a, b) × LCM(a, b).

Properties of HCF

HCF is always a factor of the difference between the two numbers and also a factor of their LCM.

Q66. Answer: (a) 4 km to the east

Given:

Mr. KLM starts from Point A and drives 21 km towards the south.

He then takes a left turn, drives 7 km, turns left and drives 26 km.

He then takes a left turn and drives 11 km.

He takes a final left turn, drives 5 km and stops at Point P.

Thus, Mr. KLM should drive 4 km (11 km - 7 km) in the east direction in order to reach Point A again.

Hence, "Option 1" is the correct answer.

Q67. Answer: (b) -2

Given: (Left) 951 474 717 497 127 (Right)

According to the question:

Given numbers	**951**	**474**	**717**	**497**	**127**

Number are arranged in ascending order	127	474	497	717	951

So,

First digit of the highest number → 951 → 9

Third digit of the lowest number → 127 → 7

Thus, if the first digit of the highest number is subtracted from the third digit of the lowest number then the resultant will be → 7 - 9 → -2

Hence, the correct answer is "Option 2".

Q68. Answer: (d) 48.16%

Shortcut Trick

Net discount for 28% and 20% = 28 + 20 − (28 × 20) ÷ 100 = 48 − 5.6 = 42.4%.

Net discount for 42.4% and 10% = 42.4 + 10 − (42.4 × 10) ÷ 100.

=> 52.4 − 4.24 = 48.16%.

Therefore The correct answer is 48.16%.

Alternate Method

Given: Successive discounts of 28%, 20%, and 10%.

Formula: SP = MP × (100 − d1)% × (100 − d2)% × (100 − d3)%

Let the Marked Price (MP) be 100.

=> Selling Price (SP) = 100 × (72/100) × (80/100) × (90/100)

=> SP = 100 × 0.72 × 0.8 × 0.9 = 51.84.

=> Single Equivalent Discount = MP − SP = 100 − 51.84 = 48.16%.

Therefore The correct answer is 48.16%.

Additional Information

Successive Discount Formula

For two successive discounts a% and b%, the single equivalent discount is (a + b − ab/100)%.

Marked Price & Selling Price

Discount is always calculated on the Marked Price (MP). SP = MP − Discount.

Q69. Answer: (c) -5

Given: (Left) 983 986 481 941 167 (Right)

According to the question:

Given numbers	**983**	**986**	**481**	**941**	**167**
Number are arranged in ascending order	167	481	941	983	986

So,

Third digit of the highest number → 986 → 6

First digit of the lowest number → 167 → 1

Thus, if the third digit of the highest number is subtracted from the first digit of the lowest number then the resultant will be → 1 - 6 → -5

Hence, the correct answer is "Option 3".

Q70. Answer: (b) Vidarbha

The correct answer is Vidarbha.

Key Points

• Vidarbha was crowned the Ranji Trophy champion for the 2024-25 season, showcasing their dominance in Indian domestic cricket.

• The Ranji Trophy is one of the most prestigious domestic cricket tournaments in India, organized by the Board of Control for Cricket in India (BCCI).

• The tournament is named after Ranjitsinhji, the famous Indian cricketer, and it has been played since 1934-35.

• Vidarbha's cricket team represents the Vidarbha region in Maharashtra and is managed by the Vidarbha Cricket Association.

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• Vidarbha has shown remarkable growth in recent years, with consistent performances in domestic cricket.

• Key players in the team's success include seasoned cricketers and emerging talents who have contributed significantly to their victory.

• Vidarbha has previously won the Ranji Trophy titles in 2017-18 and 2018-19, making this their third title.

• Their victory highlights the strength of their domestic cricket infrastructure and the effective management by the Vidarbha Cricket Association.

Additional Information

• Mumbai

• Mumbai holds the record for the most Ranji Trophy titles, with 41 titles to their name.

• They are known as the powerhouse of Indian domestic cricket, producing legendary cricketers such as Sachin Tendulkar, Sunil Gavaskar, and Rohit Sharma.

• Kerala

• Kerala is a relatively new entrant in the domestic cricket scene, and their performance has improved in recent years.

• Although they have not won the Ranji Trophy, the team has produced notable players like Sanju Samson.

• Tamil Nadu

• Tamil Nadu has won the Ranji Trophy twice, in 1954-55 and 1987-88.

• The state is known for its strong cricketing culture and has contributed players like Ravichandran Ashwin and Dinesh Karthik.

Q71. Answer: (d) Chaturang

The Correct answer is Chaturang.

