RRB NTPC Graduate Level CBT-I Official Paper (Held On: 09 Jun, 2025 Shift 3) (Previous Year Paper)

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

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

Q1. Select the number from among the given options that can replace the question mark (?) in the following series.

13 26 29 58 61 122 125 ?

(a) 131
(b) 225
(c) 128
(d) 250

Q2. In MS Word 365, what is the shortcut to remove manual character formatting from selected text?

(a) Ctrl + Shift + N
(b) Ctrl + Z
(c) Ctrl + Spacebar
(d) Ctrl + B

Q3. In the context of file deletion, what is the typical immediate effect of moving a file to the 'Trash' or 'Recycle Bin' in a GUI-based Operating System?

(a) The file is moved to a special directory, and its directory entry is updated, but the data remains on the storage device.
(b) The file's data is immediately overwritten and unrecoverable.
(c) The file's metadata (inode or equivalent) is immediately purged from the file system.
(d) The file is compressed and archived before being permanently deleted.

Q4. In March 2025, India hosted the inaugural edition of which naval exercise aimed at enhancing maritime cooperation with African nations?

(a) Exercise MILAN
(b) Africa-India Key Maritime Engagement
(c) Indian Ocean Naval Symposium (IONS)
(d) Exercise VARUNA

Q5. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

FMT AHO VCJ QXE ?

(a) LZS
(b) ZSL
(c) LSZ
(d) ZLS

Q6. M, N, O, P, Y and Z live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on till the topmost floor is numbered 6. Only two people lives between N and Z. Only M lives above P. Y lives on an even numbered floor. N lives on the lowermost floor. How many people live between O and M?

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

Q7. Prabin starts from Point A and drives 12 km towards the west. He then takes a right turn, drives 8 km, turns right and drives 14 km. He then takes a right turn and drives 12 km. He takes a final right turn, drives 2 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again?

(All turns are 90 degrees turns only unless specified.)

(a) 4 km to the south
(b) 5 km to the north
(c) 4 km to the north
(d) 3 km to the north

Q8. There are two sections A and B of a class, consisting of 22 and 44 students, respectively. If the average weight of section A is 40 kg and that of section B is 34 kg, find the average weight of the whole class (in kg).

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

Q9. Walking at 2/5 of his normal speed, Abhijeet is 48 minutes late in reaching. The usual time taken by him to cover the distance between his home and his destination is?

(a) 37 minutes
(b) 32 minutes
(c) 33 minutes
(d) 40 minutes

Q10. Simplify: 36/9 × (74 + 12) + 99

(a) 444
(b) 446
(c) 443
(d) 449

Q11. "Walking at 2/5 of his normal speed, Abhijeet is 18 minutes late in reach. The usual time taken by him to cover the distance between his home and destination is:

(a) 2 minutes
(b) 9 minutes
(c) 11 minutes
(d) 12 minutes

Q12. What was the unemployment rate for persons aged 15 years and above in rural India during the period 2022-23, according to the Periodic Labour Force Survey (PLFS) annual report 2022-23?

(a) 5.1%
(b) 4.0%
(c) 3.5%
(d) 2.4%

Q13. Two concentric circles have radii of 10 cm and 26 cm. Find the length of the chord of the larger circle that is tangent to the smaller circle.

(a) 48 cm
(b) 52 cm
(c) 50 cm
(d) 20 cm

Q14. Select the triad that follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

HO-JQ-LN

JQ-LS-NP

(a) KS-NU-PQ

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(b) KS-NV-PQ
(c) LS-NU-PQ
(d) LS-NU-PR

Q15. Raj has Rs. 1,218 with him. He divided it amongst his sons Varun and Ashish and asked them to invest it at 10% rate of interest per annum, compounded annually. It was seen that Varun and Ashish got the same amount after 13 and 14 years, respectively. How much (in Rs.) did Raj give to Ashish?

(a) Rs. 430
(b) Rs. 638
(c) Rs. 738
(d) Rs. 580

Q16. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements

Statements:

Some guns are bombs.

Some guns are cargos.

Some bombs are riffles.

Conclusions:

(I): Some guns are riffles.

(II): Some bombs are cargos.

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

Q17. From 10-14 February 2025, in which city did India host the annual Conference of the International Institute of Administrative Sciences (IIAS) for the first time?

(a) New Delhi
(b) Gandhinagar
(c) Hyderabad
(d) Ahmedabad

Q18. What special status did the Sixty-ninth Amendment Act, 1991 give to Delhi?

(a) Designated Delhi as the National Capital Territory with a legislative assembly
(b) Brought Delhi under the control of the President through the Governor
(c) Granted full Statehood to Delhi
(d) Made Delhi a Union Territory without a legislature

Q19. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

AHE CJG ELI GNK ?

(a) ION
(b) IPM
(c) IPN
(d) IOM

Q20. 20 dual desks and 12 chairs were bought for Rs. 79,600. If the average cost of a dual desk was Rs. 3,500, find the average cost of a chair.

(a) Rs. 920
(b) Rs. 850
(c) . Rs. 950
(d) Rs. 800

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Q21. Find the value of m for which it satisfies $(21/8)^{12} \times (8/21)^{(14)} \times (21/8)^{(14)} = (8/21)^{(9m + 20)}$

(a) • 25/9
(b) • 37/9
(c) • 22/9
(d) • 32/9

Q22. Which of the following is an indirect tax levied in India?

(a) Equalisation Levy
(b) Capital Gain Tax
(c) Corporate Tax
(d) Goods and Services Tax

Q23. A group of numbers/symbols is coded using letter codes as per the codes given below and the conditions that follow. If none of the conditions apply, then codes for the respective number/symbol to be followed directly as given in the table.

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

Conditions:

(i) 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.

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

7 & 2 @ 9 % 2

(a) © M Z C L P ©
(b) M M C Z L P ©
(c) © M C Z P L ©
(d) © M C Z L P ©

Q24. A, B, C, D, G, H, and I are sitting around a circular table facing the centre. Only one person sits between H and I when counted from the right of H. Only one person sits between I and C. Only one person sits between H and G. Only two people sit between A and C. Only one person sits between B and G. Who sits third to the right of D ?

(a) G
(b) I
(c) C
(d) A

Q25. How long (in years) will it take for Rs. 1,680 to become Rs. 2,100 at a rate of 4% per annum simple interest?

(a) 5.25
(b) 6.25
(c) 8.25
(d) 7.25

Q26. What was the budget allocated in the Smart City Mission for the financial year 2023-24?

(a) Rs. 12,000 crore
(b) Rs. 6,000 crore
(c) Rs. 8,000 crore
(d) Rs. 10,000 crore

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Q27. Who was the chairman of the National Commission on Farmers (NCF) when it was constituted on 18 November 2004 in India?

(a) Krishnaswamy Kasturirangan
(b) MS Swaminathan
(c) Chakravarthi Rangarajan
(d) Verghese Kurien

Q28. As per the Indian Space Association (ISpA) in 2025, _____ satellites out of the approved 52-satellite constellation for the defence sector are expected to be built by the private sector

(a) 21
(b) 31
(c) 52
(d) 41

Q29. This question is based on the five, three-digit numbers given below.

(Left) 773 263 387 270 378 (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 lowest number is subtracted from the first digit of the highest number?

(a) 5
(b) 4
(c) 8
(d) 6

Q30. 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 ::?

: UWC :: OHW : %

(a) = KXS, % = SRA
(b) = SRA, % = QMY
(c) = QMY, % = MCU
(d) = MCU, % = KXS

Q31. On International Women's Day 2025, which Indian bank launched 'Asmita', a collateral free digital SME loan tailored for women entrepreneurs?

(a) Bank of Baroda
(b) HDFC Bank
(c) Axis Bank
(d) State Bank of India

Q32. The retail price of a water geyser is Rs. 11,300. If the manufacturer gains 5%, the wholesale dealer gains 10% and the retailer gains 15%, then find the cost price of the water geyser (rounded off to two decimal places.)

(Note: Manufacturer sells to wholesaler, wholesaler sells to retailer and retailer sells to customer.)

(a) Rs. 9,500.75
(b) Rs. 6,050.25
(c) Rs. 10,110.11
(d) Rs. 8,507.43

Q33. Who is most commonly associated with the 'safety valve' theory regarding the formation of the Indian National Congress?

(a) Lord Dufferin
(b) AO Hume
(c) WC Bannerji
(d) Dadabhai Naoroji

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Q34. A can do a piece of work in 57 hours, B and C together can do it in 28 hours, while A and C together can do it in 19 hours. How long (in hours) will B alone take to do it?

(a) 1595
(b) 1597
(c) 1598
(d) 1596

Q35. Which of the following shortcut keys can be used to quickly open a presentation in PowerPoint?

(a) Shift + O
(b) Alt + O
(c) Tab + O
(d) Ctrl + O

Q36. Which team did India defeat to qualify for the AFC Women's Asian Cup 2026?

(a) Vietnam
(b) Thailand
(c) China
(d) Australia

Q37. This question is based on the five, three-digit numbers given below.

(Left) 898 740 280 169 993 (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 added to the third digit of the lowest number?

(a) 17
(b) 19
(c) 21
(d) 18

Q38. The median of the observations 87, 56, 79, 81, 11, 53, 94, 45, 32, 99 and 98 is:

(a) 53
(b) 56
(c) 81
(d) 79

Q39. A shopkeeper marked his goods at X% above their cost price and sold them at a discount of 16%. If he gained 68% profit, then find the value of X.

(a) 100
(b) 101
(c) 99
(d) 102

Q40. 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) BEH
(b) FHL
(c) ACG
(d) SUY

Q41. Seven people, I, J, K, L, O, P and Q are sitting in a row, facing north. No one sits to the right of I. Only three people sit between I and J. Only two people sit between J and Q. L sits third to the left of P. K sits to the immediate right of P. How many people sit between O and Q?

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

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(d) One

Q42. What provision was extended under the 104^(th) Constitutional Amendment Act, 2020?

(a) Voting age for elections
(b) Reservation for SC/ST in legislatures
(c) GST Council term
(d) Term of the Lok Sabha

Q43. VO Chidambaram Pillai was actively involved in the revolutionary movement in which of the following areas?

(a) Delhi
(b) Madras
(c) Bombay
(d) Calcutta

Q44. If a : b = 3 : 4 and b : c = 4 : 7, then (a + b + c)/c is equal to:

(a) 7/2
(b) 14/3
(c) 2
(d) 14

Q45. 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) GJ - PS
(b) JM - SV
(c) EH - NQ
(d) MQ - UZ

Q46. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

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

How many such symbols are there each of which is immediately preceded by an even number and also immediately followed by an odd number?

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

Q47. The cost of 5 shirts and 7 trousers together is Rs. 6,150 and the cost of 3 shirts is equal to the cost of 4 trousers. What is the cost (in Rs.) of 2 shirts and 2 trousers together?

(a) 2,100
(b) 2,250
(c) 2,150
(d) 2,400

Q48. The original price of a music set is Rs. 8,000. The price is decreased by 12% and then raised by 20%. What is its new price (in Rs.)?

(a) 7,948
(b) 8,448
(c) 7,748
(d) 8,948

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Q49. In a certain code language, ‘read this book’ is coded as ‘op st qr’ and ‘book on table’ is coded as ‘qr lm pq’. How is ‘book’ coded in the given language?

(a) lm
(b) qr
(c) pq
(d) op

Q50. Which country hosted the 58^(th)Annual Meeting of the Asian Development Bank (ADB) in 2025, where India discussed the Strategic Action Plan 2025-2029?

(a) China
(b) Italy
(c) Japan
(d) India

Q51. Which of the following numbers is divisible by 38?

(a) 2620
(b) 2423
(c) 1938
(d) 1495

Q52. The Meissner effect is a defining characteristic of which state of matter?

(a) Paramagnetic state
(b) Superconducting state
(c) Ferromagnetic state
(d) Insulating state

Q53. Ashish’s salary is Rs. 11,000 per month. He spends Rs. 4,000 on house rent and Rs. 1,500 on bills, and the rest of the amount is his monthly savings. Find his savings (in Rs.) in a year, if in the month of his birthday, he spent all his monthly savings on birthday celebrations.

(a) 49,500
(b) 55,000
(c) 66,000
(d) 60,500

Q54. Which Himalayan range is the northern-most and contains the loftiest peaks?

(a) Shiwalik
(b) Himachal Himalaya
(c) Himadri
(d) Purvachal

Q55. Which country's federal election was held on 3 May 2025 to elect members of its 48^(th) Parliament?

(a) Canada
(b) New Zealand
(c) Australia
(d) United Kingdom

Q56. 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 ::?

: OLR :: PMS : %

(a) = MKI, % = NHU
(b) = JGM, % = URX
(c) = LKP, % = FGH
(d) # = KLM, % = NHY

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Q57. Which Constitutional Article specifically provides for free legal aid to the poor?

(a) Article 39A
(b) Article 21
(c) Article 32
(d) Article 44

Q58. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. 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/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

50, 4

80, 7

(a) 90, 11
(b) 60, 6
(c) 70, 6
(d) 100, 11

Q59. In December 2024, which day honoured Dr BR Ambedkar's contribution to social justice?

(a) Constitution Awareness Day
(b) National Equality Day
(c) Mahaparinirvan Diwas
(d) Ambedkar Smriti Diwas

Q60. The capacity of a cuboid tank of water is 70,000 litres. Find the breadth of the tank, if its length and depth are 4 m and 10 m, respectively.

(a) 1.95 m
(b) 1.85 m
(c) 1.75 m
(d) 1.65 m

Q61. 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.

E lives on a floor which is a prime number. The product of floors on which E and A live is 8. C lives immediately above F. The sum of floors on which A and B live is 7. How many people live between C and E?

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

Q62. LQRU is related to ONTS in a certain way based on the English alphabetical order. In the same way, RKVQ is related to UHXO. To which of the given options is XEZM related, following the same logic?

(a) ABBK
(b) ZBZL
(c) BABJ
(d) BCAK

Q63. A person saves 40% of his income. If his expenditure is Rs. 480, then his income (in Rs.) is:

(a) 192
(b) 198
(c) 840
(d) 800

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Q64. y varies directly as (x+3), and y=8 when x=1. What is the value of y when x = 2?

(a) 8
(b) 5
(c) 10
(d) 2

Q65. 2 men or 9 women can do a job in 14 days. 2 men work for 9 days and leave. The number of women required to complete the remaining work in 9 days is:

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

Q66. Where is plantation agriculture mainly practised in India?

(a) Odisha and Chhattisgarh
(b) Rajasthan and Gujarat
(c) Punjab and Haryana
(d) Kerala and Assam

Q67. Vijay ranked 34^(th) from the top and 11^(th) from the bottom in his class. How many students are there in his class?

(a) 43
(b) 45
(c) 44
(d) 42

Q68. In a certain code language,

A + B means ‘A is the mother of B’
A – B means ‘A is the brother of B’
A × B means ‘A is the wife of B’ and
A ÷ B means ‘A is the father of B’.
How is M related to Q if ‘M + N ÷ O – P × Q’?

(a) Wife's mother's sister
(b) Wife's father's mother
(c) Wife's father's sister
(d) Wife's mother's mother

Q69. The diameter of a metallic solid sphere is 42 cm. It is melted and drawn into a wire with a cross-sectional diameter of 0.6 cm. Find the length (in metre) of the wire.

(a) 1364
(b) 1362
(c) 1372
(d) 1367

Q70. Which feature in Windows allows you to create shortcuts to frequently used folders for easier access?

(a) Task Bar
(b) Quick Access
(c) File Explorer
(d) Libraries

Q71. Which of the following components is NOT part of the CPU?

(a) Cache memory
(b) Control Unit (CU)
(c) Arithmetic Logic Unit (ALU)
(d) Hard Disk Drive (HDD)

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Q72. If $a^2 + b^2 = 144$, $a \times b = 24$ and $a > b$, then find the value of $(a - b)/(a + b)$.

(a) √(1/3)
(b) 1/2
(c) 1/3
(d) √(1/2)

Q73. What is the projected population of India by 2036, according to the National Commission on Population?

(a) 1.38 billion
(b) 1.32 billion
(c) 1.52 billion
(d) 1.45 billion

Q74. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 8457312, what will be sum of the highest and lowest digits in the number thus formed?

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

Q75. Who was the son and successor of Chandragupta II?

(a) Kumaragupta I
(b) Skandagupta
(c) Ramgupta
(d) Samudragupta

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

51 ÷ 12 + 162 × 3 − 104 =?

(a) 672
(b) 652
(c) 662
(d) 642

Q77. If '−' means '÷', '÷' means '×', '×' means '+' and '+' means '−', then what will come in place of the question mark (?) in the following equation?

3 ÷ 45 × 855 − 19 + 16 = ?