Key Points

• Chaturang is not a part of the Carnatic style of composition.

• It is a unique form of composition in the Hindustani classical music tradition.

• The term "Chaturang" translates to "four colors" or "four aspects," representing its structure, which includes four distinct components - lyrics, sargam (solfege), tarana, and rhythmic patterns.

• Chaturang is often composed to showcase the richness and diversity of Hindustani music.

• Unlike Carnatic music compositions, Chaturang does not follow the framework of Pallavi, Anupallavi, and Charanam, which are integral to Carnatic music.

• This distinction clearly separates Chaturang from the Carnatic style.

Additional Information

• Varnam

• Varnam is a fundamental composition in Carnatic music and is often used as a warm-up piece for vocalists and instrumentalists.

• It combines intricate melodic patterns with rhythmic variations.

• Varnams are performed at the beginning of a concert and serve as an ideal demonstration of a raga's structure and essence.

• Pallavi

• The Pallavi is the opening section of a Carnatic composition and acts as the main theme.

• It is repeated multiple times during a performance and forms the foundation for improvisation.

• It is a distinctive feature of Carnatic music compositions.

• Ragamalika

• Ragamalika translates to "garland of ragas" and is a type of composition in Carnatic music.

• It involves the use of multiple ragas within a single composition.

• Ragamalikas are often used to demonstrate the composer's creativity and ability to transition smoothly between ragas.

Q72. Answer: (a) Its stable double-helical structure

The Correct answer is Its stable double-helical structure.

Key Points

• The double-helical structure of DNA is stabilized by hydrogen bonds between the nitrogenous bases and hydrophobic interactions among the base pairs.

• This stable structure ensures the faithful replication and preservation of genetic information across generations.

• The stability of DNA allows it to resist degradation and maintain its integrity, making it the most abundant genetic material.

• The backbone of DNA is made up of phosphate and deoxyribose sugar, which contributes to its chemical resilience.

• The structure also facilitates the precise pairing of bases (adenine with thymine, and cytosine with guanine), ensuring accurate genetic coding.

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• The stability of DNA is further enhanced by its ability to interact with histones and other proteins, which help compact and protect it within chromosomes.

Additional Information

• Its high mutation rate

• A high mutation rate would make DNA unstable and less reliable for preserving genetic information.

• While mutations play a role in evolution, excessive mutations can lead to genetic disorders and errors in replication.

• Its interaction with proteins

• DNA interacts with proteins like histones to form chromatin; however, this feature is not directly responsible for DNA being the most abundant genetic material.

• Protein interactions primarily help in packaging and regulation of genetic material.

• Its enzymatic roles

• DNA itself does not perform enzymatic roles; instead, enzymes like DNA polymerase and helicase act on DNA during replication and repair.

• Enzymatic roles are more relevant to RNA, which can act as a ribozyme (catalytic RNA).

Q73. Answer: (a) 8

Given number: 1862547

According to the question,

Given number	1	8	6	2	5	4	7
Odd digit → (+1) Even digit → (-2)	(+1)	(-2)	(-2)	(-2)	(+1)	(-2)	(+1)
New number	2	6	4	0	6	2	8

Difference between the highest and lowest digits → 8 - 0 = 8

Hence, the correct answer is "Option 1".

Q74. Answer: (d) Only conclusion (II) follows

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

Conclusions:

(I) Some drape are curtain → Does not follow (As all curtain are blinder and some blinder are drape. So it is possible but not definite.)

(II) Some blinder are screen → Follow (As all curtain are screen and all curtain are blinder. As whole curtains comes in both screen and binder, therefore it is true)

Therefore Here, Only conclusion (II) follows.

Hence, the correct answer is "Option 4".

Q75. Answer: (c) Each minister is the political head of his/her ministry

The Correct answer is Each minister is the political head of his/her ministry.

Key Points

• The Union Council of Ministers is the executive authority in India, responsible for the administration of the country under the guidance of the Prime Minister.

• Each minister is designated as the political head of his/her ministry, meaning they are responsible for setting policies, making decisions, and ensuring the implementation of laws within their respective departments.

• Ministers work in collaboration with civil servants who are tasked with operational execution, providing expertise, and implementing policies laid down by the government.

• The political leadership of ministers ensures that the actions of their ministry align with the government's vision and objectives, as well as the interests of the public.

• This structure is derived from the Westminster system, where the ministers are accountable to the legislature and indirectly to the public.

• The Union Council of Ministers operates under the framework of the Indian Constitution, particularly Articles 74 and 75, which define its composition, functions, and roles.

Additional Information

• Ministers leave all work operations to be done by civil servants

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• While civil servants play a crucial role in the implementation of policies, ministers do not leave all operations to them. Ministers act as the political heads, guiding the civil servants in alignment with government goals.

• Centralisation of power in local bodies

• This is incorrect because the Union Council of Ministers is responsible for national-level governance, not local bodies. Local governance is handled by Panchayati Raj Institutions and urban municipal bodies under the provisions of the Constitution.

• The abolition of the role of the Secretary

• The role of the Secretary is integral in ministries. Secretaries are senior civil servants who assist ministers by providing expertise, advice, and administrative support.

• They ensure the smooth functioning of ministries and the execution of policy decisions.

Q76. Answer: (c) 854

Shortcut Trick

Identify two Numbers whose Product is 45 and Sum is 14.

Factors of 45 are (1, 45), (3, 15), and (5, 9).

Only the pair (9, 5) satisfies the condition: 9 + 5 = 14 and 9 × 5 = 45.

Sum of Cubes = $9^3 + 5^3 = 729 + 125 = 854$.

Therefore The correct answer is 854.

Alternate Method

Given:

=> Sum of numbers (x + y) = 14

=> Product of numbers (xy) = 45

Formula Used:

=> $x^3 + y^3 = (x + y)^3 - 3xy(x + y)$

Calculations:

=> $x^3 + y^3 = (14)^3 - 3 \times 45 \times (14)$

=> $x^3 + y^3 = 2744 - 135 \times 14$

=> $x^3 + y^3 = 2744 - 1890$

=> $x^3 + y^3 = 854$

The calculated value matches the third option.

Therefore The correct answer is 854.

Additional Information

Sum of Cubes Identity

The expression can also be factored as $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$.

Difference of Cubes

Similarly, for the difference, use the identity $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$.

Square of a Sum

To find $x^2 + y^2$ independently, use $(x + y)^2 - 2xy$.

Q77. Answer: (c) 53

The logic followed here is:

Hence, the correct answer is "Option 3".

Q78. Answer: (c) 14%

Shortcut Trick

Initial Cost = Rs. 1,23,016 | Final Cost = Rs. 1,40,203

Increase = 1,40,203 − 1,23,016 = 17,187

Percentage Increase ≈ (17187 ÷ 123016) × 100

Since 12,301 is 10% and 1,230 is 1%, 17,187 is roughly 10% + 4% = 14%.

Therefore The correct answer is 14%.

Alternate Method

Given:

Present Cost (Original Value) = Rs. 1,23,016

Future Cost (New Value) = Rs. 1,40,203

Formula Used:

Percentage Increase = [(New Value − Original Value) ÷ Original Value] × 100

Calculations:

=> Actual Increase = 1,40,203 − 1,23,016

=> Actual Increase = Rs. 17,187

=> % Increase = (17,187 ÷ 1,23,016) × 100

=> % Increase = 1,718,700 ÷ 1,23,016

=> % Increase = 13.971%

=> Rounding off to the nearest integer, we get 14%.

Therefore The correct answer is 14%.

Additional Information

Percentage Change

It represents the degree of change over time. Formula: [(Final − Initial) ÷ Initial] × 100.

Rounding Off Rules

If the digit after the decimal is 5 or more, round up to the next integer. Here 13.97 becomes 14.

Appreciation and Depreciation

Increase in value of an asset like a house is called Appreciation, while a decrease is Depreciation.

Q79. Answer: (a) 986

The logic followed here is:

Hence, the correct answer is "Option 1".

Q80. Answer: (d) It opens a search or find feature to locate text or items in files, webpages or applications.

The Correct answer is It opens a search or find feature to locate text or items in files, webpages or applications.

Key Points

• Ctrl + F is a widely used keyboard shortcut in Windows operating systems and other platforms.

• It is primarily used to open the Search or Find feature in various applications like web browsers, text editors, and file explorers.

• This shortcut helps users locate specific words, phrases, or items in documents, webpages, or files without manually scanning through them.

• The Find feature often includes additional options such as case sensitivity, whole-word search, or searching within specific sections.

• Applications like Google Chrome, Microsoft Word, Excel, and Notepad utilize this shortcut to enhance productivity and simplify navigation.

• In web browsers, Ctrl + F enables users to search for terms on a webpage, highlighting all instances of the searched term for easy identification.

• This functionality is crucial in scenarios like data analysis, content review, and locating critical information quickly.