(a) 164
(b) 136
(c) 460
(d) 180

Q78. If 2 is added to each even digit and 2 is added to each odd digit in the number 7362145, what will be the sum of all the odd digits in the new number thus formed?

(a) 28
(b) 26
(c) 24
(d) 20

Q79. In which of the following cities Gharanas of Thumri are based?

(a) Banaras and Lucknow
(b) Agra and Kirana
(c) Gwalior and Bhopal
(d) Patiala and Talwandi

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Q80. The sculpture of bearded man, found in Mohejo-daro, is made of which material?

(a) Terracota
(b) Bronze
(c) Copper
(d) Stone

Q81. Select the correct statement regarding the properties of diagonals of a rhombus.

(a) The diagonals of a rhombus are equal, intersect at right angles and bisect each other
(b) The diagonals of a rhombus are not equal, intersect at right angles and bisect each other.
(c) The diagonals of a rhombus are equal, intersect at right angles and do not bisect each other
(d) The diagonals of a rhombus are equal, do not intersect at right angles and bisect each other

Q82. Which of the following sports events were included in the school-level competitions organised by the Uttar Pradesh government in December 2024?

(a) . Kabaddi and kho-kho
(b) Basketball and athletics
(c) Tennis and swimming
(d) Cricket and badminton

Q83. The peasant struggle of the Warli tribe in the year 1945 occurred in which of the following states of India?

(a) Gujarat
(b) Mizoram
(c) Maharashtra
(d) Kerala

Q84. The Scythians, or Shakas, originally came from _____.

(a) Eastern Europe
(b) South India
(c) Central Asia
(d) Southeast Asia

Q85. According to the Regulating Act of 1773 of the East India Company, to whom did the governors of Madras and Bombay report regularly?

(a) The Governor General
(b) The British Parliament
(c) Court of Directors
(d) The British Crown

Q86. DNA polymerase catalyses the addition of nucleotides during DNA replication. Its main role is to:

(a) Ligate Okazaki fragments together
(b) Synthesise new DNA strands complementary to the template
(c) Unwind the DNA double helix
(d) Remove RNA primers from the lagging strand

Q87. Which Article of the Constitution of India deals with the application of the Directive Principles of the State Policy?

(a) Article 36
(b) Article 37
(c) Article 39
(d) Article 38

Q88. What should come in place of the question mark (?) in the given series?

601 600 597 592 585 ?

(a) 573
(b) 577
(c) 576

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(d) 571

Q89. What is the mean of the following distribution?

Marks	13	27	59	61	97
No. of Students	95	57	80	98	73

(a) 74
(b) 51
(c) 45
(d) 31

Q90. In a certain code language, 'NOSE' is coded as '3517' and 'OILY' is coded as '2458'. What is the code for 'O' in the given code language?

(a) 5
(b) 2
(c) 1
(d) 7

Q91. If x + y = 10, product of x and y is 16, then the value of x^4 + y^4 is:

(a) 4092
(b) 4112
(c) 4073
(d) 4175

Q92. Sharda Sinha, honoured with the Padma Vibhushan in 2025, was originally known for singing in which Indian languages?

(a) Marathi and Konkan
(b) Assamese and Bodo
(c) Punjabi and Kashmiri
(d) Bhojpuri and Maithili

Q93. Which of the following films won the 2025 Golden Globe Award for Best Motion Picture– Non-English Language?

(a) The Girl With The Needle
(b) I'm Still Here
(c) Emilia Pérez
(d) All We Imagine as Light

Q94. Determine the nature of the roots of the quadratic equation $3x^2 + 2x + 5 = 0$.

(a) More than 2 real roots
(b) Real and Distinct Roots
(c) Real and Equal Roots
(d) Complex Roots (Imaginary Roots)

Q95. Through which of the following plateaus does the River Damodar flow?

(a) Deccan Plateau
(b) Chhotanagpur Plateau
(c) Malwa Plateau
(d) Meghalaya Plateau

Q96. A ladder 10.6 m long is leaning against a wall. It makes an angle of 30° with the ground. How high does the ladder reach on the wall?

(a) 5.6 m
(b) 5.3 √3 m
(c) 5.3 m
(d) 5.3 √2 m

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Q97. The book "Gita Rahasya", a philosophical interpretation of the Bhagavad Gita, was written by which of the following leaders?

(a) Gopal Krishna Gokhale
(b) Bal Gangadhar Tilak
(c) Mahatma Gandhi
(d) Aurobindo Ghosh

Q98. Which Indian state became the first to establish a Senior Citizens Commission in March 2025?

(a) Maharashtra
(b) Gujarat
(c) Kerala
(d) Tamil Nadu

Q99. What is Tetrachloromethane primarily used for in manufacturing?

(a) Textile dyeing and coloring of woollen clothes
(b) Fertiliser production and pesticide refining
(c) Production of refrigerants and aerosol propellants
(d) Glass manufacturing and ceramic treatment

Q100. If the ratio of two numbers is 3 : 16 and the product of their LCM and their HCF is 432, then the sum of the reciprocals of the LCM and the HCF is:

(a) 49/159
(b) 49/144
(c) 49/151
(d) 49/145

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) 250

The logic followed here is:

Hence, the correct answer is "Option 4".

Q2. Answer: (c) Ctrl + Spacebar

The Correct answer is Ctrl + Spacebar.

Key Points

• Ctrl + Spacebar is the shortcut used in MS Word 365 to remove manual character formatting from selected text.
• This action restores the selected text to the default formatting applied by the paragraph style.
• Manual character formatting includes font styles, font sizes, bold, italic, underline, and other direct formatting changes.

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• Using this shortcut ensures that the selected text adheres to the consistent formatting of the overall document.
• MS Word 365 provides various shortcuts to streamline formatting tasks, enhancing user productivity.
• This shortcut is particularly useful in situations where the text has been formatted inconsistently or requires a uniform style for professional appearance.
• Ctrl + Spacebar is supported across different versions of Microsoft Word, making it a universal formatting tool for users.

Additional Information

• Ctrl + Shift + N
• Ctrl + Shift + N is used to apply the Normal style to the selected text in MS Word.
• The Normal style is the default paragraph style for new documents and includes predefined font and spacing settings.
• This shortcut is different from Ctrl + Spacebar, as it applies a style rather than removing manual character formatting.
• Ctrl + Z
• Ctrl + Z is the shortcut for the Undo
• It reverses the last action performed by the user, whether it is text editing, formatting, or other changes.
• This shortcut does not remove character formatting but instead undoes recent modifications.
• Ctrl + B
• Ctrl + B is used to apply or remove bold formatting to the selected text.
• This shortcut is specific to bold styling and does not remove other manual formatting changes.
• It is commonly used for emphasizing text in documents.

Q3. Answer: (a) The file is moved to a special directory, and its directory entry is updated, but the data remains on the s...

The Correct answer is The file is moved to a special directory, and its directory entry is updated, but the data remains on the storage device.

Key Points

• When a file is moved to the 'Trash' or 'Recycle Bin' in a GUI-based Operating System, it is not permanently deleted.
• The file’s directory entry is updated to reflect its new location in a special directory (e.g., the Trash or Recycle Bin folder).
• The actual data remains on the storage device until the file is permanently deleted or the storage space is overwritten.
• This mechanism allows users to recover deleted files easily if they change their minds or deleted the file by mistake.
• The Trash or Recycle Bin acts as a, ensuring the file is not lost immediately and providing an opportunity for restoration.
• This functionality is common in operating systems like Windows, macOS, and Linux GUIs, making file management more user-friendly and less prone to accidental data loss.
• Files in the Trash or Recycle Bin typically still occupy storage space until they are permanently deleted or the Trash/Recycle Bin is emptied.

Additional Information

• The file’s data is immediately overwritten and unrecoverable.
• This is incorrect because simply moving a file to the Trash or Recycle Bin does not overwrite the data. Overwriting occurs only when specific tools or processes overwrite the storage sectors.
• Overwriting makes data recovery nearly impossible, but this is not the default behavior of the Trash/Recycle Bin feature.
• The file’s metadata (inode or equivalent) is immediately purged from the file system.
• When a file is moved to the Trash or Recycle Bin, its metadata is not purged immediately. Instead, its location is updated, and the metadata is preserved for potential recovery.
• Metadata purging occurs during permanent deletion or when the file system explicitly removes all references to the file.
• The file is compressed and archived before being permanently deleted.
• Trash/Recycle Bin does not compress or archive files by default. Files retain their original format and size while in the Trash/Recycle Bin.
• Compression is a separate process, often used in backup solutions, not for managing deleted files in most operating systems.

Q4. Answer: (b) Africa-India Key Maritime Engagement

The correct answer is Africa-India Key Maritime Engagement.

Key Points

• The Africa-India Key Maritime Engagement was held in March 2025, marking the inaugural edition of this naval exercise.
• This exercise was specifically aimed at enhancing maritime cooperation between India and African nations.
• It reflects India’s ongoing efforts to strengthen security partnerships in the Indian Ocean Region (IOR) and bolster ties with African countries.

• The initiative is part of India's strategy to ensure maritime security and promote a free, open, and inclusive Indo-Pacific region.
• It also underscores India's commitment to fostering blue economy growth and addressing shared challenges such as piracy, illegal fishing, and climate change.
• This exercise is a significant step in India's Act East Policy and its outreach towards African nations through maritime diplomacy.
• Participants included naval forces from several African coastal countries, showcasing a spirit of partnership and cooperation.

Additional Information

• Exercise MILAN
• Exercise MILAN is a biennial multilateral naval exercise hosted by the Indian Navy.
• It focuses on enhancing interoperability and maritime cooperation among participating nations.
• It is held in the Andaman and Nicobar Islands or the Eastern Naval Command in Visakhapatnam.
• The exercise involves activities such as maritime maneuvers, professional interactions, and cultural exchanges.
• Indian Ocean Naval Symposium (IONS)
• IONS is a voluntary initiative launched by the Indian Navy in 2008.
• It aims to enhance maritime cooperation among the littoral states of the Indian Ocean Region (IOR).
• IONS fosters discussions on topics like maritime security, disaster response, and sustainability.
• It includes member nations from South Asia, West Asia, East Africa, and Southeast Asia.
• Exercise VARUNA
• Exercise VARUNA is an annual bilateral naval exercise between India and France.
• It focuses on enhancing interoperability and strategic cooperation between the two nations' navies.
• The exercise includes activities such as anti-submarine warfare, surface combat, and air defense drills.
• It underscores the strong defense partnership between India and France.

Q5. Answer: (c) LSZ

The logic followed here is,

Hence, the correct answer is "Option 3".

Q6. Answer: (a) Two

Given: M, N, O, P, Y and Z 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.

Let's deduce the positions step by step:

1) N lives on the lowermost floor.

	Person
Floor 6	
Floor 5	
Floor 4	
Floor 3	
Floor 2	
Floor 1	N

2) Only two people live between N and Z.

	Person
Floor 6	
Floor 5	
Floor 4	Z
Floor 3	
Floor 2	
Floor 1	N

3) Only M lives above P. This means M is immediately above P.

	Person
Floor 6	M
Floor 5	P
Floor 4	Z
Floor 3	
Floor 2	
Floor 1	N

4) Y lives on an even numbered floor.

	Person
Floor 6	M
Floor 5	P
Floor 4	Z
Floor 3	
Floor 2	Y
Floor 1	N

The only person left is O, and the only floor left is Floor 3.

	Person
Floor 6	M
Floor 5	P
Floor 4	Z
Floor 3	O
Floor 2	Y
Floor 1	N

O is on Floor 3 and M is on Floor 6.

There are 2 people living between O and M.

Hence, the correct answer is "Option 1".

Q7. Answer: (c) 4 km to the north

Given,

Prabin starts from Point A and drives 12 km towards west.

He then takes a right turn, drives 8 km, turns right, and drives 14 km.

He then takes a right turn and drives 12 km.

He takes a final right turn, drives 2 km, and stops at Point P.

Therefore, he should drive 4 km towards the North to reach Point A again.

Hence, the correct answer is "Option 3".

Q8. Answer: (b) 36

Shortcut Trick

Ratio of student counts in Section A and Section B = 22 : 44 = 1 : 2.

Using the ratio method for weighted average: [(1 × 40) + (2 × 34)] ÷ (1 + 2).

Combined average weight = (40 + 68) ÷ 3 = 108 ÷ 3 = 36 kg.

Therefore The correct answer is 36 kg.

Alternate Method

Given:

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Students in Section A (n1) = 22 | Average weight (x1) = 40 kg

Students in Section B (n2) = 44 | Average weight (x2) = 34 kg

Formula Used:

Average weight of the class = (Sum of weights of all students) ÷ (Total number of students)

=> Total weight of Section A = 22 × 40 = 880 kg

=> Total weight of Section B = 44 × 34 = 1496 kg

=> Total class weight = 880 + 1496 = 2376 kg

=> Total class strength = 22 + 44 = 66

=> Average weight of the whole class = 2376 ÷ 66 = 36 kg

Therefore The correct answer is 36 kg.

Additional Information

Weighted Average Formula

When two groups are combined, the total average is calculated as (n1x1 + n2x2) ÷ (n1 + n2).

Ratio Simplification

For average weight or score calculations, you can replace actual quantities with their simplest ratio to reduce numerical complexity.

Deviation Method

Pick an assumed average and calculate the net deviation. The final average is Assumed Average + (Net Deviation ÷ Total Count).

Q9. Answer: (b) 32 minutes

Shortcut Trick

When Distance is constant, Speed is inversely proportional to Time.

Speed ratio = 5 : 2 → Time ratio = 2 : 5.

Difference in time units = 5 − 2 = 3 units.

Given 3 units = 48 minutes => 1 unit = 16 minutes.

Usual time = 2 units = 2 × 16 = 32 minutes.

Therefore The correct answer is 32 min.

Alternate Method

Given: New speed = 2/5 of Normal speed. Delay = 48 minutes.

Formula: Usual Time = [Late time × Numerator] ÷ [Denominator − Numerator]

=> Let normal speed be S and usual time be T.

=> New speed = (2/5) × S

=> Since Distance = Speed × Time, S × T = (2/5)S × (T + 48)

=> T = (2/5) × (T + 48)

=> 5T = 2T + 96

=> 3T = 96

=> T = 32 minutes

Therefore The correct answer is 32 min.

Additional Information

Inverse Relationship of Speed and Time

If distance is constant, Speed1/Speed2 = Time2/Time1. This is the foundation for solving constant distance problems.

Direct Shortcut for Late/Early Problems

If a person travels at a/b of their usual speed and is 'L' minutes late, Usual Time = (a × L) ÷ |b − a|.

Average Speed for Constant Distance

When a person travels to a destination and back at speeds x and y, Average Speed = 2xy ÷ (x + y).

Q10. Answer: (c) 443

Given:

Simplify: (36)/(9) × (74 + 12) + 99

Formula used:

Basic arithmetic operations: Division, Multiplication, Addition

Calculation:

=> (36 ÷ 9) × (74 + 12) + 99

=> 4 × (74 + 12) + 99

=> 4 × 86 + 99

=> 344 + 99

=> 443

Therefore The correct answer is option (3).

Q11. Answer: (d) 12 minutes

Shortcut Trick

Speed ratio = 5 : 2 (Normal : New)

Time ratio = 2 : 5 (Normal : New) [Since Distance is constant, Speed prop. to 1/Time]

Difference in time ratio = 5 − 2 = 3 units

Given 3 units = 18 minutes => 1 unit = 6 minutes

Usual time = 2 units = 2 × 6 = 12 minutes

Therefore The correct answer is 12 min.

Alternate Method

Given:

New speed = 2/5 × Normal Speed

Time delay = 18 minutes

Formula Used:

Distance = Speed × Time

If distance is constant, s1t1 = s2t2

Calculations:

Let the usual speed be s and usual time be t.

=> Distance (D) = s × t

=> New speed = 2/5s

=> New time = t + 18

=> s × t = (2/5)s × (t + 18)

=> t = 2/5(t + 18)

=> 5t = 2t + 36

=> 3t = 36

=> t = 12 minutes

Therefore The correct answer is 12 min.

Additional Information

Inverse Variation of Speed and Time

When the distance is constant, the time taken is inversely proportional to the speed (t prop. to 1/s).

Direct Formula for Late/Early

Usual Time = [Late time × (Ratio Numerator)] ÷ [Difference between Numerator and Denominator].

Average Speed

Average speed = (Total Distance) ÷ (Total Time). For two equal distances with speeds x and y, Average Speed = 2xy/(x + y).

Q12. Answer: (d) 2.4%

The Correct answer is 0.024.

Key Points

• The unemployment rate for persons aged 15 years and above in rural India during the period 2022-23 was 2.4% (0.024).