• It is supported across multiple operating systems, including Windows, macOS (using Command + F), and Linux, making it a universal feature.

Additional Information

• Option 1: It forwards an email message to another recipient.

• This is typically achieved using the Forward button within email applications like Microsoft Outlook or Gmail, not via Ctrl + F.

• In certain email programs, Ctrl + F might forward the message, but it is not its universal function across all applications.

• Option 2: It checks and corrects spelling errors in text.

• Spelling and grammar checking are performed using tools like the Review tab in Microsoft Word or shortcuts such as F7.

• Ctrl + F does not have any role in correcting spelling errors.

• Option 3: It formats content in a document or application.

• Content formatting is typically carried out using shortcuts like Ctrl + B for bold text, Ctrl + I for italics, or Ctrl + U for underlining.

• Ctrl + F is not associated with formatting tasks.

Q81. Answer: (c) Only 1, 2 and 4

The Correct answer is Only 1, 2 and 4.

Key Points

• Statement 1: The Indian Navy evacuated injured crew members from MV Heilan Star, which was located west of Goa. This is correct as the operation indeed involved providing aid to this ship in distress.

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• Statement 2: A Sea King helicopter from INS Vikrant was used to airlift three injured crew members, including two Chinese nationals and one Indonesian national. This is accurate and highlights the humanitarian approach of the Indian Navy in assisting international crew members.

• Statement 4: After evacuation, the injured crew were flown to INS Hansa, Goa, for further transfer to a civil hospital. This is correct, as the operation involved facilitating medical care for the rescued personnel.

• Statement 3: This is incorrect because the operation was conducted solely by the Indian Navy, and there was no joint coordination with the Indian Air Force.

Additional Information

• Indian Navy

• The Indian Navy is a branch of the Indian Armed Forces responsible for safeguarding India's maritime interests.

• It is equipped with advanced vessels like aircraft carriers, submarines, and destroyers, such as the INS Vikrant, which was involved in this operation.

• The Indian Navy often undertakes Humanitarian Assistance and Disaster Relief (HADR) missions in the Indian Ocean Region.

• INS Vikrant

• INS Vikrant is India's first indigenously built aircraft carrier, commissioned in 2022.

• It serves as a critical asset in conducting naval operations, including search and rescue missions.

• The carrier is equipped with advanced technologies, including helicopters like the Sea King, which played a crucial role in this mission.

• Sea King Helicopter

• The Sea King helicopter is a versatile aircraft used for search and rescue, anti-submarine warfare, and transport missions.

• It is widely deployed by the Indian Navy due to its reliability and capability to operate in challenging conditions.

Q82. Answer: (d) 1

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) D lives on an odd numbered floor but not 5.

2) The sum of floors on which D and A live is 5.

Floor	People	
	Case 1	Case 2
6		
5		
4	A	
3		D
2		A
1	D	

3) Only 3 people live between A and F.

As there is no possible position for F in case 1, therefore is eliminated.

Floor	People
	Case 2
6	F
5	
4	
3	D
2	A
1	

4) B lives immediately above E.

After positioning B and E only one person is left which will be occupied by the only person left i.e. C

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

Thus, one person lives above B.

Hence, the correct answer is "Option 4".

Q83. Answer: (a) The Golden Threshold

The Correct answer is The Golden Threshold.

Key Points

• The Golden Threshold was the first collection of poems published by Sarojini Naidu in the year 1905.

• This collection established Sarojini Naidu as a significant poet in the Indian literary scene.

• The poems in this collection reflect her lyrical style, which was deeply influenced by Indian themes, culture, and traditions.

• The Golden Threshold is named after the residence of Sarojini Naidu in Hyderabad, which was also a hub for intellectual and political discussions.

• Her work in this collection combines elements of nature, love, and patriotism, showcasing her ability to weave rich imagery and metaphors.

• This publication was a stepping stone for her to gain recognition as the ‘Nightingale of India’.

• The collection was endorsed by prominent figures like Edmund Gosse, a renowned English critic, who admired her poetic talent and helped introduce her work to the Western world.

Additional Information

• Urvasie

• Urvasie is a character from Indian mythology, specifically in the tales of the Apsaras in Hindu texts.

• It is not a work of Sarojini Naidu but has been referenced in various Indian texts and poems.

• The term "Urvasie" is symbolic of beauty and divine charm.

• The Captive Lady

• The Captive Lady is not related to Sarojini Naidu’s works.

• This title is associated with Michael Madhusudan Dutt, a famous Bengali poet, who wrote an epic by this name.

• The poem is inspired by the tale of Prithviraj Chauhan and Sanyogita.

• Songs of the Dawn

• This is not a work by Sarojini Naidu.

• The term might have been mistaken for her lyrical and poetic style, but Songs of the Dawn does not belong to her literary oeuvre.

Q84. Answer: (a) HHO

The logic followed here is:

Hence, the correct answer is "Option 1".

Q85. Answer: (c) QJM

The logic followed here is:

Hence, the correct answer is "Option 3".

Q86. Answer: (a) 27

Given number: 4713562

According to the question,

Given number	4	7	1	3	5	6	2

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Odd digit → (+2) Even digit → (+2)	(+2)	(+2)	(+2)	(+2)	(+2)	(+2)	(+2)
New number	6	9	3	5	7	8	4

The sum of the last two and first two digits in the new number thus formed → 6 + 9 + 8 + 4 = 27

Hence, the correct answer is "Option 1".

Q87. Answer: (c) 144 : 385

Shortcut Trick

Side ratio of ΔBDE to ΔBAC = BD : (BD + AD) = 12 : (12 + 11) = 12 : 23.

Area ratio of ΔBDE to ΔBAC = $12^2 : 23^2 = 144 : 529$.

Area of trapezium ADEC = Area(ΔBAC) − Area(ΔBDE) = 529 − 144 = 385 units.

Required ratio = Area(ΔBDE) : Area(trapezium ADEC) = 144 : 385.

Therefore The correct answer is 144 : 385.

Alternate Method

Given:

In ΔABC, DE || AC. BD = 12 cm and AD = 11 cm.

Formula Used:

If two triangles are similar, the ratio of their areas is equal to the square of the ratio of their corresponding sides.

Calculations:

=> Total length of side AB = BD + AD

=> AB = 12 + 11 = 23 cm

=> Since DE || AC, ΔBDE ~ ΔBAC (by AA similarity criterion)

=> Area(ΔBDE) ÷ Area(ΔBAC) = $(BD \div AB)^2$

=> Area(ΔBDE) ÷ Area(ΔBAC) = $(12 \div 23)^2 = 144 \div 529$

=> Let Area(ΔBDE) = 144 units and Area(ΔBAC) = 529 units

=> Area(trapezium ADEC) = Area(ΔBAC) − Area(ΔBDE)

=> Area(trapezium ADEC) = 529 − 144 = 385 units

=> Ratio = Area(ΔBDE) : Area(trapezium ADEC) = 144 : 385

Therefore The correct answer is 144 : 385.

Additional Information

Basic Proportionality Theorem (Thales Theorem)

If a line is drawn parallel to one side of a triangle, it divides the other two sides in the same ratio: BD/AD = BE/EC.

Area of Similar Triangles

The ratio of the areas of two similar triangles is equal to the square of the ratio of any two corresponding sides: Area1/Area2 = $(s1/s2)^2$.

AA Similarity Criterion

If two angles of one triangle are equal to two angles of another triangle, then the two triangles are similar.

Q88. Answer: (b) They were outsiders like landlords, moneylenders and officials exploiting tribal community

The correct answer is They were outsiders like landlords, moneylenders and officials exploiting tribal community.

Key Points

• The term 'Dikus' was used by tribal communities to refer to outsiders, such as landlords, moneylenders, traders, and British officials, who exploited them economically and socially.

• These outsiders disrupted the traditional tribal way of life by introducing exploitative systems like land revenue policies and imposing heavy taxes.

• The Dikus often manipulated tribal people into debt through unfair lending practices and forced them to work in bonded labor.

• The tribal communities, who primarily depended on the forest for their livelihood, faced hardships as the Dikus extracted resources and restricted access to forests.

• The interference of the Dikus led to the erosion of tribal autonomy and culture, creating resentment among the tribes.

• This oppression and exploitation by the Dikus became a major factor in igniting several early tribal revolts in India, such as the Santhal Rebellion (1855-56) and the Munda Rebellion (1899-1900).

• The tribal uprisings were attempts to resist the economic, social, and cultural domination of the Dikus and reclaim their traditional

way of life.

Additional Information

• 'Perceived Gods of the forests'

• This is incorrect, as 'Dikus' does not refer to forest deities or gods. Instead, it represents the external exploiters of tribal communities.

• British officials stationed in tribal areas

• While British officials were part of the Dikus, the term broadly includes other exploitative groups like landlords and moneylenders.

• Tribal priests encouraging rebellion

• This is incorrect, as 'Dikus' were outsiders and not part of the tribal community, including priests.