• This data was reported in the Periodic Labour Force Survey (PLFS) Annual Report 2022-23, which is conducted by the National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI).

• The unemployment rate is calculated as the percentage of unemployed persons in the labor force (both employed and unemployed) during the reference period.

• The rural unemployment rate is generally lower than the urban unemployment rate due to the availability of agriculture-based employment in rural areas.

• The PLFS aims to provide reliable estimates of the labour force indicators, such as employment, unemployment, and labor participation rates, across rural and urban regions of India.

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• This report helps the government and policymakers to frame employment and labor policies to address the challenges of unemployment in India.

Additional Information

• Importance of the PLFS:

• The PLFS is a significant survey for understanding the employment dynamics in India.

• It provides data on labor force participation rate (LFPR), worker population ratio (WPR), and unemployment rate (UR).

• The survey is conducted on a quarterly basis for urban areas and an annual basis for rural and urban combined estimates.

• Rural Employment in India:

• Agriculture remains the primary source of employment in rural India, employing a large percentage of the rural workforce.

• Other significant employment sectors in rural areas include construction, manufacturing, and services.

• Government programs like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) play a crucial role in providing employment in rural regions.

• Unemployment Trends:

• The unemployment rate in rural areas is lower due to the prevalence of informal and seasonal employment.

• However, issues like underemployment and disguised unemployment are common in rural areas.

Q13. Answer: (a) 48 cm

Shortcut Trick

For concentric circles, the length of the chord of the larger circle that is tangent to the smaller circle is given by:

Length of chord = $2 \times \sqrt{(R^2 - r^2)}$

Where R = 26 cm and r = 10 cm.

=> Length = $2 \times \sqrt{(26^2 - 10^2)} = 2 \times \sqrt{(676 - 100)}$

=> Length = $2 \times \sqrt{576} = 2 \times 24 = 48$ cm.

Therefore The correct answer is 48 cm.

Alternate Method

Given:

Radius of the larger circle (R) = 26 cm

Radius of the smaller circle (r) = 10 cm

Formula Used:

In a right-angled triangle, Pythagoras theorem states: $\text{Hypotenuse}^2 = \text{Base}^2 + \text{Perpendicular}^2$

Let the two concentric circles have a common center O.

Let AB be the chord of the larger circle which is tangent to the smaller circle at point M.

Since OM is the radius of the smaller circle and AB is the tangent, OM perpendicular to AB.

=> In right-angled triangle OMA, OA = 26 cm (Radius of larger circle) and OM = 10 cm (Radius of smaller circle).

Using Pythagoras theorem in triangle OMA:

=> $OA^2 = OM^2 + AM^2$

=> $26^2 = 10^2 + AM^2$

=> $676 = 100 + AM^2$

=> $AM^2 = 676 - 100 = 576$

=> $AM = \sqrt{576} = 24$ cm

Since the perpendicular from the center to a chord bisects the chord:

=> $AB = 2 \times AM = 2 \times 24 = 48$ cm

Therefore The correct answer is 48 cm.

Additional Information

Concentric Circles

Circles that share the same center but have different radii are called concentric circles.

Tangent-Radius Property

The radius of a circle is always perpendicular to the tangent at the point of contact (OM perpendicular to AB).

Chord Bisector Theorem

A perpendicular drawn from the center of a circle to a chord bisects the chord into two equal parts.

Q14. Answer: (d) LS-NU-PR

Let's analyze the given triads:
For, HO-JQ-LN
JQ-LS-NP
Option 4: LS-NU-PR follows the same logic.
Therefore, Option 4 follows the same pattern.
Hence, the correct answer is Option (4).

Q15. Answer: (d) Rs. 580

Shortcut Trick
Ratio of shares is determined by the time difference: 14 − 13 = 1 year.
At 10% rate, the multiplying factor is (1 + 10/100) = 11/10.
Ratio of Varun's share : Ashish's share = $(11/10)^1 : 1 = 11 : 10$.
Total units = 11 + 10 = 21 units → Rs. 1,218.
Value of 1 unit = 1,218 ÷ 21 = Rs. 58.
Ashish's share = 10 units × 58 = Rs. 580.
Therefore The correct answer is Rs. 580.
Alternate Method
Given:
Total Amount = Rs. 1,218
Rate (R) = 10% per annum
Time for Varun (T_v) = 13 years
Time for Ashish (T_a) = 14 years
Formula Used:
Amount (A) = P(1 + R/100)^T
Calculations:
=> Amount for Varun = Amount for Ashish
=> $P_v(1 + 10/100)^{13} = P_a(1 + 10/100)^(14)$
=> $P_v \times (1.1)^{13} = P_a \times (1.1)^(14)$
=> $P_v / P_a = (1.1)^(14) \div (1.1)^{13}$
=> P_v / P_a = 1.1 = 11 / 10
=> Ratio of shares P_v : P_a = 11 : 10
=> Ashish's share = [10 ÷ (11 + 10)] × 1,218
=> Ashish's share = (10 ÷ 21) × 1,218
=> Ashish's share = 10 × 58 = 580
Therefore The correct answer is Rs. 580.
Additional Information
Compound Interest Amount Formula
The total amount A after n years is given by $A = P(1 + r/100)^n$, where P is the principal and r is the annual interest rate.
Ratio of Principals for Equal Amounts
If amounts are equal after T1 and T2 years, the ratio of principals is P1/P2 = (1 + r/100)^((T2 − T1)).
Compound Interest (CI)
The interest earned is $CI = A − P = P[(1 + r/100)^n − 1]$.

Q16. Answer: (c) Neither conclusion (I) nor (II) follow

Given Statements:
• Some guns are bombs.
• Some guns are cargos.
• Some bombs are riffles.
The least possible Venn diagram for the given statements is:
Conclusions:
I. Some guns are riffles. - False (There is no direct or indirect definite relationship established between "guns" and "riffles".

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Therefore, this conclusion does not logically follow.)

II. Some bombs are cargos. - False (There is no direct or indirect definite relationship established between "bombs" and "cargos". Therefore, this conclusion does not logically follow.)

So, Neither conclusion I nor II follows.

Hence, the correct answer is "Option 3".

Q17. Answer: (a) New Delhi

The Correct answer is New Delhi.

Key Points

• New Delhi hosted the annual Conference of the International Institute of Administrative Sciences (IIAS) for the first time from 10-14 February 2025.

• The International Institute of Administrative Sciences (IIAS) is a global organization dedicated to the study and promotion of public administration and governance.

• India's hosting of this prestigious conference signifies its growing role in global administrative and governance discourses.

• New Delhi, the capital city of India, is known for its infrastructure and ability to host international conferences, summits, and events.

• The conference featured discussions on key topics related to public administration, policymaking, and global governance.

• New Delhi has been a hub for numerous international and diplomatic gatherings due to its strategic location and status as India's political capital.

• This event provided an opportunity for Indian policymakers and administrative professionals to interact and collaborate with global experts.

• Hosting the IIAS conference aligns with India’s efforts to showcase its advancements in administrative sciences and governance practices.

Additional Information

• Gandhinagar

• Gandhinagar, the capital city of Gujarat, is known for its planned city layout and administrative importance.

• It has hosted significant national events like Vibrant Gujarat Global Summit, which promotes investment and economic development.

• While Gandhinagar has modern infrastructure, it is not known for hosting international conferences like the IIAS meeting.

• Hyderabad

• Hyderabad, the capital of Telangana, is a major IT hub and known for its rich heritage.

• It has hosted events like Global Entrepreneurship Summit and UN Biodiversity Conference, showcasing its capability for international gatherings.

• However, the IIAS conference was not held in Hyderabad in 2025.

• Ahmedabad

• Ahmedabad, another prominent city in Gujarat, is known for its commercial significance and historic landmarks.

• It has hosted events like the World Heritage City Conference and Vibrant Gujarat but was not chosen for the IIAS conference.

Q18. Answer: (a) Designated Delhi as the National Capital Territory with a legislative assembly

The Correct answer is Designated Delhi as the National Capital Territory with a legislative assembly.

Key Points

• The Sixty-ninth Amendment Act, 1991 granted Delhi the status of a National Capital Territory (NCT).

• This amendment enabled Delhi to have its own legislative assembly and Council of Ministers to manage affairs related to certain subjects.

• It introduced Article 239AA into the Constitution of India, detailing the structure and functioning of the governance in Delhi.

• While Delhi was given a legislative assembly, it remained a Union Territory, with its legislative powers limited to specific domains like public order, police, and land under the control of the Union Government.

• Delhi's governance is unique as it has a blend of both the Union Government and a locally elected assembly, making it distinct from full-fledged states.

• The amendment aimed to strike a balance between Delhi's status as the capital city and granting it some degree of self-governance.

• The Chief Minister of Delhi is the head of the elected government, but the Lieutenant Governor retains significant powers and represents the Union Government.

Additional Information

• Brought Delhi under the control of the President through the Governor

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• Delhi is governed by the Lieutenant Governor, who acts as the representative of the President of India, but it is not directly under the control of a Governor as seen in states.

• The Lieutenant Governor holds administrative authority and works alongside the elected government.

• Granted full Statehood to Delhi

• Delhi has not been granted full statehood. It remains a Union Territory with partial state-like governance powers.

• Matters like public order, police, and land are still under the control of the Union Government.

• Made Delhi a Union Territory without a legislature

• This option is incorrect because the Sixty-ninth Amendment Act explicitly provided Delhi with a legislative assembly to handle certain subjects.

• Delhi's governance model is distinct from a typical Union Territory without legislative powers, such as Chandigarh.

Q19. Answer: (b) IPM

The logic followed here is,

Hence, the correct answer is "Option 2".

Q20. Answer: (d) Rs. 800

Shortcut Trick

Total cost of 20 dual desks = 20 × 3,500 = Rs. 70,000.

Total cost of 12 chairs = 79,600 − 70,000 = Rs. 9,600.

Average cost of a chair = 9,600 ÷ 12 = Rs. 800.

Therefore The correct answer is Rs. 800.

Alternate Method

Given:

Total quantity: 20 desks and 12 chairs

Total combined cost: Rs. 79,600

Average cost per desk: Rs. 3,500

Formula Used:

Total Value = (Average Value × Number of Items)

Calculations:

=> Total cost of 20 desks = 20 × 3,500 = Rs. 70,000

=> Total cost of 12 chairs = Total bill − Total desk cost

=> Total cost of 12 chairs = 79,600 − 70,000 = Rs. 9,600

=> Average cost of a chair = Total chair cost ÷ Number of chairs

=> Average cost of a chair = 9,600 ÷ 12 = Rs. 800

Therefore The correct answer is Rs. 800.

Additional Information

Weighted Average

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

Relationship between Total and Average

Sum of Observations = Average × Number of Observations. This is the fundamental rule used to find individual components from a total sum.

Mixture & Alligation

Average problems involving two distinct groups can also be solved using the alligation method to find the ratio of quantities or the missing average value.

Q21. Answer: (d) • 32/9

Given:

$(21/8)^{12} \times (8/21)^{(14)} \times (21/8)^{(14)} = (8/21)^{(9m + 20)}$

Formula used:

$a^m \times a^n = a^{(m+n)}$

$(a/b)^n = (b/a)^{(-n)}$

Calculation:

LHS: $(21/8)^{12} \times (8/21)^{(14)} \times (21/8)^{(14)}$

=> (21/8)^(12 + 14) × (8/21)^(14)

=> (21/8)^(26) × (21/8)^(-14)

=> (21/8)^(26 - 14) = $(21/8)^{12}$

Now express all powers in base (8/21) :

=> $(21/8)^{12}$ = (8/21)^(-12)

RHS = (8/21)^(9m + 20)

Now equating powers:

=> −12 = 9m + 20

=> 9m = −32

=> m = −32/9

Therefore The value of m is − 32/9

Q22. Answer: (d) Goods and Services Tax

The Correct answer is Goods and Services Tax.

Key Points

• Goods and Services Tax (GST) is an indirect tax implemented in India on July 1, 2017.

• It is a comprehensive, multi-stage, destination-based tax that is levied on every value addition.

• GST replaced multiple indirect taxes like Central Excise Duty, Service Tax, VAT, and others.

• It is governed by the Goods and Services Tax Act, 2017, and is categorized into Central GST (CGST), State GST (SGST), and Integrated GST (IGST).

• GST ensures a uniform tax structure across the country and eliminates the cascading effect of taxes.

• Under GST, consumers pay tax only on the value added to goods or services.

• It is implemented under the constitutional framework of Article 246A of the Indian Constitution, which grants powers to both the Parliament and State Legislatures to make laws regarding GST.

• GST applies to goods and services at different rates: 0%, 5%, 18%, and 40%, depending on the category.

• The introduction of GST has simplified the taxation system, promoted ease of doing business, and enhanced tax compliance.

Additional Information

• Equalisation Levy

• The Equalisation Levy, also known as the Google Tax, was introduced in India in 2016 to tax digital transactions.

• It aims to address taxation challenges posed by the digital economy, specifically targeting companies like Google, Facebook, and other online platforms.

• The levy is not considered a broad-based indirect tax like GST but is a targeted tax primarily applied to non-resident companies providing online advertising services.

• Capital Gain Tax

• Capital Gain Tax is a direct tax levied on the profit earned from the sale of a capital asset, such as property, stocks, or bonds.

• It is categorized into short-term capital gains and long-term capital gains based on the holding period of the asset.

• This tax is not an indirect tax and is paid directly by the individual or entity earning the profit.

• Corporate Tax

• Corporate Tax is a direct tax imposed on the income or profit of corporations and companies.

• It is calculated on the net income after expenses and deductions as per the Income Tax Act, 1961.

• Corporate Tax rates vary based on the type of company, such as domestic or foreign, and its turnover.

Q23. Answer: (d) © M C Z L P ©

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

Conditions:

(i) 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.

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

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

Given- 7 & 2 @ 9 % 2

Let's analyze the given group of numbers/symbols and the conditions:

• The first element is 7 (an odd number).

• The last element is 2 (an even number).

• The second element is & (a symbol, not a perfect square).

• The third element is 2 (not a perfect square).

Now let's check which conditions apply:

Rule No. (i): This condition does not apply because the first element (7) is a number, not a symbol.

Rule No. (ii): This condition applies because the first element (7) is an odd number and the last element (2) is an even number. So, the first and last elements will be coded as ©.

Rule No. (iii): This condition does not apply because neither the second element (&) nor the third element (2) are perfect squares.

Based on the applicable rule (ii), the first and last elements are coded as ©.

Now, let's find the codes for the remaining elements from the table:

• The code for & is M.

• The code for 2 is C.

• The code for @ is Z.

• The code for 9 is L.

• The code for % is P.

Thus, '7 & 2 @ 9 % 2' is coded as → © M C Z L P ©.

Hence, the correct answer is "Option 4".

Q24. Answer: (b) I

Given A, B, C, D, G, H, and I are sitting around a circular table facing the centre.

Only one person sits between H and I when counted from the right of H.

Only one person sits between I and C.

Only one person sits between H and G.

Only two people sit between A and C.

Only one person sits between B and G.

And D sits at the remaining place.

"I" sits third to the right of D.

Hence, the correct answer is "Option 2".

Q25. Answer: (b) 6.25

Shortcut Trick

Total Interest earned = Rs. 2,100 − Rs. 1,680 = Rs. 420

Interest for 1 year = 4% of Rs. 1,680 = 16.8 × 4 = Rs. 67.2

Number of years (T) = Total Interest ÷ Interest per year

=> T = 420 ÷ 67.2 = 6.25 years

Therefore The correct answer is 6.25 years.

Alternate Method

Given: Principal (P) = Rs. 1,680, Amount (A) = Rs. 2,100, Rate (R) = 4% per annum.

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

=> SI = A − P = 2100 − 1680 = Rs. 420

=> 420 = (1680 × 4 × T) ÷ 100

=> 420 × 100 = 6720 × T

=> 42000 = 6720 × T

=> T = 4200 ÷ 672

=> T = 6.25 years

Therefore The correct answer is 6.25 years.

Additional Information

Simple Interest (SI)

It is calculated only on the initial Principal amount. Formula: SI = (P × R × T) ÷ 100.

Amount in Simple Interest

The total money returned after a period is A = P × [1 + (R × T) ÷ 100].

Rate of Interest

If Time and Principal are constant, Simple Interest is directly proportional to the Rate of Interest.

Q26. Answer: (c) Rs. 8,000 crore

The Correct answer is Rs. 8,000 crore.

Key Points

• The Smart City Mission is a flagship program launched by the Government of India in 2015.

• The mission aims to promote core infrastructure, sustainable urban development, and a better quality of life for citizens.

• The budget allocated for the financial year 2023-24 under the Smart City Mission is Rs. 8,000 crore.

• This fund is utilized for developing 100 smart cities across India with focus on smart solutions like better urban mobility, improved sanitation, and efficient energy use.