Q89. Answer: (d) JVP : GXN

The logic followed here is:

MWC : JYA

And,

KUR : HWP

Similarly,

Option 4) JVP : GXN

Hence, "Option 4" is the correct answer.

Q90. Answer: (c) 1976

The Correct answer is 1976.

Key Points

• The provision for free legal aid to the poor was added to the Directive Principles of State Policy in the Indian Constitution through the 42nd Amendment Act of 1976.

• This amendment introduced Article 39A, which directs the State to promote justice on the basis of equal opportunity and provide free legal aid to ensure that no citizen is denied access to justice due to economic or other disabilities.

• The Directive Principles of State Policy (DPSP) are non-justiciable guidelines for the government to ensure socio-economic welfare and justice.

• The 42nd Amendment is often referred to as the “Mini Constitution” because it introduced significant changes to the Constitution, including provisions related to education, environment, and justice.

• This amendment played a crucial role in strengthening the welfare state ideology and ensuring social justice for marginalized sections of society.

• The concept of free legal aid was influenced by the United Nations’ Declaration of Human Rights, which emphasizes equal access to justice.

Additional Information

• 1978

• This year is significant for the 44th Amendment Act, which reversed some provisions of the 42nd Amendment but did not relate to free legal aid.

• The 44th Amendment restored certain rights and protections, such as the provision for property rights under Article 300A.

• 2011

• No major constitutional amendments related to free legal aid or Directive Principles occurred in this year.

• This year is more associated with judicial and legislative developments, such as the introduction of certain social welfare schemes and acts.

• 2002

• The 86th Amendment Act was passed in this year, which added the provision for free and compulsory education for children under Article 21A.

• This amendment was important for education but had no connection to free legal aid.

Q91. Answer: (b) 10

Given number: 9368547

According to the question,

Given	**9**	**3**	**6**	**8**	**5**	**4**	**7**

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Odd digit → (-2) Even digit → (+1)	(-2)	(-2)	(+1)	(+1)	(-2)	(+1)	(-2)
New number	7	1	7	9	3	5	5

The sum of the digits which are third from the left and third from the right in the new number thus formed → 7 + 3 = 10

Hence, the correct answer is "Option 2".

Q92. Answer: (b) 10

Shortcut Trick

For n consecutive odd or even numbers, the difference between the largest and smallest number is always 2 × (n − 1).

In this case, n = 6.

=> Difference = 2 × (6 − 1)

=> Difference = 2 × 5 = 10

Note: The average value (30) does not affect the difference between the numbers.

Therefore The correct answer is 10.

Alternate Method

Given: Average of 6 consecutive odd numbers = 30.

The average of an even count of consecutive numbers is the middle point between the two center-most numbers.

=> Middle two numbers are 30 − 1 and 30 + 1 (since they are odd).

=> 3rd number = 29 and 4th number = 31.

By finding all numbers in the sequence:

=> Sequence: 25, 27, 29, 31, 33, 35

=> Smallest number = 25

=> Largest number = 35

=> Difference = 35 − 25 = 10

Therefore The correct answer is 10.

Additional Information

Average of Consecutive Numbers

For an odd number of terms, the average is the middle term itself. For an even number of terms, the average is the mean of the two middle terms.

Difference Property

In any Arithmetic Progression (AP) with common difference 'd' and 'n' terms, the difference between the first and last term is always (n − 1) × d.

Sum of First n Odd Numbers

The sum of the first 'n' odd natural numbers starting from 1 is always n^2.

Q93. Answer: (a) 0.9

Shortcut Trick

Upstream speed (U) = 27.9 ÷ (39/60) = 42.92 kmph. Ratio speed: Water (x) = 9k, Stream (y) = 4k.

Upstream speed U = x − y = 5k. Downstream speed D = x + y = 13k.

Since 5k = 42.92, k = 8.584. U = 42.92, D = 13 × 8.584 = 111.592.

Time = (18.9 ÷ 42.92) + (51.3 ÷ 111.592) ≈ 0.44 + 0.46 = 0.9 hours.

Therefore The correct answer is 0.9 hours.

Alternate Method

Given:

Distance upstream1 = 27.9 km, Time1 = 39 min = 39/60 hours.

Ratio of Speed of Boat (x) to Speed of Stream (y) = 9 : 4.

Calculations:

=> Upstream speed (U) = Distance / Time = 27.9 ÷ (39/60) = (27.9 × 60) ÷ 39 = 1674 ÷ 39 = 42.923 kmph.

=> Let x = 9k and y = 4k. Then U = x − y = 5k.

=> 5k = 42.923 => k = 8.5846.

=> Downstream speed (D) = x + y = 13k = 13 × 8.5846 = 111.6 kmph.

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=> Time for 18.9 km upstream = 18.9 ÷ 42.923 ≈ 0.44 hours.

=> Time for 51.3 km downstream = 51.3 ÷ 111.6 ≈ 0.46 hours.

=> Total Time = 0.44 + 0.46 = 0.9 hours.

Therefore The correct answer is 0.9 hours.

Additional Information

Relative Speed in Water

Upstream Speed (U) = x − y and Downstream Speed (D) = x + y, where x is boat speed in still water and y is stream speed.

Speed Components

Boat speed in still water x = (D + U) ÷ 2 and Stream speed y = (D − U) ÷ 2.

Average Speed for Round Trip

Average Speed = (U × D) / x = ($x^2 - y^2$) / x kmph.

Q94. Answer: (c) It can only be invoked for enforcement of Fundamental Rights.

The Correct answer is It can only be invoked for enforcement of Fundamental Rights.

Key Points

• The Supreme Court's writ jurisdiction is provided under Article 32 of the Indian Constitution.

• It empowers the Supreme Court to issue writs for the enforcement of Fundamental Rights.

• Fundamental Rights are enshrined under Part III of the Indian Constitution, including rights such as Right to Equality, Right to Freedom, Right against Exploitation, Right to Constitutional Remedies, etc.

• The writ jurisdiction of the Supreme Court is considered a crucial mechanism for ensuring the protection of citizens' rights and maintaining the rule of law.

• The types of writs that can be issued include Habeas Corpus, Mandamus, Prohibition, Certiorari, and Quo Warranto.

• Article 32 is often referred to as the "Heart and Soul of the Constitution", as described by Dr. B.R. Ambedkar, due to its significant role in safeguarding Fundamental Rights.

• Unlike the High Courts, the Supreme Court's writ jurisdiction is limited to matters involving Fundamental Rights and does not extend to other legal rights.

Additional Information

• Option 1: It extends to both Fundamental Rights and other legal rights.

• This is incorrect because the Supreme Court's writ jurisdiction under Article 32 is restricted to the enforcement of Fundamental Rights only. It does not extend to other legal rights.

• However, High Courts under Article 226 can issue writs for both Fundamental Rights and other legal rights.

• Option 2: It is exclusive and cannot be exercised by the High Courts.

• This is incorrect as High Courts, under Article 226, also have writ jurisdiction, which is broader than the Supreme Court's jurisdiction under Article 32.

• The High Courts can issue writs for both Fundamental Rights and other legal rights.

• Option 4: It allows the Court to issue writs only against the Central Government.

• This is incorrect as writs can be issued against both the Central Government, State Governments, and even private individuals or entities where applicable.

Q95. Answer: (a) Water conservation systems

The Correct answer is Water conservation systems.

Key Points

• Dholavira, located in the present-day state of Gujarat, India, is one of the most prominent archaeological sites of the Indus Valley Civilization (IVC).

• The site is unique for its advanced and ingenious water conservation systems, which include reservoirs, step wells, and channels for water harvesting.

• The people of Dholavira constructed sophisticated systems to manage water, as the region is characterized by arid climatic conditions with limited rainfall.

• It is believed to be one of the earliest examples of urban water management in human history, showcasing the engineering and technological advancements of the civilization.

• The water conservation systems at Dholavira were essential for agriculture, drinking water, and other daily needs, making it a sustainable settlement in a harsh environment.

• Archaeological excavations have revealed massive water reservoirs, some of which are among the largest found in ancient civilizations.

• The ingenuity of the water systems highlights the importance of rainwater harvesting and resource management during the Indus

Valley Civilization.

• In 2021, Dholavira was declared a UNESCO World Heritage Site, further emphasizing its cultural and historical significance.

Additional Information

• Scripted seals

• Scripted seals are a hallmark of the Indus Valley Civilization, featuring the still undeciphered Indus script.

• They were primarily used for trade, identification, and administrative purposes.

• While seals have been found at Dholavira, the site is more renowned for its water conservation systems rather than scripted seals.

• Use of palm leaves

• Palm leaves were historically used for writing manuscripts in many ancient Indian cultures, but there is no evidence linking their use specifically to Dholavira.

• Rock-cut architecture

• Rock-cut architecture, such as caves and temples, is associated with later periods of Indian history, particularly the Buddhist, Jain, and Hindu traditions.