• Under the mission, cities aim to use technology, governance, and innovation to address urban challenges.

• Projects funded include integrated command and control centers, waste management systems, and smart transportation networks.

• The Smart City Mission is coordinated by the Ministry of Housing and Urban Affairs, ensuring efficient utilization of funds.

• The mission aligns with broader goals like Sustainable Development Goals (SDGs) and India's commitment to urban transformation.

Additional Information

• Rs. 12,000 crore

• This option is incorrect as the allocated budget for the financial year 2023-24 under the Smart City Mission is Rs. 8,000 crore, not Rs. 12,000 crore.

• Rs. 12,000 crore could refer to allocations under other government missions or programs in different sectors.

• Rs. 6,000 crore

• The amount of Rs. 6,000 crore is lower than the actual allocation made for the Smart City Mission in 2023-24.

• This amount might correspond to other urban development programs or regional initiatives outside the scope of the mission.

• Rs. 10,000 crore

• Rs. 10,000 crore exceeds the budget allocated for the Smart City Mission in the financial year 2023-24.

• Although larger budgets have been allocated to urban development in India in the past, the mission-specific allocation remains at Rs. 8,000 crore.

Q27. Answer: (b) MS Swaminathan

The Correct answer is MS Swaminathan.

Key Points

• MS Swaminathan, often referred to as the Father of the Green Revolution in India, was the chairman of the National Commission on Farmers (NCF) when it was constituted on 18 November 2004.

• The primary focus of the NCF under his leadership was to address issues related to sustainable agriculture, food security, and the welfare of farmers.

• He played a pivotal role in introducing high-yielding varieties of wheat and rice to India, which significantly increased agricultural production in the country during the Green Revolution.

• MS Swaminathan has been a staunch advocate for the use of science and technology to improve agricultural productivity while ensuring the conservation of natural resources.

• The NCF under his leadership proposed several key recommendations, including the establishment of Farmer Welfare Fund and providing farmers access to resources like credit, seeds, and irrigation facilities.

• The commission emphasized the need for a pro-farmer policy framework to ensure that farmers' incomes are stabilized and enhanced.

• MS Swaminathan has also contributed significantly to the global agricultural research landscape and has been recognized with numerous awards, including the World Food Prize.

Additional Information

• Krishnaswamy Kasturirangan

• Krishnaswamy Kasturirangan is an eminent Indian scientist known for his contributions to space research.

• He served as the Chairman of ISRO (Indian Space Research Organisation) from 1994 to 2003.

• He has played a key role in India's space missions, including the development of the Indian Remote Sensing satellites and INSAT series.

• He was also involved in drafting the National Education Policy (NEP) 2020.

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• Chakravarthi Rangarajan

• Chakravarthi Rangarajan is a renowned Indian economist and former Governor of the Reserve Bank of India (RBI).

• He has also served as the Chairman of the Economic Advisory Council to the Prime Minister.

• His work has focused on monetary policy, economic reforms, and financial stability.

• Verghese Kurien

• Verghese Kurien, known as the Father of the White Revolution in India, was instrumental in transforming India into the largest producer of milk in the world.

• He founded the Amul cooperative movement, which helped revolutionize India's dairy industry.

• He established the National Dairy Development Board (NDDB) and played a key role in implementing Operation Flood, one of the largest agricultural programs in India.

Q28. Answer: (b) 31

The Correct answer is 31.

Key Points

• As per the Indian Space Association (ISpA), by the year 2025, out of the approved 52-satellite constellation for the defence sector, 31 satellites are expected to be built by the private sector.

• This marks a significant step towards the involvement of private entities in the development of India's space and defence-related technologies.

• The initiative supports the vision of self-reliance (Atmanirbhar Bharat) in the space sector, as promoted by the Government of India.

• Private sector participation is crucial in reducing the burden on public organizations like the Indian Space Research Organisation (ISRO) and fostering innovation through competitive development.

• The 31 satellites are expected to cater to defence-related communication, surveillance, and strategic needs, strengthening India's national security infrastructure.

• This move aligns with the space sector reforms introduced in recent years, aiming to provide more opportunities to private players and startups in the space ecosystem.

Additional Information

• Private Sector Involvement in Space

• Recently, the Government of India has introduced policy reforms to facilitate private sector participation in the space sector.

• Organizations like IN-SPACe (Indian National Space Promotion and Authorization Center) have been established to promote and regulate private sector activities in space.

• Startups and private companies like Skyroot Aerospace, Agnikul Cosmos, and Pixxel have emerged as key players in India's evolving space industry.

• The government also aims to commercialize space technology through its commercial arm, NewSpace India Limited (NSIL).

• Defence Space Applications

• Satellites play a vital role in military communication, navigation, surveillance, and reconnaissance.

• They provide critical information for border security, disaster management, and strategic operations.

• Examples of defence-oriented satellites include RISAT (Radar Imaging Satellite) and GSAT series satellites.

Q29. Answer: (a) 5

The logic follows here is :-

Given numbers: 773 263 387 270 378

The lowest number is 263.

Now, extract the first digit of the lowest number:

• First digit of 263 is 2.

The highest number is 773.

Then, extract the first digit of the highest number:

• First digit of 773 is 7.

Finally, subtract the first digit of the lowest number from the first digit of the highest number:

Resultant = (First digit of highest number) - (First digit of lowest number)

Resultant = 7 - 2 = 5

Hence, the correct answer is "Option 1".

Q30. Answer: (b) = SRA, % = QMY

Given:

: UWC :: OHW : %

Option 1) # = KXS, % = SRA

For KXS to UWC:

Pattern for KXS to UWC: (+10, +3, +10)

For OHW to SRA

The patterns (+10, +3, +10) and (+4, +11, +4) are not the same. So, Option 1 is incorrect.

Option 2) # = SRA, % = QMY

For SRA to UWC:

Pattern for SRA to UWC: (+2, +5, +2)

For OHW to QMY

Pattern for OHW to QMY: (+2, +5, +2).

This pattern matches the pattern for SRA to UWC!

Option 3) # = QMY, % = MCU

For QMY to UWC:

Pattern for QMY to UWC: (+4, +10, +4)

For OHW to MCU

The patterns (+4, +10, +4) and (-2, -5, -2) are not the same. So, Option 3 is incorrect.

Option 4) # = MCU, % = KXS

For MCU to UWC:

Pattern for MCU to UWC: (+8, +20, +8)

For OHW to KXS

The patterns (+8, +20, +8) and (-4, +16, -4) are not the same. So, Option 4 is incorrect.

Hence, the correct answer is "Option 2".

Q31. Answer: (d) State Bank of India

The Correct answer is State Bank of India.

Key Points

• The State Bank of India (SBI) launched a unique product called ‘Asmita’ on International Women’s Day 2025.

• ‘Asmita’ is a collateral-free digital SME loan specifically designed for women entrepreneurs, aiming to support and empower them.

• The loan offers women an opportunity to scale their businesses without the burden of providing collateral, thus encouraging financial independence.

• The initiative aligns with the bank’s commitment to promoting gender inclusivity in the business and financial sector.

• State Bank of India is India's largest public sector bank, with a wide reach and extensive customer base.

• By introducing products like ‘Asmita,’ SBI demonstrates a focus on fostering women’s entrepreneurship and contributing to economic growth.

• This product is expected to benefit women across various industries, providing them a platform to access credit digitally without cumbersome paperwork.

Additional Information

• Bank of Baroda

• Bank of Baroda is one of the leading public sector banks in India.

• It was established in 1908 and is headquartered in Vadodara, Gujarat.

• The bank is known for its innovative financial products and has a strong international presence.

• While it offers loans for SMEs and women entrepreneurs, it did not launch the ‘Asmita’ loan on International Women’s Day 2025.

• HDFC Bank

• HDFC Bank is a leading private sector bank in India and is known for its superior technology-driven services.

• It was established in 1994 and is headquartered in Mumbai, Maharashtra.

• HDFC Bank offers a range of business loans and financial products; however, it was not the bank that launched the ‘Asmita’ loan.

• Axis Bank

• Axis Bank is another prominent private sector bank in India, established in 1993.

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• Headquartered in Mumbai, it provides various SME loans and initiatives for women entrepreneurs.
• Although Axis Bank is known for its focus on women-centric initiatives, it was not the initiator of the 'Asmita' loan.

Q32. Answer: (d) Rs. 8,507.43

Shortcut Trick

Let the Cost Price (CP) of the manufacturer be x.

Successive selling price chain: x × 105/100 × 110/100 × 115/100 = 11,300.

x × 1.05 × 1.10 × 1.15 = 11,300.

x × 1.32825 = 11,300.

x = 11,300 ÷ 1.32825 = 8,507.4346...

Therefore The correct answer is Rs. 8,507.43.

Alternate Method

Given → Retail Price = Rs. 11,300 | Manufacturer Profit = 5% | Wholesaler Profit = 10% | Retailer Profit = 15%.

Formulas: SP = CP × (100 + P%)/100 | Final Price = Initial CP × (1 + r1/100) × (1 + r2/100) × (1 + r3/100).

=> Let initial CP be CP.

=> Price after Manufacturer = CP × 1.05.

=> Price after Wholesaler = (CP × 1.05) × 1.10.

=> Price after Retailer = (CP × 1.05 × 1.10) × 1.15 = 11,300.

=> CP × 1.32825 = 11,300.

=> CP = 11,300 ÷ 1.32825 = 8,507.434...

Therefore The correct answer is Rs. 8,507.43.

Additional Information

Successive Percentage Changes

When a value is increased by x%, y%, and z% successively, the final value is Initial × (1 + x/100) × (1 + y/100) × (1 + z/100).

Retailer and Customer

The Selling Price of one entity in the supply chain becomes the Cost Price for the next entity.

Q33. Answer: (b) AO Hume

The Correct answer is AO Hume.

Key Points

• The 'Safety Valve Theory' is associated with AO Hume, a retired British civil servant who played a key role in the formation of the Indian National Congress (INC) in 1885.
• This theory suggests that the British government supported the establishment of the INC as a means to provide a platform for Indians to express their grievances peacefully, thus preventing revolutionary activities.
• AO Hume believed that by channeling Indian discontent into constitutional and non-violent methods, the British could maintain control over India while addressing some concerns.
• He was instrumental in bringing together prominent Indian leaders and intellectuals to form the INC, which later became a significant force in India's struggle for independence.
• The INC was initially meant to serve as a forum for educated Indians to discuss political issues and advise the British administration on reforms.
• The theory has been debated by historians, with some accepting its validity and others arguing that the INC was formed due to genuine political aspirations of Indian leaders rather than British motives.

Additional Information

• Lord Dufferin
• Lord Dufferin was the Viceroy of India from 1884 to 1888.
• Although he did not directly form the INC, he interacted with its leaders and played a role in facilitating its early discussions.
• He supported the idea of addressing Indian grievances, but his involvement was more indirect compared to AO Hume.
• WC Bannerji
• WC Bannerji was the first president of the Indian National Congress in 1885.
• He was a prominent lawyer and political leader known for his advocacy of constitutional reforms and moderate politics.
• While he played an important role in the INC's early leadership, the 'Safety Valve Theory' is not directly associated with him.
• Dadabhai Naoroji
• Dadabhai Naoroji was a key figure in Indian nationalism and the INC, often referred to as the Grand Old Man of India.

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• He was known for his economic critique of British colonial rule, especially the 'Drain of Wealth' theory.

• Though he contributed significantly to the INC, his focus was more on economic issues rather than the 'Safety Valve Theory.'

Q34. Answer: (d) 1596

Shortcut Trick

Total Work (LCM of 57, 28, 19) = 1596 units.

Efficiency of A = 1596 ÷ 57 = 28 units/hr.

Efficiency of A + C = 1596 ÷ 19 = 84 units/hr → Efficiency of C = 84 − 28 = 56 units/hr.

Efficiency of B + C = 1596 ÷ 28 = 57 units/hr → Efficiency of B = 57 − 56 = 1 unit/hr.

Time taken by B = 1596 ÷ 1 = 1596 hours.

Therefore The correct answer is 1596 hours.

Alternate Method

Given:

Time taken by A = 57 hours

Time taken by B + C = 28 hours

Time taken by A + C = 19 hours

Formula Used:

Efficiency = Total Work ÷ Time

Person	Days	Total Work	Efficiency
A	57	1596	28
B + C	28	57	
A + C	19	84	

Calculations:

=> Efficiency of A = 28

=> Efficiency of A + C = 84

=> Efficiency of C = (A + C) − A = 84 − 28 = 56

=> Efficiency of B + C = 57

=> Efficiency of B = (B + C) − C = 57 − 56 = 1

=> Time taken by B alone = Total Work ÷ Efficiency of B

=> Time = 1596 ÷ 1 = 1596 hours

Therefore The correct answer is 1596 hours.

Additional Information

Combined Efficiency

When multiple people work together, their individual efficiencies are added to find the total rate of work per unit time.

Total Work Assumption

Taking the LCM (Least Common Multiple) of the given time durations as the total work simplifies calculations by ensuring efficiencies are integers.

Inverse Relationship

For a constant amount of work, Time is inversely proportional to Efficiency (T prop. to 1/E).

Q35. Answer: (d) Ctrl + O

The correct answer is Ctrl + O.

Key Points

• Ctrl + O is a universal shortcut used in several applications, including Microsoft PowerPoint, to open an existing file or presentation.

• This shortcut improves productivity by allowing users to access files quickly without navigating through menus manually.

• In the context of Microsoft PowerPoint, pressing Ctrl + O will directly open the "Open" dialog box, enabling users to browse and select a file to work on.

• It is part of the broader suite of keyboard shortcuts designed to enhance user efficiency within the Microsoft Office environment.

• The shortcut is widely recognized and standardized across various programs, making it a valuable tool for users familiar with Windows-based applications.

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• Keyboard shortcuts like Ctrl + O reduce dependency on a mouse and are particularly beneficial for users aiming for speed and accuracy.

Additional Information

• Shift + O

• This combination does not perform any specific function in Microsoft PowerPoint.

• In some software, Shift may modify other shortcut keys, but it is not associated with opening presentations.

• Alt + O

• Alt + O is not a default shortcut for opening files in Microsoft PowerPoint.

• In older versions of Microsoft Word, this combination was used to open the "Format" menu, but it has no relevance in PowerPoint.

• Tab + O

• Tab is typically used for navigation purposes, such as moving between fields or options.

• It is not used in combination with O to open a file or presentation in PowerPoint.

Q36. Answer: (b) Thailand

The Correct Answer is Thailand.

In News

• Football: India secures AFC Women's Asian Cup Qualification for the first time.

Key Points

• India beat Thailand 2–1 in their final AFC Women's Asian Cup 2026 Qualifiers (Group B) match.

• The match was held at the 700th Anniversary of Chiang Mai Stadium in Thailand.

• Sangita Basfore scored a brace (2 goals) for India; Chatchawan Rodhong scored for Thailand.

• The match was a virtual playoff, as both teams had 9 points and an identical +22 goal difference.

• India qualified for the 2026 AFC Women's Asian Cup, to be held in Australia.

• This is India's first qualification in 22 years through regular competition (last time: 2003).

• India was automatically qualified in 2022 as hosts but had to withdraw due to a COVID-19 outbreak.

Q37. Answer: (d) 18

The logic follows here is :-

Given numbers: 898 740 280 169 993

The highest number is 993.

First digit of the highest number:

• First digit of 993 is 9.

The lowest number is 169.

Then, Third digit of the lowest number:

• Third digit of 169 is 9.

Finally, add the first digit of the highest number to the third digit of the lowest number:

Resultant = (First digit of highest number) + (Third digit of lowest number)

Resultant = 9 + 9

Resultant = 18

Hence, the correct answer is "Option 4".

Q38. Answer: (d) 79

Shortcut Trick

Arrange the given 11 observations in ascending order:

11, 32, 45, 53, 56, 79, 81, 87, 94, 98, 99

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

Median = ((11 + 1) ÷ 2)^(th) term = 6^(th) term = 79

Therefore The correct answer is 79.

Alternate Method

Given:

Observations: 87, 56, 79, 81, 11, 53, 94, 45, 32, 99, 98

Total number of observations (N) = 11

Formula Used:

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

Calculations:

First, arrange the given observations in ascending order:

=> 11, 32, 45, 53, 56, 79, 81, 87, 94, 98, 99

Count the total number of observations:

=> N = 11

Since N is an odd number, the median is calculated as:

=> Median = ((N + 1) ÷ 2)^(th) term

=> Median = ((11 + 1) ÷ 2)^(th) term

=> Median = (12 ÷ 2)^(th) term

=> Median = 6^(th) term

Looking at the ordered list, the 6^(th) term is 79.

=> Median = 79

Option Analysis:

=> Option (1) 53: This is the 4^(th) term in the sorted list, not the middle term.

=> Option (2) 56: This is the 5^(th) term in the sorted list, which is just before the middle term.

=> Option (3) 81: This is the 7^(th) term in the sorted list, which is just after the middle term.

=> Option (4) 79: This is the exact 6^(th) (middle) term, which is the correct median.

Therefore The correct answer is 79.

Additional Information

Median for Even Number of Terms

If the number of observations (N) is even, the median is the average of the (N ÷ 2)^(th) term and the ((N ÷ 2) + 1)^(th) term after arranging them in ascending order.

Relation between Mean, Median, and Mode

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

Effect of Outliers on Median

Unlike the mean, the median is a robust measure of central tendency and is not heavily influenced by extremely large or small values (outliers).

Q39. Answer: (a) 100

Shortcut Trick

Use the relationship: MP ÷ CP = (100 + Profit%) ÷ (100 − Discount%).

MP ÷ CP = (100 + 68) ÷ (100 − 16) = 168 ÷ 84 = 2 ÷ 1.

Since MP is 2 and CP is 1, the markup is 1 unit over 1 unit of CP.

Markup percentage X = (1 ÷ 1) × 100 = 100%.

Therefore The correct answer is 100.

Alternate Method

Given: Discount% = 16%, Profit% = 68%.

Formulas: SP = CP × (100 + P%) ÷ 100 | SP = MP × (100 − D%) ÷ 100 | MP = CP × (100 + X%) ÷ 100.

=> Let Cost Price (CP) be 100.

=> Selling Price (SP) = 100 + 68 = 168.

=> Since Discount is 16%, SP = 84% of Marked Price (MP).

=> 84% of MP = 168 => MP = (168 ÷ 84) × 100 = 200.

=> Markup Value = MP − CP = 200 − 100 = 100.

=> Markup Percentage (X) = (100 ÷ 100) × 100 = 100.

Therefore The correct answer is 100.

Additional Information

Marked Price & Discount

Marked Price is the price printed on the label. Discount is always calculated on the Marked Price: SP = MP − Discount.

Relation between CP and MP

The direct ratio MP/CP = (100 + P%)/(100 − D%) is derived by equating the two SP formulas.

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Q40. Answer: (a) BEH

The logic followed in this pattern is based on alphabetical shifts between consecutive letters within each cluster.

For 'BEH':

For 'FHL':

For 'ACG':

For 'SUY':

All letter-clusters except 'BEH' follow the pattern of adding +2 to the first letter to get the second, and adding +4 to the second letter to get the third.

'BEH' follows a +3, +3 pattern.

Hence, the letter-cluster that DOES NOT belong to that group is "1) BEH".

Hence, the correct answer is "Option 1".

Q41. Answer: (a) Three

Given, Seven people, I, J, K, L, O, P and Q are sitting in a row, facing north.

No one sits to the right of I.

Only three people sit between I and J.

Only two people sit between J and Q.

L sits third to the left of P.

K sits to the immediate right of P.

Three people sit between O and Q.

Hence, the correct answer is "Option 1".

Q42. Answer: (b) Reservation for SC/ST in legislatures

The Correct answer is Reservation for SC/ST in legislatures.

Key Points

• The 104th Constitutional Amendment Act, 2020 extended the provision for reservation of seats for Scheduled Castes (SC) and Scheduled Tribes (ST) in the Lok Sabha and State Legislative Assemblies.

• This reservation was originally provided under Article 334 of the Indian Constitution.

• Such reservations were introduced for a period of 70 years starting from the adoption of the Constitution in 1950.

• The amendment extended the reservation for SCs and STs by 10 years, thereby ensuring these provisions until 2030.

• The primary aim of this provision is to ensure adequate political representation for marginalized communities in legislative bodies.

• The reservation does not apply to seats in the Rajya Sabha and Legislative Councils, as these are indirectly elected bodies.

• It highlights India’s commitment to social justice and the inclusion of disadvantaged communities in the political process.

Additional Information

• Voting age for elections

• The voting age in India was reduced from 21 years to 18 years by the 61st Constitutional Amendment Act, 1988.

• This amendment aimed to provide greater political participation for the youth of India.

• The reduction of voting age applies to elections for the Lok Sabha and State Legislative Assemblies.

• GST Council term

• The GST Council was established under Article 279A of the Indian Constitution.

• It was introduced through the 101st Constitutional Amendment Act, 2016.

• The Council is responsible for making decisions related to Goods and Services Tax (GST).

• There is no specific term for the GST Council as it is a permanent body.

• Term of the Lok Sabha

• The term of the Lok Sabha is defined as five years under Article 83 of the Indian Constitution.

• The Lok Sabha can be dissolved earlier by the President on the advice of the Council of Ministers.

• The term can also be extended during a national emergency under provisions of Article 352.

Q43. Answer: (b) Madras

The Correct answer is Madras.

Key Points

• V.O. Chidambaram Pillai, also known as "Kappalottiya Tamilan," was a prominent Indian freedom fighter and a key figure in the

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Swadeshi Movement.

• He was actively involved in the revolutionary movement in the region of Madras Presidency, which is now a part of modern-day Tamil Nadu.

• He was instrumental in establishing the first indigenous shipping service, the Swadeshi Steam Navigation Company, to compete with British shipping companies.

• V.O. Chidambaram Pillai was deeply influenced by the ideas of Bal Gangadhar Tilak and used his entrepreneurial skills to strengthen the Swadeshi Movement.

• He contributed significantly to the cause of economic independence by promoting indigenous industries and creating awareness about the exploitation by colonial powers.

• He was arrested by the British authorities in 1908 for his revolutionary activities and was subjected to rigorous imprisonment, including forced labor.

• His life and legacy remain an integral part of the history of the freedom struggle in the Madras region.

Additional Information

• Delhi

• Delhi was a significant center during India's freedom struggle, but it was more prominently associated with movements like the 1857 Revolt and the activities of revolutionaries such as Bhagat Singh and others during the later phases of the struggle.

• However, V.O. Chidambaram Pillai's revolutionary activities were not focused in Delhi.

• Bombay

• Bombay (now Mumbai) was the hub of many prominent leaders like Gopal Krishna Gokhale and Dadabhai Naoroji, and was central to the early phases of the Indian National Congress.

• Though Bombay played a major role in the freedom movement, V.O. Chidambaram Pillai’s contributions were focused in the Madras region.

• Calcutta

• Calcutta (now Kolkata) was the capital of British India until 1911 and a major center for revolutionary activities led by groups like the Anushilan Samiti and leaders such as Aurobindo Ghosh.

• While Calcutta was pivotal in shaping the freedom movement, V.O. Chidambaram Pillai's work was concentrated in Madras Presidency.

Q44. Answer: (c) 2

Shortcut Trick

Combine the ratios directly since the term b is already common with the same value 4.

Ratio a : b : c = 3 : 4 : 7.

Substitute these values directly into the expression: (3 + 4 + 7) ÷ 7 = 14 ÷ 7 = 2.

Therefore The correct answer is 2.

Alternate Method

Given:

=> a : b = 3 : 4

=> b : c = 4 : 7

Formula Used:

=> If a : b = x : y and b : c = y : z, then a : b : c = x : y : z.

Calculations:

=> Since b is equal to 4 in both ratios, we can write:

=> a : b : c = 3 : 4 : 7

=> Let a = 3k, b = 4k, and c = 7k, where k is a constant.

=> Required expression = (a + b + c) ÷ c

=> Required expression = (3k + 4k + 7k) ÷ 7k

=> Required expression = 14k ÷ 7k

=> Required expression = 2

Therefore The correct answer is 2.

Additional Information

Compound Ratio

For two or more ratios, if we multiply the antecedents together and the consequents together, the ratio so obtained is called their compound ratio. For a : b and c : d, the compound ratio is ac : bd.

Combining Ratios

To combine ratios a : b and b : c when the value of b is different, multiply the first ratio by the b-value of the second, and the second ratio by the b-value of the first to make the b-term common.

Homogeneous Expressions

In a fraction where the numerator and denominator are homogeneous expressions of the same degree, the actual constant 'k' cancels out, allowing direct substitution of ratio terms.

Q45. Answer: (d) MQ - UZ

The logic followed here is based on alphabetical shifts within each cluster pair.

Let's analyze each option:

Option 1) GJ - PS:

Option 2) JM - SV:

Option 3) EH - NQ:

Option 4) MQ - UZ:

So, the letter-cluster pair that DOES NOT belong to that group is "4) MQ - UZ".

Hence, the correct answer is "Option 4".

Q46. Answer: (c) One

Given series:

8 £ 6 @ & % 4 6 @ 8 $ 7 & 3 Ω 9 # 1 * 4 5

Condition to be checked:

The pattern we are looking for is: Even Number → Symbol → Odd Number

Let's go through the series from left to right and identify the symbols:

8 £ 6 @ & % 4 6 @ 8 $ 7 & 3 Ω 9 # 1 * 4 5

Thus, there is only one such pattern (8 $ 7) that follows the given condition.

Hence, the correct answer is "Option 3".

Q47. Answer: (a) 2,100

Shortcut Trick

Ratio of cost of Shirt (S) to Trouser (T) is 4 : 3 (since 3S = 4T).

Total units for 5 shirts and 7 trousers = (5 × 4) + (7 × 3) = 41 units.

Given 41 units = Rs. 6,150 => 1 unit = Rs. 150.

Required cost for 2 shirts and 2 trousers = 2 × (4 + 3) = 14 units.

Final Cost = 14 × 150 = Rs. 2,100.

Therefore The correct answer is Rs. 2,100.

Alternate Method

Given:

Cost of 5 Shirts (S) + 7 Trousers (T) = Rs. 6,150

Cost of 3 Shirts = Cost of 4 Trousers => 3S = 4T

Calculations:

=> From 3S = 4T, we get S = 4T/3

=> Substitute S in the first equation: 5(4T/3) + 7T = 6150

=> (20T/3) + 7T = 6150

=> (20T + 21T) / 3 = 6150

=> 41T / 3 = 6150

=> 41T = 18450

=> T = 18450 ÷ 41 = Rs. 450

=> S = (4 × 450) ÷ 3 = Rs. 600

=> Cost of 2 shirts and 2 trousers = 2(600) + 2(450)

=> 1200 + 900 = Rs. 2,100

Therefore The correct answer is Rs. 2,100.

Additional Information

Ratio and Proportion

If aA = bB, then the ratio A : B is equal to b : a. This helps in converting multi-variable equations into single-variable unit-based

problems.

Unitary Method

It involves finding the value of a single unit and then multiplying it by the required number of units to find the final total value.

Linear Equations

Systems like a1x + b1y = c1 can be solved using substitution, elimination, or cross-multiplication methods.

Q48. Answer: (b) 8,448

Shortcut Trick

Net percentage change = −12 + 20 + [(−12 × 20) ÷ 100]

Net percentage change = 8 − 2.4 = 5.6% increase

New Price = 8000 × (105.6 ÷ 100) = 80 × 105.6 = 8448

Therefore The correct answer is Rs. 8448.

Alternate Method

Given: Original Price = Rs. 8,000, First change = 12% decrease, Second change = 20% increase.

=> Price after 12% decrease = 8000 − (12% of 8000)

=> Price after 12% decrease = 8000 − 960 = Rs. 7,040

=> Price after 20% increase = 7040 + (20% of 7040)

=> Price after 20% increase = 7040 + 1408 = Rs. 8,448

Therefore The correct answer is Rs. 8448.

Additional Information

Successive Percentage Change

If a value is changed by a% and then by b%, the effective net change is [a + b + (ab/100)]%.

Multiplying Factor Method

Final Value = Initial Value × (1 ± r1/100) × (1 ± r2/100), where r is the rate of increase/decrease.

Percentage Base Change

When a price decreases by x% and then increases by y%, the base for the second change is the result of the first change.

Q49. Answer: (b) qr

The given code language is:

Book is common in both the code, and qr is common in both the code.

Thus, 'book' is coded as 'qr'.

Hence, the correct answer is "Option 2".

Q50. Answer: (b) Italy

The Correct answer is Italy.

Key Points

• The Asian Development Bank (ADB) is a regional development bank established to foster economic growth and cooperation in the Asia-Pacific region.

• The 58th Annual Meeting of ADB in 2025 was hosted by Italy, marking a significant step as the meeting was held outside Asia.

• Italy, being a member of ADB, has demonstrated its commitment to global partnerships and sustainable development by hosting this prestigious event.

• During the meeting, India presented its Strategic Action Plan 2025-2029, focusing on long-term goals such as economic development, infrastructure growth, and poverty alleviation.

• The meeting serves as a forum for member countries to discuss important regional issues, financial strategies, and collaborative projects.

• Italy's hosting of this event reflects its active participation in international economic policies despite being geographically outside the Asia-Pacific region.

• This meeting also highlighted Italy's efforts to strengthen ties with Asian nations and contribute to global economic stability.

Additional Information

• China

• China is one of the founding members of ADB and a major contributor to its funding.

• China has hosted multiple international events and conferences but did not host the 58th Annual Meeting of ADB in 2025.

• The country is known for its significant role in regional development and its Belt and Road Initiative.

• Japan

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• Japan is a key member of ADB and one of its largest contributors.

• The headquarters of ADB is located in Manila, Philippines, but Japan has been instrumental in shaping ADB's policies and projects since its inception.

• Although Japan regularly participates in ADB meetings, it was not the host for the 2025 event.

• India

• India is a founding member of ADB and actively engages in its developmental initiatives.

• India's Strategic Action Plan 2025-2029 was discussed during the meeting, focusing on key areas like infrastructure and sustainable growth.

• Despite its strong involvement, India was not the host for the 58th Annual Meeting in 2025.

Q51. Answer: (c) 1938

Shortcut Trick

For a number to be divisible by 38, it must be divisible by its factors 2 and 19.

Checking options for divisibility by 2: (1) 2620, (3) 1938 are even; (2) 2423, (4) 1495 are odd and eliminated.

Check 1938 for 19: 1900 + 38 = (19 × 100) + (19 × 2) = 19 × 102. It is divisible.

Therefore The correct answer is 1938.

Alternate Method

Given: Divisor = 38

Method: Perform direct division for each option to check for zero remainder.

=> Option (1): 2620 ÷ 38 ≈ 68.94 (Not divisible)

=> Option (2): 2423 ÷ 38 ≈ 63.76 (Not divisible)

=> Option (3): 1938 ÷ 38

=> 1938 ÷ 38 = 51 (Remainder = 0)

=> Option (4): 1495 ÷ 38 ≈ 39.34 (Not divisible)

Therefore The correct answer is 1938.

Additional Information

Divisibility by Composite Numbers

A number is divisible by a composite number if it is divisible by its co-prime factors. For 38, factors are 2 and 19.

Divisibility Rule of 19

Multiply the last digit by 2 and add it to the remaining number. If the result is divisible by 19, the whole number is. Example: 193 + (8 × 2) = 209; 20 + (9 × 2) = 38 (Divisible).

Divisibility Rule of 2

A number is divisible by 2 if its last digit is even (0, 2, 4, 6, or 8).

Q52. Answer: (b) Superconducting state

The Correct answer is Superconducting state.

Key Points

• The Meissner effect is the phenomenon where a material expels magnetic fields when it transitions into the superconducting state.

• This effect is a defining characteristic of superconductors and demonstrates their ability to exhibit perfect diamagnetism.

• In the superconducting state, the material's resistance drops to zero, allowing electric currents to flow without energy loss.

• The effect was discovered in 1933 by Walther Meissner and Robert Ochsenfeld.

• It occurs due to the formation of Cooper pairs, which are paired electrons that move without scattering.

• The Meissner effect is observed below a critical temperature, which varies depending on the type of superconducting material.

• The effect is utilized in technologies such as magnetic levitation and highly efficient electrical systems.

• Superconductors are categorized into two types: Type I and Type II, both exhibiting the Meissner effect but with different behaviors in external magnetic fields.

Additional Information

• Paramagnetic state

• In the paramagnetic state, materials are weakly attracted to external magnetic fields due to the alignment of magnetic moments.

• Unlike the superconducting state, paramagnetic materials do not exhibit zero resistance or expulsion of magnetic fields.

• Examples of paramagnetic materials include aluminum, platinum, and magnesium.

• Ferromagnetic state

• In the ferromagnetic state, materials exhibit strong attraction to magnetic fields and retain their magnetization even after the external field is removed.
• Examples include iron, nickel, and cobalt.
• Ferromagnetic materials are used in applications like electric motors, transformers, and permanent magnets.
• Insulating state
• In the insulating state, materials do not conduct electricity due to the absence of free electrons or charge carriers.
• Common examples include rubber, glass, and ceramics.
• Insulators are widely used in electrical wiring and circuit components to prevent current leakage.