• Dholavira, being part of the Indus Valley Civilization, predates the development of rock-cut architecture in India.

Q96. Answer: (c) 1 km towards the west

Given:

Mr. I starts from Point M and drives 1 km towards the south.

He then takes a right turn, drives 3 km, turns left and drives 3 km.

He then takes a left turn and drives 4 km.

He takes a final left turn, drives 4 km and stops at Point N.

Thus, Mr. I should drive 1 km (4 km - 3 km) in the west direction in order to reach Point M again.

Hence, "Option 3" is the correct answer.

Q97. Answer: (a) 120

Shortcut Trick

For any quadrilateral whose diagonals are perpendicular bisectors of each other (which is a rhombus):

Area = (1 ÷ 2) × d1 × d2

180 = (1 ÷ 2) × 3 × d2

d2 = (180 × 2) ÷ 3 = 120 cm

Therefore The correct answer is 120 cm.

Alternate Method

Given:

Length of one diagonal (d1) = 3 cm

Area of the quadrilateral = 180 cm^2

Diagonals are perpendicular bisectors of each other.

Formula Used:

A quadrilateral whose diagonals are perpendicular bisectors of each other is a rhombus.

Area of a rhombus = (1 ÷ 2) × d1 × d2, where d1 and d2 are the lengths of the diagonals.

Calculations:

=> Area = (1 ÷ 2) × d1 × d2

=> 180 = (1 ÷ 2) × 3 × d2

=> 180 = 1.5 × d2

=> d2 = 180 ÷ 1.5

=> d2 = 120 cm

Analysis of other options:

=> Option (2) 112: If d2 = 112 cm, Area = 0.5 × 3 × 112 = 168 cm^2, which is incorrect.

=> Option (3) 115: If d2 = 115 cm, Area = 0.5 × 3 × 115 = 172.5 cm^2, which is incorrect.

=> Option (4) 128: If d2 = 128 cm, Area = 0.5 × 3 × 128 = 192 cm^2, which is incorrect.

Therefore The correct answer is 120 cm.

Additional Information

Properties of a Rhombus

All four sides are equal, opposite angles are equal, and adjacent angles are supplementary. The diagonals bisect each other at 90°.

Side Length of a Rhombus

The side length (a) of a rhombus can be calculated from its diagonals using the formula: $a = (1 \div 2) \times \sqrt{(d1^2 + d2^2)}$.

Perimeter of a Rhombus

The perimeter of a rhombus is given by: Perimeter $= 4 \times a = 2 \times \sqrt{(d1^2 + d2^2)}$.

Q98. Answer: (a) 53

Given: Vinod ranked 36th from the top and 18th from the bottom in his class.

Vinod's rank from the top = 36th.

Vinod's rank from the bottom = 18th.

Total students = (Rank from Top) + (Rank from Bottom) - 1

= 36 + 18 - 1

= 54 - 1

= 53

Hence, the correct answer is "Option 1".

Q99. Answer: (d) 952

Shortcut Trick

Difference in Gain% = 82% − 57% = 25%.

This 25% difference is equivalent to the extra amount of Rs. 238.

Using unitary method: 25% of CP = 238.

Therefore, 100% of CP = 238 × 4 = 952.

Therefore The correct answer is Rs. 952.

Alternate Method

Given: Initial Profit = 57%, Final Profit = 82%, Increase in SP = Rs. 238.

Formulas: SP = CP × (100 + P%) ÷ 100 | Profit = SP − CP

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

=> First Selling Price (SP1) = 1.57x.

=> Second Selling Price (SP2) = 1.82x.

=> According to the question: SP2 − SP1 = 238.

=> 1.82x − 1.57x = 238 => 0.25x = 238.

=> x = 238 ÷ 0.25 = 238 × 4 = 952.

Therefore The correct answer is Rs. 952.

Additional Information

Profit and Loss on Cost Price

Unless stated otherwise, Profit% or Loss% is always calculated on the Cost Price (CP). Formula: Profit% = (Profit ÷ CP) × 100.

Relation between Gain and SP

If there are two different gain percentages g1 and g2 on the same CP, the difference in SP is equal to the difference in gain percentages of the CP.

Q100. Answer: (c) DH - IQ

The logic followed here is.

Option 1) NR - TA

Option 2) RV - XE

Option 3) DH - IQ

Option 4) XB - DK

Thus, out of all 'DH - IQ' is the odd one out.

Hence, the correct answer is "Option 3".

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