Q53. Answer: (d) 60,500

Shortcut Trick
Monthly Savings = 11,000 − (4,000 + 1,500) = Rs. 5,500.
Total months in a year = 12.
Birthday month savings spent = 1 month.
Total Savings in a year = 5,500 × (12 − 1) = 5,500 × 11 = Rs. 60,500.
Therefore The correct answer is Rs. 60,500.
Alternate Method
Given:
Monthly salary = Rs. 11,000
Expenditure on Rent = Rs. 4,000
Expenditure on Bills = Rs. 1,500
Calculations:
=> Total monthly expenditure = 4,000 + 1,500 = Rs. 5,500
=> Monthly savings = 11,000 − 5,500 = Rs. 5,500
=> Annual savings (without birthday expense) = 5,500 × 12 = Rs. 66,000
=> Amount spent on birthday = Monthly savings of 1 month = Rs. 5,500
=> Final annual savings = 66,000 − 5,500 = Rs. 60,500
Therefore The correct answer is Rs. 60,500.
Additional Information
Income, Expenditure and Savings
The basic relationship is Income = Expenditure + Savings. Any change in two variables affects the third proportionally.
Percentage Savings
Savings % = (Savings ÷ Total Income) × 100. This is useful for comparing financial habits across different income levels.
Annualization
To convert monthly figures to annual, multiply by 12. If a specific one-time expense occurs, subtract it from the total annual calculation.

Q54. Answer: (c) Himadri

The Correct answer is Himadri.
Key Points
• The Himadri, also known as the Greater Himalayas, is the northernmost range of the Himalayan mountain system.
• It contains the loftiest peaks, including the world's highest peak, Mount Everest (8,848 meters), and several other towering peaks like K2, Kanchenjunga, Nanga Parbat, and Annapurna.
• This range is characterized by its permanent snow cover and is home to some of the largest glaciers, such as the Siachen Glacier and the Gangotri Glacier.
• The Himadri range spans across several countries, including India, Nepal, Bhutan, Pakistan, and China (Tibet).
• The region is geologically young, formed due to the collision between the Indian Plate and the Eurasian Plate.
• It is a significant source of major rivers like the Ganges, Yamuna, Indus, Brahmaputra, and their tributaries.
• The Himadri range plays a crucial role in influencing the climate and weather patterns in South Asia by blocking cold winds and trapping the monsoon rains.
• The region is sparsely populated due to its extreme climatic conditions, high altitude, and rugged terrain.
• The Himadri serves as a hotspot for mountaineering, trekking, and adventure tourism, attracting enthusiasts from across the globe.

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Additional Information

• Shiwalik Range

• The Shiwalik Range, also known as the Outer Himalayas, is the southernmost range of the Himalayas.

• It is characterized by low-altitude hills (600-1,200 meters) and is known for its fragile geology.

• This range is primarily composed of sedimentary rocks, making it prone to erosion and landslides.

• It serves as a transition zone between the plains of northern India and the mountainous terrain of the Himalayas.

• Himachal Himalaya

• The Himachal Himalaya, also known as the Lesser Himalayas, lies between the Shiwalik and Himadri ranges.

• This range includes medium-altitude peaks (3,700–4,500 meters) and is rich in vegetation and biodiversity.

• It is home to popular hill stations like Shimla, Manali, Mussoorie, and Nainital.

• The region is known for its agricultural activities, particularly the cultivation of apples and other fruits.

• Purvachal Hills

• The Purvachal Hills are located in the northeastern part of India and are not part of the Himalayan system.

• They include ranges like the Patkai, Naga, Khasi, Jaintia, and Mizo Hills.

• This region is characterized by low-altitude hills and dense forests, making it rich in biodiversity.

• The Purvachal Hills are known for their distinct cultural identity and indigenous tribal communities.

Q55. Answer: (c) Australia

The Correct answer is Australia.

Key Points

• Australia holds federal elections to elect members of its Parliament, which consists of the House of Representatives and the Senate.

• The election date is determined by the Governor-General on the advice of the Prime Minister. In this case, the election was held on 3 May 2025.

• The federal election is conducted by the Australian Electoral Commission (AEC), which ensures the process adheres to democratic standards.

• Australia operates under a compulsory voting system, meaning all eligible citizens are required to vote in federal elections.

• The electoral system used for the House of Representatives is the preferential voting system, while the Senate uses a proportional representation system.

• The elected members of the House of Representatives serve for a term of three years, and the Senate members serve for a term of six years, with half of the Senate seats up for election every three years.

• Australia's federal elections play a crucial role in shaping the country’s governance, as they determine the composition of the government and opposition.

Additional Information

• Canada

• Canada holds federal elections typically every four years, but the actual timing depends on the dissolution of Parliament.

• Canada operates under a parliamentary system with a bicameral legislature consisting of the House of Commons and the Senate.

• The elections are governed by the Canada Elections Act and conducted by Elections Canada.

• New Zealand

• New Zealand has a unicameral parliamentary system, with elections held every three years.

• Elections in New Zealand use the Mixed Member Proportional (MMP) system, combining both electorate and party votes.

• The elections are managed by the Electoral Commission.

• United Kingdom

• The United Kingdom holds general elections typically every five years to elect members of the House of Commons.

• The UK operates under a first-past-the-post electoral system, where the candidate with the most votes in each constituency wins.

• Elections in the UK are managed by the Electoral Commission and overseen by local returning officers.

Q56. Answer: (b) = JGM, % = URX

Given:

: OLR :: PMS : %

Option 1) # = MKI, % = NHU

Option 2) # = JGM, % = URX

Option 3) # = LKP, % = FGH

Option 4) # = KLM, % = NHY

Based on the analysis, only Option 2 maintains a consistent pattern across both pairs.

Hence, the correct answer is "Option 2".

Q57. Answer: (a) Article 39A

The Correct answer is Article 39A.

Key Points

• Article 39A of the Indian Constitution explicitly provides for free legal aid to the poor and weaker sections of society.

• This Article was added by the 42nd Amendment Act of 1976, which emphasized the need for equal justice and provided a directive to the state to ensure that justice is not denied to any citizen due to economic or other disabilities.

• The provision aims to promote justice on the basis of equal opportunity and ensures that the legal system operates efficiently for all citizens, regardless of their financial status.

• Free legal aid under this Article is a part of the Directive Principles of State Policy (DPSP), which guide the government in framing laws and policies to establish a welfare state.

• The responsibility to provide free legal aid is administered by institutions such as the National Legal Services Authority (NALSA) and respective State Legal Services Authorities.

• It reflects the constitutional vision of ensuring social justice and removing barriers to accessing the legal system for marginalized groups.

Additional Information

• Article 21

• Article 21 guarantees the right to life and personal liberty. It states that no person shall be deprived of their life or personal liberty except according to the procedure established by law.

• This Article has been interpreted widely by the judiciary to include various rights such as the right to privacy, right to health, and right to a clean environment.

• While Article 21 indirectly supports access to justice, it does not specifically provide for free legal aid.

• Article 32

• Article 32 provides the right to constitutional remedies, allowing individuals to move the Supreme Court for the enforcement of their fundamental rights.

• It is often referred to as the "heart and soul of the Constitution" as described by Dr. B.R. Ambedkar.

• This Article empowers the Supreme Court to issue writs such as habeas corpus, mandamus, prohibition, quo warranto, and certiorari for the enforcement of fundamental rights.

• Article 44

• Article 44 falls under the Directive Principles of State Policy (DPSP) and directs the state to strive for a Uniform Civil Code (UCC) throughout the country.

• The UCC aims to replace personal laws based on the scriptures and customs of each major religious community with a common set governing every citizen.

• It is not related to the provision of free legal aid.

Q58. Answer: (c) 70, 6

The logic followed here is:

Logic: The second number is obtained by dividing the first number by 10 and then subtracting 1 from the result.

i.e., 2nd number = (1st number ÷ 10) - 1

Let's verify this logic with the given pairs:

For (50, 4):

→ 1st number = 50

→ Check 2nd number: (50 ÷ 10) - 1 = 5 - 1 = 4

→ The given 2nd number is 4. The logic holds for the first pair.

For (80, 7):

→ 1st number = 80

→ Check 2nd number: (80 ÷ 10) - 1 = 8 - 1 = 7

→ The given 2nd number is 7. The logic holds for the second pair.

Now, let's apply this logic to the given options:

Option 1) (90, 11)

→ 1st number = 90

→ Check 2nd number: (90 ÷ 10) - 1 = 9 - 1 = 8

→ The given 2nd number is 11. Since 8 ≠ 11, this option does NOT follow the logic.

Option 2) (60, 6)

→ 1st number = 60

→ Check 2nd number: (60 ÷ 10) - 1 = 6 - 1 = 5

→ The given 2nd number is 6. Since 5 ≠ 6, this option does NOT follow the logic.

Option 3) (70, 6)

→ 1st number = 70

→ Check 2nd number: (70 ÷ 10) - 1 = 7 - 1 = 6

→ The given 2nd number is 6. This option follows the logic.

Option 4) (100, 11)

→ 1st number = 100

→ Check 2nd number: (100 ÷ 10) - 1 = 10 - 1 = 9

→ The given 2nd number is 11. Since 9 ≠ 11, this option does NOT follow the logic.

Hence, the correct answer is "Option 3".

Q59. Answer: (c) Mahaparinirvan Diwas

The Correct answer is Mahaparinirvan Diwas.

Key Points

• Mahaparinirvan Diwas is observed on 6th December every year to honor the contributions of Dr. B.R. Ambedkar, the architect of the Indian Constitution, towards social justice, equality, and empowerment.

• The term Mahaparinirvan signifies the attainment of ultimate liberation or salvation, which is a Buddhist concept.

• Dr. Ambedkar, a staunch advocate of Dalit rights, passed away on 6th December 1956, and the day has been observed as Mahaparinirvan Diwas since then.

• Dr. Ambedkar was instrumental in combating social discrimination, particularly towards the marginalized sections of society.

• On this day, people across India pay homage to Dr. Ambedkar by visiting his memorial at Chaitya Bhoomi in Mumbai.

• Dr. Ambedkar's work in the fields of law, economics, and social reform continues to inspire millions of people worldwide.

• He was awarded the Bharat Ratna, India’s highest civilian honor, posthumously in 1990.

Additional Information

• Constitution Awareness Day

• Constitution Awareness Day is celebrated on 26th November, the day the Indian Constitution was adopted in 1949.

• The day is also referred to as Constitution Day or Samvidhan Divas.

• It is observed to spread awareness about the importance of the Indian Constitution and its role in ensuring democracy and justice.

• National Equality Day

• While the term National Equality Day is significant, it is not officially recognized or associated with Dr. Ambedkar's contributions.

• The concept focuses on promoting equal rights and opportunities for all citizens.

• Ambedkar Smriti Diwas

• While it may sound relevant, Ambedkar Smriti Diwas is not an officially recognized term for the day honoring Dr. Ambedkar.

• The official day for commemorating Dr. Ambedkar’s contributions is Mahaparinirvan Diwas.

Q60. Answer: (c) 1.75 m

Shortcut Trick

Volume in m^3 = 70,000 ÷ 1,000 = 70 m^3

Breadth = Volume ÷ (Length × Depth)

Breadth = 70 ÷ (4 × 10) = 70 ÷ 40 = 1.75 m

Therefore The correct answer is 1.75 m.

Alternate Method

Given:

Capacity of tank = 70,000 litres

Length (l) = 4 m

Depth (h) = 10 m

Formula Used:

1 m^3 = 1,000 litres

Volume of a cuboid = Length × Breadth × Height

Calculations:

=> Volume in cubic meters = 70,000 ÷ 1,000 = 70 m^3

=> Volume = l × b × h

=> 70 = 4 × b × 10

=> 70 = 40 × b

=> b = 70 ÷ 40

=> b = 1.75 m

Therefore The correct answer is 1.75 m.

Additional Information

Volume of Cuboid

The space occupied by a three-dimensional rectangular object is given by Volume = Length × Breadth × Height.

Unit Conversions

1 m^3 = 1,000 litres and 1 litre = 1,000 cm^3.

Surface Area of Cuboid

Total Surface Area = 2(lb + bh + hl) and Lateral Surface Area = 2h(l + b).

Q61. Answer: (b) Three

Given: A, B, C, D, E and F live on six different floors of the same building, numbered 1 to 6 from bottom to top.

E lives on a floor which is a prime number.

The prime numbered floors are 2, 3, and 5.

So, E can live on Floor 2, Floor 3, or Floor 5.

The product of floors on which E and A live is 8.

If E is on Floor 2, then A must be on Floor 4 (2 * 4 = 8).

If E is on Floor 3, then A would have to be on Floor 8/3, which is not possible.

If E is on Floor 5, then A would have to be on Floor 8/5, which is not possible.

Therefore, E must live on Floor 2 and A must live on Floor 4.

	Person
Floor 6	
Floor 5	
Floor 4	A
Floor 3	
Floor 2	E
Floor 1	

C lives immediately above F.

	Person
Floor 6	C
Floor 5	F
Floor 4	A
Floor 3	
Floor 2	E
Floor 1	

The sum of floors on which A and B live is 7.

We know A lives on Floor 4. So, 4 + B's Floor = 7. This means B's Floor = 3.

So, B lives on Floor 3.

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	Person
Floor 6	C
Floor 5	F
Floor 4	A
Floor 3	B
Floor 2	E
Floor 1	

The only remaining person is D, and the only remaining floor is Floor 1.
So, D lives on Floor 1.
Final Arrangement:

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

C lives on Floor 6.
E lives on Floor 2.
There are 3 people (F, A, B) living between C and E.
Hence, the correct answer is "Option 2".

Q62. Answer: (a) ABBK

Here is the alphabetical place value for each letter:
The logic followed in this pattern is a series of alphabetical shifts for each letter position: +3, -3, +2, -2.
For 'LQRU' related to 'ONTS'
For 'RKVQ' related to 'UHXO':
The consistent pattern observed is +3, -3, +2, -2.
Applying the same logic to 'XEZM':
Thus, XEZM is related to ABBK.
Hence, the correct answer is "Option 1".

Q63. Answer: (d) 800

Shortcut Trick
Savings = 40% → Expenditure = 100% − 40% = 60%.
60% units = Rs. 480
1% unit = 480 ÷ 60 = 8
100% (Income) = 8 × 100 = Rs. 800.
Therefore The correct answer is Rs. 800.
Alternate Method
Given:
Savings = 40% of Income
Expenditure = Rs. 480
Formula: Income = Expenditure + Savings
=> Let total Income be Rs. I.
=> Savings = 0.40 × I
=> Expenditure = I − 0.40I = 0.60I

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=> 0.60 × I = 480
=> I = 480 ÷ 0.60
=> I = 48000 ÷ 60
=> I = 800
Therefore The correct answer is Rs. 800.
Additional Information
Income-Expenditure Relation
Total Income is always the sum of Expenditure and Savings (Income = E + S).
Percentage Base
In such problems, the Income is always treated as the 100% base for calculations.
Savings Ratio
If savings % is S, then expenditure % is (100 − S). Ratio of S : E = Savings % : (100 − Savings %).

Q64. Answer: (c) 10

Shortcut Trick
Since y varies directly as (x + 3), the ratio y / (x + 3) remains constant.
Ratio 1 = 8 / (1 + 3) = 8 / 4 = 2.
For x = 2, y = 2 × (2 + 3) = 2 × 5 = 10.
Therefore The correct answer is 10.
Alternate Method
Given: y prop. to (x + 3), y = 8 when x = 1.
Formula Used: y = k(x + 3), where k is the constant of proportionality.
=> 8 = k(1 + 3)
=> 8 = 4k
=> k = 2
=> Now, for x = 2:
=> y = 2(2 + 3)
=> y = 2 × 5
=> y = 10
Therefore The correct answer is 10.
Additional Information
Direct Variation
When one quantity increases as the other increases, the relationship is y = kx. The ratio y/x is always constant.
Inverse Variation
When one quantity increases as the other decreases, the relationship is y = k/x. The product x × y is always constant.
Proportionality Constant
The value 'k' represents the constant rate of change between the dependent and independent variables.

Q65. Answer: (a) 5

Shortcut Trick
Efficiency ratio M : W => 2M = 9W => M/W = 9/2.
Total Work = 2 × 9 × 14 = 252 units.
Work done by 2 men in 9 days = 2 × 9 × 9 = 162 units.
Remaining Work = 252 − 162 = 90 units.
Women required (n) × Efficiency (2) × Days (9) = 90 => n = 90 ÷ 18 = 5.
Therefore The correct answer is 5 women.
Alternate Method
Given: 2 Men (M) = 9 Women (W) can complete work in 14 days.

Person	Days	Total Work	Efficiency
2 Men	14	18 units/day	
9 Women	14	252 units	18 units/day

=> Efficiency of 1 Man = 18 ÷ 2 = 9 units/day.

=> Efficiency of 1 Woman = 18 ÷ 9 = 2 units/day.

=> Work done by 2 men in 9 days = (2 × 9) × 9 = 162 units.

=> Remaining work = 252 − 162 = 90 units.

=> Time allowed for remaining work = 9 days.

=> Required efficiency = 90 ÷ 9 = 10 units/day.

=> Number of women = Required efficiency ÷ Efficiency of 1 woman.

=> Number of women = 10 ÷ 2 = 5.

Therefore The correct answer is 5 women.

Additional Information

The 'OR' Concept

When M1 men OR W1 women can do a job, equate their total work capacities: M1 × Days = W1 × Days to find the efficiency ratio.

Work-Efficiency Formula

Total Work = Efficiency × Time. If work is constant, Efficiency is inversely proportional to Time.

M-D-H Rule

For different groups, use (M1×D1×H1)/W1 = (M2×D2×H2)/W2 where M is persons, D is days, H is hours, and W is work.

Q66. Answer: (d) Kerala and Assam

The Correct answer is Kerala and Assam.

Key Points

• Plantation agriculture is a form of commercial farming where crops are grown for profit.

• In India, plantation agriculture is primarily concentrated in the regions of Kerala and Assam due to their suitable climatic and geographical conditions.

• Kerala is known for the cultivation of crops like rubber, tea, coffee, spices, and coconut, which require a tropical climate and abundant rainfall.

• Assam is globally famous for its tea plantations. The state has a humid subtropical climate with heavy rainfall, making it ideal for tea cultivation.

• Plantation agriculture in these areas contributes significantly to the export economy of India.

• This type of agriculture often involves large-scale monoculture practices and requires a large labor force.

• In Kerala and Assam, plantation agriculture also supports industries like tea processing, rubber production, and spice export.

Additional Information

• Odisha and Chhattisgarh

• These states are not major regions for plantation agriculture but are known for rice cultivation due to their fertile soils and adequate water supply.

• Odisha also grows crops like pulses, oilseeds, and sugarcane, while Chhattisgarh is referred to as the "Rice Bowl of India".

• Rajasthan and Gujarat

• These states are characterized by arid and semi-arid climates, which are unsuitable for plantation agriculture.

• Major crops in these regions include millets, cotton, groundnuts, and oilseeds.

• Rajasthan is known for its dryland farming, while Gujarat is a leading producer of cotton and groundnuts.

• Punjab and Haryana

• These states are the center of intensive subsistence farming and are part of the Green Revolution in India.

• The primary crops grown in this region are wheat, rice, and sugarcane, which are staples of India's food production.

• The climatic and soil conditions in Punjab and Haryana are more suited for cereal and cash crops than plantation crops.

Q67. Answer: (c) 44

The logic followed here is based on the formula for finding the total number of items in a row/class when the rank of one item from both ends is known.

Given:

• Vijay's rank from the top = 34th

• Vijay's rank from the bottom = 11th

The formula for the total number of students in the class is:

Total number of students = (Rank from Top) + (Rank from Bottom) - 1

Total number of students = 34 + 11 - 1

Total number of students = 45 - 1

Total number of students = 44

Hence, the correct answer is "Option 3".

Q68. Answer: (b) Wife's father's mother

Decoding symbols:

A is				
Symbol	•	•	×	÷
Meaning	Mother	Brother	Wife	Father
to B				

Given: M + N ÷ O – P × Q

Let's break down the expression step by step:

M + N → M is the mother of N.

N ÷ O → N is the father of O.

O – P → O is the brother of P.

P × Q → P is the wife of Q.

Now, let's trace the relationship from M to Q:

Therefore, M is the Wife's father's mother of Q.

Hence, the correct answer is "Option 2".

Q69. Answer: (c) 1372

Shortcut Trick

Volume of sphere = Volume of cylindrical wire

$(4/3) \times \pi \times R^3 = \pi \times r^2 \times L$

$(4/3) \times 21 \times 21 \times 21 = 0.3 \times 0.3 \times L$ (all in cm)

$L = (4 \times 7 \times 21 \times 21) \div 0.09 = 137200$ cm = 1372 m

Therefore The correct answer is 1372 m.

Alternate Method

Given:

Diameter of sphere (D) = 42 cm => Radius (R) = 21 cm

Diameter of wire (d) = 0.6 cm => Radius (r) = 0.3 cm

Formula Used:

Volume of sphere = $(4/3) \times \pi \times R^3$

Volume of cylinder (wire) = $\pi \times r^2 \times h$ (where h is the length L)

Calculations:

=> Volume of sphere = Volume of wire

=> $(4/3) \times \pi \times (21)^3 = \pi \times (0.3)^2 \times L$

=> $(4/3) \times 21 \times 21 \times 21 = 0.09 \times L$

=> $4 \times 7 \times 441 = 0.09 \times L$

=> $12348 = 0.09 \times L$

=> $L = 12348 \div 0.09 = 137200$ cm

=> L (in metre) = 137200 ÷ 100 = 1372 m

Therefore The correct answer is 1372 m.

Additional Information

Volume Invariance

When a solid is melted and recast into a new shape, the total volume remains constant, provided there is no wastage.

Cylinder Properties

For a wire (cylinder), the curved surface area is $2\pi rh$ and the total surface area is $2\pi r(h + r)$.

Unit Conversion

1 metre = 100 centimetres. Always ensure all dimensions are in the same system before calculation.

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Q70. Answer: (b) Quick Access

The Correct answer is Quick Access.

Key Points

• Quick Access is a feature in Windows File Explorer that allows users to pin and access their most frequently used folders and files easily.

• It provides a convenient location for users to view recently accessed files and folders, promoting efficiency in navigating the system.

• This feature is automatically updated based on user activity, displaying the files and folders that are most relevant to the user at a given time.

• Users can also manually pin folders to the Quick Access section for quick retrieval.

• It enhances productivity by eliminating the need to search for frequently used files and directories across the file system.

• Quick Access is located at the top of the navigation pane in File Explorer in Windows 10 and Windows 11.

• It is particularly useful for professionals and students managing a large number of files and folders daily.

Additional Information

• Task Bar

• The Task Bar is a graphical interface element in Windows that displays running applications, system notifications, and shortcuts to certain programs.

• It is located at the bottom of the desktop by default and contains the Start menu, search bar, and system tray.

• Its primary function is to manage open programs and provide quick access to pinned applications, not folders.

• File Explorer

• File Explorer is the primary file management system in Windows, allowing users to browse, manage, and organize files and folders.

• It provides access to system drives, external drives, and network locations.

• While it contains the Quick Access feature, File Explorer itself is not specifically designed for creating shortcuts to frequently used folders.

• Libraries

• Libraries are a feature in Windows that allow users to organize content from multiple folders into a single virtual collection.

• They are best suited for categorizing files by type, such as documents, music, pictures, and videos.

• However, Libraries do not serve as a shortcut tool for quick access to frequently used folders.

Q71. Answer: (d) Hard Disk Drive (HDD)

The Correct answer is Hard Disk Drive (HDD).

Key Points

• The Hard Disk Drive (HDD) is a storage device that is not part of the Central Processing Unit (CPU).

• The CPU consists of components like the Control Unit (CU), Arithmetic Logic Unit (ALU), and Cache Memory, which work together to process data and execute instructions.

• Unlike the CPU, the HDD is primarily used for long-term data storage and does not perform data processing or execution of instructions.

• The HDD is considered an external storage device connected to the computer system to store files, programs, and operating systems.

• HDDs are slower compared to RAM or Cache Memory when it comes to accessing data, as they are designed for mass storage rather than quick access.

• Modern computers often use Solid State Drives (SSD) alongside or in place of HDDs due to their faster data access speeds.

Additional Information

• Cache Memory

• Cache Memory is a small-sized, high-speed memory located within the CPU or very close to it.

• It stores frequently accessed data and instructions to improve the processing speed of the CPU.

• Cache memory is faster than RAM and is used to reduce the time taken to access data from the main memory.

• Control Unit (CU)

• The Control Unit is one of the main components of the CPU and is responsible for directing the flow of data and instructions.

• It interprets program instructions and controls the operation of the CPU's other components, such as the ALU and memory.

• The CU is crucial for the execution of programs and ensures proper coordination between various parts of the computer.

• Arithmetic Logic Unit (ALU)

• The Arithmetic Logic Unit performs all the arithmetic (e.g., addition, subtraction) and logical operations (e.g., comparisons)

required for processing data.

• The ALU is integral to the CPU and works closely with the Control Unit to execute instructions.

• It is a fundamental component for tasks that involve mathematical computations and decision-making processes.

Q72. Answer: (d) √(1/2)

Shortcut Trick

The squared ratio of difference to sum is given by [(a2 + b2) − 2ab] / [(a2 + b2) + 2ab].

Substituting values: (144 − 48) / (144 + 48) = 96 / 192 = 1 / 2.

Taking square root on both sides: (a − b) / (a + b) = √(1 / 2).

Therefore The correct answer is sqrt(1)/(2).

Alternate Method

Given: a2 + b2 = 144, ab = 24, and a > b.

Formula used: (a + b)2 = a2 + b2 + 2ab and (a − b)2 = a2 + b2 − 2ab

=> First, calculate the sum of squares plus twice the product:

=> (a + b)2 = 144 + 2 × 24 = 144 + 48 = 192

=> a + b = √192

=> Next, calculate the sum of squares minus twice the product:

=> (a − b)2 = 144 − 2 × 24 = 144 − 48 = 96

=> a − b = √96

=> Now, find the required ratio of (a − b) to (a + b):

=> (a − b) / (a + b) = √96 / √192

=> (a − b) / (a + b) = √(96 / 192)

=> (a − b) / (a + b) = √(1 / 2)

Therefore The correct answer is sqrt(1)/(2).

Additional Information

Algebraic Binomial Expansion

The expansion (x ± y)2 = x2 + y2 ± 2xy is a fundamental identity used to relate the sum and difference of squares with their products.

Relation between Sum and Difference

The difference between the squares of the sum and the difference of two numbers is (a + b)2 − (a − b)2 = 4ab.

Properties of Square Roots

For any positive numbers x and y, the property √x / √y = √(x / y) allows for the simplification of ratios involving radicals.

Q73. Answer: (c) 1.52 billion

The Correct answer is 1.52 billion.

Key Points

• According to the National Commission on Population (NCP), the projected population of India by the year 2036 is expected to be 1.52 billion.

• The data is based on the report "Population Projections for India and States 2011–2036" prepared by the National Commission on Population under the guidance of the Ministry of Health and Family Welfare, Government of India.

• This projection takes into account various factors such as fertility rate, mortality rate, and migration trends in India.

• With a population of 1.52 billion, India is expected to remain the second most populous country in the world, following China, but it is anticipated that India may surpass China shortly thereafter.

• The population growth rate is expected to decline due to factors such as improvements in healthcare, education, and family planning initiatives.

• This population projection is critical for planning and implementing strategies in areas like healthcare infrastructure, employment, education, and resource management.

• The report also emphasizes the need for continued efforts in ensuring sustainable development to manage the challenges posed by a large population.

Additional Information

• National Commission on Population (NCP)

• The National Commission on Population was established in 2000 under the chairmanship of the Prime Minister of India.

• The aim of the commission is to monitor and review the implementation of the National Population Policy (NPP), 2000.

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• The commission focuses on achieving population stabilization and improving the quality of life of citizens through better health and family welfare programs.
• Fertility Rate
• The fertility rate refers to the average number of children born to a woman over her lifetime.
• In India, the Total Fertility Rate (TFR) has been declining due to increased awareness and access to family planning measures.
• Population Projections
• Population projections are statistical estimates of future population size and composition based on current data and trends.
• They are used by governments and organizations for policy formulation and resource allocation.

Q74. Answer: (c) 8

Given number: '8457312'

After applying the given operations:

Original Digit	**8**	**4**	**5**	**7**	**3**	**1**	**2**
Operation	-2 (Even)	-2 (Even)	+1 (Odd)	+1 (Odd)	+1 (Odd)	+1 (Odd)	-2 (Even)
New Digit	6	2	6	8	4	2	0

The number thus formed is 6268420.

Highest digit is: 8

Lowest digit is: 0

Now,

Sum of the highest and lowest digits is: 8 + 0 = 8.

Hence, the correct answer is "Option 3".

Q75. Answer: (a) Kumaragupta I

The Correct answer is Kumaragupta I.

Key Points

• Kumaragupta I was the son and successor of Chandragupta II, one of the greatest emperors of the Gupta Dynasty.
• He ascended the throne around 415 CE and ruled for approximately 40 years.
• Kumaragupta I is known for maintaining the stability and prosperity of the Gupta Empire during his reign.
• He performed the Ashvamedha Yajna (horse sacrifice ritual) to assert his imperial authority.
• During his reign, the empire faced threats from the Pushyamitras, a tribe that challenged Gupta rule, but Kumaragupta successfully defended the empire.
• He issued various types of coins, including gold and silver coins, which showcased the prosperity of the Gupta Empire.
• Kumaragupta I established the famous Nalanda University, which later became an important center for learning in ancient India.
• His reign marked the continuation of the Golden Age of India, characterized by advancements in art, science, literature, and culture.

Additional Information

• Skandagupta
• Skandagupta was a later ruler of the Gupta dynasty and is known for his military campaigns against the Hunas, who invaded India during his reign.
• He is credited with successfully repelling the Huna invasions and preserving the Gupta Empire's territorial integrity.
• Skandagupta faced financial difficulties due to continuous wars, which marked the beginning of the decline of the Gupta Empire.
• Ramgupta
• Ramgupta is believed to have been a lesser-known ruler of the Gupta dynasty and possibly the elder brother of Chandragupta II.
• Historical sources suggest that Ramgupta was defeated by the Saka rulers and later replaced by Chandragupta II.
• His reign is not well-documented, and his contributions to the Gupta Empire are minimal compared to other rulers.
• Samudragupta
• Samudragupta was the father of Chandragupta II and one of the most celebrated rulers of the Gupta dynasty.
• He is known as the Napoleon of India for his extensive military campaigns and conquests across the Indian subcontinent.
• Samudragupta's reign laid the foundation for the Gupta Empire's expansion and prosperity under his successors.
• He was a patron of art and culture, and his coins depict him as a skilled musician and warrior.

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Q76. Answer: (c) 662

BODMAS Table:

Given equation: 51 ÷ 12 + 162 × 3 − 104 = ?

Now, if '+' and '−' are interchanged and '×' and '÷' are interchanged, the equation becomes:

=> 51 × 12 − 162 ÷ 3 + 104 = ?

Following the BODMAS rule:

=> 51 × 12 − 162 ÷ 3 + 104 = ?

=> 51 × 12 − 54 + 104 = ?

=> 612 − 54 + 104 = ?

=> 558 + 104 = 662

Hence, the correct answer is "Option 3".

Q77. Answer: (a) 164

Given: 3 ÷ 45 × 855 − 19 + 16 = ?

Decoding the given information:

Symbol	•	÷	×	•
Means	÷	×	•	•

Now replacing the sign from left to right using BODMAS Rule, we get:

=> 3 × 45 + 855 ÷ 19 − 16 = ?

=> 3 × 45 + 855 ÷ 19 − 16 = ?

=> 3 × 45 + 45 − 16 = ?

=> 135 + 45 − 16 = ?

=> 180 − 16 = 164

Hence, the correct answer is "Option 1".

Q78. Answer: (c) 24

Given number: 7362145

Condition: 2 is added to each even digit and 2 is added to each odd digit.

Let's apply the condition to each digit:

• Original digit: 7 (Odd) → 7 + 2 = 9

• Original digit: 3 (Odd) → 3 + 2 = 5

• Original digit: 6 (Even) → 6 + 2 = 8

• Original digit: 2 (Even) → 2 + 2 = 4

• Original digit: 1 (Odd) → 1 + 2 = 3

• Original digit: 4 (Even) → 4 + 2 = 6

• Original digit: 5 (Odd) → 5 + 2 = 7

The new number formed is 9584367.

Sum of the odd digits = 9 + 5 + 3 + 7

Sum of the odd digits = 24

Hence, the correct answer is "Option 3".

Q79. Answer: (a) Banaras and Lucknow

The Correct answer is Banaras and Lucknow.

Key Points

• Thumri is a semi-classical form of Indian vocal music known for its expressive and romantic themes.

• The two prominent Gharanas associated with Thumri are based in Banaras and Lucknow.

• Banaras Gharana: Known for its spiritual and devotional touch, this style emphasizes the lyrical aspect of Thumri with intricate melodic variations. It is often performed in a more relaxed and meditative manner.

• Lucknow Gharana: This Gharana is recognized for its expressive and dramatic style, focusing on the emotional depth and beauty of Thumri. It heavily incorporates gestures and facial expressions to convey the mood of the song.

• Both Gharanas have contributed significantly to the evolution and popularity of Thumri, making them integral to Indian classical music.

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• Thumri is often accompanied by instruments such as the tabla, harmonium, and sarangi, enhancing its melodious appeal.

Additional Information

• Agra and Kirana

• The Agra Gharana is primarily known for its Dhrupad and Khayal styles rather than Thumri. It emphasizes robust and powerful singing techniques.

• The Kirana Gharana is famous for its focus on the melodic and subtle nuances of Khayal singing. It is not predominantly associated with Thumri.

• Gwalior and Bhopal

• The Gwalior Gharana is the oldest Gharana in Indian classical music, known for its Khayal style. It does not hold a significant tradition of Thumri singing.

• Bhopal does not have a notable Gharana associated with Thumri or any prominent style of Indian classical music.

• Patiala and Talwandi

• The Patiala Gharana is renowned for its Khayal and Tappa styles, characterized by intricate rhythmic patterns and fast-paced singing.

• Talwandi Gharana is primarily associated with Dhrupad style and does not have a significant tradition of Thumri singing.

Q80. Answer: (d) Stone

The Correct answer is Stone.

Key Points

• The sculpture of the Bearded Man, found in Mohenjo-Daro, is a significant artifact of the Indus Valley Civilization.

• This sculpture is made of stone, specifically steatite

• The Bearded Man is considered one of the finest examples of ancient craftsmanship and reflects the artistic skills of the people of the Indus Valley Civilization.

• The sculpture is believed to represent a priest or a nobleman, showcasing a well-defined beard and a robe with detailed patterns.

• The use of stone indicates the advanced techniques employed by the civilization for carving and sculpting.

• Its discovery in Mohenjo-Daro highlights the urban sophistication and cultural richness of the Indus Valley Civilization.

• Artifacts like the Bearded Man provide crucial insights into the social, cultural, and artistic aspects of one of the world's oldest civilizations.

Additional Information

• Terracotta

• Terracotta is a type of earthenware made from baked clay.

• It was widely used by the Indus Valley Civilization to create figurines, pottery, and seals.

• Terracotta items are significant for understanding the daily life, religious beliefs, and art of ancient civilizations.

• Bronze

• Bronze is an alloy of copper and tin and was commonly used by ancient civilizations for making tools, weapons, and sculptures.

• The famous Dancing Girl of Mohenjo-Daro is made of bronze and represents the advanced metallurgical skills of the Indus Valley Civilization.

• Copper

• Copper was extensively used in the Indus Valley Civilization for making utensils, tools, and ornaments.

• The use of copper indicates the civilization's knowledge of metallurgy and trade networks.

Q81. Answer: (b) The diagonals of a rhombus are not equal, intersect at right angles and bisect each other.

Shortcut Trick

A Rhombus is a special Parallelogram where all four sides are equal.

Property 1: Diagonals of any parallelogram bisect each other.

Property 2: Diagonals of a rhombus are perpendicular (intersect at 90°).

Property 3: Geometrically, diagonals are unequal in length (unless it is a square).

Conclusion: Diagonals are not equal, bisect each other, and meet at right angles.

Therefore The correct answer is The diagonals of a rhombus are not equal, intersect at right angles and bisect each other..

Alternate Method

Given: A Rhombus ABCD with diagonals AC and BD intersecting at point E.

Formula Used: Properties of Parallelograms and Congruent Triangles.

=> In a Rhombus, all sides are equal: AB = BC = CD = DA.

=> Since a rhombus is a parallelogram, its diagonals bisect each other: AE = EC and BE = ED.

=> In ΔAED and ΔCED, AD = CD (sides), DE is common, and AE = EC (bisection).

=> By SSS Congruence, ΔAED ~= ΔCED, which implies angle AED = angle CED.

=> Since angle AED + angle CED = 180° (linear pair), each angle must be 90°.

=> Thus, diagonals intersect at right angles

Q82. Answer: (a) . Kabaddi and kho-kho

The Correct answer is Kabaddi and kho-kho.

Key Points

• Kabaddi and Kho-kho are popular traditional Indian sports, often included in school-level competitions to promote physical fitness and teamwork.

• Kabaddi is a contact team sport that originated in ancient India and is widely played across the country.

• Kho-kho is another traditional Indian sport involving chasing and tagging. It emphasizes agility, speed, and coordination.

• Both sports are affordable and require minimal equipment, making them ideal for school-level competitions, especially in rural and semi-urban regions.

• The Uttar Pradesh government aims to encourage these sports at the grassroots level to preserve cultural heritage and promote health among students.

• These sports foster team spirit, enhance strategic thinking, and contribute to the overall development of students.

• Such initiatives also align with the government's objective to identify and nurture talent for state and national-level competitions.

Additional Information

• Basketball and athletics

• Basketball is a globally popular sport that requires specialized courts and equipment, making it less accessible in some rural areas compared to traditional sports like Kabaddi and Kho-kho.

• Athletics includes various track and field events, which are often encouraged at higher levels but might not be prioritized in school-level competitions in some states.

• Tennis and swimming

• Tennis is a sport that requires expensive infrastructure like courts and equipment, making it less feasible for widespread inclusion in school-level competitions.

• Swimming also demands specialized facilities such as swimming pools, which are not always available in all schools, especially in rural areas.

• Cricket and badminton

• Cricket is immensely popular in India, but its inclusion often depends on the availability of space and infrastructure for organizing matches.

• Badminton requires indoor courts and specific equipment, which might not be accessible in all schools.

Q83. Answer: (c) Maharashtra

The Correct answer is Maharashtra.

Key Points

• The Warli tribe is an indigenous tribal group primarily residing in the western region of Maharashtra, particularly in the districts of Palghar and Thane.

• The peasant struggle of the Warli tribe in 1945 was a significant movement against exploitation and oppression by landlords and moneylenders.

• The movement was fueled by the economic hardships faced by the Warli community due to unfair practices such as high rents, forced labor, and debt bondage.

• This struggle also highlighted the efforts of tribal communities to assert their rights and dignity in the face of systemic oppression.

• The Warli community is renowned for its Warli art, a tribal art form that uses geometric shapes to depict scenes from daily life, nature, and their mythology.

• Such movements were part of the broader freedom and social justice struggles in India during the colonial period.

Additional Information

• Gujarat

• Gujarat is known for its diverse tribal communities, such as the Bhils, Garasia, and Rathwas, but it is not the location of the Warli tribe's peasant struggle.

• The state is famous for its Gir National Park, home to the Asiatic lions.

• It is also renowned for its cultural heritage, including Garba and Dandiya Raas dance forms.

• Mizoram

• Mizoram is located in the northeastern region of India and is predominantly inhabited by the Mizo tribes.

• The state is known for its lush green landscapes and cultural festivals such as Chapchar Kut.

• The Warli struggle did not occur in Mizoram, as the Warli tribe is native to Maharashtra.

• Kerala

• Kerala is renowned for its backwaters, Ayurveda, and cultural heritage, including traditional dance forms like Kathakali and Mohiniyattam.

• The state also has tribal communities such as the Paniya, Kurumba, and Kattunaikka.

• The peasant struggle of the Warli tribe does not have historical relevance to Kerala.

Q84. Answer: (c) Central Asia

The correct answer is Central Asia.

Key Points

• The Scythians, also known as the Shakas, were a group of ancient nomadic tribes originating from Central Asia.

• The Scythians played a significant role in the history of the Steppe region and were known for their exceptional horsemanship and warrior skills.

• They are believed to have migrated into India after being displaced by other nomadic tribes like the Yuezhi and the Huns.

• In Indian history, the Shakas established their rule in parts of Northwest India, including regions like Gujarat, Rajasthan, and Punjab.

• The most prominent Shaka ruler in India was Rudradaman I, who is known for his achievements in administration and culture.

• The Scythians are associated with the spread of Central Asian influences in Indian art, religion, and culture.

Additional Information

• Eastern Europe

• Though the Scythians were originally from Central Asia, their influence extended into Eastern Europe, particularly in regions north of the Black Sea.

• In Eastern Europe, the Scythians interacted with and influenced the cultures of ancient civilizations like the Greeks.

• South India

• The Scythians are not historically associated with South India.

• South Indian history during this period was dominated by Dravidian dynasties such as the Cheras, Cholas, and Pandyas.

• Southeast Asia

• Southeast Asia was influenced by Indian culture but had no direct connection with the Scythians.

• Indian influence in Southeast Asia came through the spread of Hinduism and Buddhism and the establishment of Indianized kingdoms like Srivijaya and Majapahit.

Q85. Answer: (a) The Governor General

The Correct answer is The Governor General.

Key Points

• The Regulating Act of 1773 was an important legislative measure passed by the British Parliament to regulate the affairs of the East India Company in India.

• The act created the position of the Governor General of Bengal, who was given supervisory authority over the governors of Madras and Bombay.

• The Governor General was tasked with overseeing and ensuring better coordination between the presidencies of Madras, Bombay, and Bengal.

• This act marked the beginning of a centralized administration in India and aimed to curb the corruption and inefficiency prevalent in the East India Company's governance.

• The first Governor General appointed under the Regulating Act was Warren Hastings.

• The governors of Madras and Bombay were required to report regularly and act according to the directives of the Governor General to ensure uniformity in policies and governance.

• The Regulating Act also established a Supreme Court in Calcutta to handle legal issues, further strengthening the role of the Governor General.

Additional Information

• The British Parliament

• The British Parliament passed the Regulating Act of 1773 but did not directly oversee the operations of the East India Company's presidencies.

• The act aimed to reduce the company's autonomy and introduce a centralized administrative system.

• The Parliament had the power to legislate but did not directly manage the day-to-day affairs of the Indian presidencies.

• Court of Directors

• The Court of Directors was responsible for overseeing the commercial and administrative aspects of the East India Company.

• They were based in London and played a role in policymaking but did not directly supervise the governors of Madras and Bombay.

• The Court of Directors reported to the British Parliament rather than directly managing presidencies.

• The British Crown

• The British Crown was involved in India's governance later, especially after the Government of India Act 1858, which transferred control from the East India Company to the Crown.

• During the time of the Regulating Act of 1773, the Crown did not directly manage the presidencies or supervise their governors.

Q86. Answer: (b) Synthesise new DNA strands complementary to the template

The Correct answer is Synthesise new DNA strands complementary to the template.

Key Points

• DNA polymerase is a key enzyme involved in the process of DNA replication.

• Its primary function is to catalyse the addition of nucleotides to the growing DNA strand, ensuring it is complementary to the original template strand.

• The enzyme works in the 5’ to 3’ direction, adding new nucleotides to the free 3’-OH group of the preceding nucleotide.

• DNA polymerase requires a template strand and a primer to initiate synthesis.

• This enzyme plays a critical role in maintaining the accuracy and fidelity of DNA replication by performing proofreading and correcting errors.

• DNA polymerase is essential for cell division as it ensures that genetic information is accurately passed to daughter cells.

• Replication of DNA is crucial for processes such as growth, repair, and reproduction in living organisms.

• There are different types of DNA polymerase enzymes, including DNA polymerase I, II, and III in prokaryotes and DNA polymerase alpha, beta, delta, and epsilon in eukaryotes, each specialized for different functions.

Additional Information

• Ligate Okazaki fragments together

• This function is performed by the enzyme DNA ligase, not DNA polymerase.

• Okazaki fragments are short DNA sequences synthesized on the lagging strand during replication.

• DNA ligase joins these fragments by forming phosphodiester bonds between adjacent nucleotides.

• Unwind the DNA double helix

• This process is carried out by the enzyme helicase, not DNA polymerase.

• Helicase breaks the hydrogen bonds between complementary base pairs, allowing the two strands of DNA to separate and serve as templates.

• Remove RNA primers from the lagging strand

• The removal of RNA primers is performed by enzymes such as DNA polymerase I in prokaryotes and RNase H in eukaryotes.

• DNA polymerase I also replaces the RNA primers with DNA nucleotides after their removal.

Q87. Answer: (b) Article 37

The Correct answer is Article 37

Key Points

• Article 37 of the Indian Constitution deals with the application of Directive Principles of State Policy (DPSP).

• It states that the Directive Principles are fundamental in the governance of the country and it shall be the duty of the State to apply these principles in making laws.

• Although DPSPs are not enforceable by any court, they are considered essential for achieving the socio-economic objectives outlined in the Constitution.

• The Directive Principles aim to ensure social justice, economic welfare, and political equality for all citizens.

• Some of the key areas covered under DPSPs include education, healthcare, environment protection, equitable distribution of resources, and promotion of cottage industries.

• These principles are inspired by the Irish Constitution and are included in Part IV of the Indian Constitution.

• The DPSPs serve as guiding principles for the government to create policies and laws that work toward achieving a welfare state.

Additional Information

• Article 36

• Article 36 defines the term "State" as used in Part IV of the Constitution. It includes the Government and Parliament of India, the Government and Legislature of the States, and all local or other authorities within Indian territory.

• Article 38

• Article 38 directs the State to strive to promote the welfare of the people by securing and protecting a social order based on justice—social, economic, and political.

• It also emphasizes the reduction of income inequalities and inequalities in status, facilities, and opportunities.

• Article 39

• Article 39 outlines several specific principles, such as ensuring adequate means of livelihood for all citizens, equal pay for equal work, protection of children, and equitable distribution of resources.

• This article is pivotal in addressing social and economic disparities within the country.

Q88. Answer: (c) 576

The logic followed here is:

601	→	**600**	→	**597**	→	**592**	→	**585**	→	**576**
	-1	→	-3	→	-5	→	-7	→	-9	
		-2	→	-2	→	-2	→	-2		

Hence, the correct answer is "576".

Q89. Answer: (b) 51

Shortcut Trick

Total Frequency (Σf) = 95 + 57 + 80 + 98 + 73 = 403

Sum of Products (Σfx) = (13 × 95) + (27 × 57) + (59 × 80) + (61 × 98) + (97 × 73)

Σfx = 1235 + 1539 + 4720 + 5978 + 7081 = 20553

Mean = Σfx / Σf = 20553 / 403 = 51

Therefore The correct answer is 51.

Alternate Method

Given: Marks (x) and Number of Students (f).

Formula: Mean (μ) = Σ(f_i × x_i) / Σf_i

=> Total Students (Σf) = 95 + 57 + 80 + 98 + 73 = 403

=> f1x1 = 13 × 95 = 1235

=> f2x2 = 27 × 57 = 1539

=> f3x3 = 59 × 80 = 4720

=> f4x4 = 61 × 98 = 5978

=> f5x5 = 97 × 73 = 7081

=> Sum of Products (Σfx) = 1235 + 1539 + 4720 + 5978 + 7081 = 20553

=> Mean = 20553 / 403 = 51

Therefore The correct answer is 51.

Additional Information

Arithmetic Mean

The average of a set of numerical values, calculated by dividing the sum of the values by the total count of observations.

Assumed Mean Method

A technique to simplify calculations by choosing an arbitrary value 'A' and using deviations d = x − A. Formula: Mean = A + (Σfd / Σf).

Weighted Mean

Used when different values have different levels of importance (weights), calculated as Σ(w × x) / Σw.

Q90. Answer: (a) 5

The given code language is:

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

Hence, the correct answer is "Option 1".

Q91. Answer: (b) 4112

Shortcut Trick

Identify two numbers whose sum is 10 and product is 16.

By inspection, the factors of 16 that add up to 10 are 8 and 2 (since 8 × 2 = 16 and 8 + 2 = 10).

Therefore, let x = 8 and y = 2.

x^4 + y^4 = 8^4 + 2^4

x^4 + y^4 = 4096 + 16 = 4112.

Therefore The correct answer is 4112.

Alternate Method

Given: x + y = 10 and xy = 16.

Formula Used: $(x + y)^2 = x^2 + y^2 + 2xy$ and $(x^2 + y^2)^2 = x^4 + y^4 + 2x^2y^2$.

=> $(x + y)^2 = 10^2$

=> $x^2 + y^2 + 2xy = 100$

=> $x^2 + y^2 + 2(16) = 100$

=> $x^2 + y^2 = 100 - 32 = 68$

=> Now, square both sides again: $(x^2 + y^2)^2 = 68^2$

=> $x^4 + y^4 + 2(xy)^2 = 4624$

=> $x^4 + y^4 + 2(16)^2 = 4624$

=> $x^4 + y^4 + 2(256) = 4624$

=> $x^4 + y^4 + 512 = 4624$

=> $x^4 + y^4 = 4624 - 512 = 4112$.

Therefore The correct answer is 4112.

Additional Information

Algebraic Identity for $x^2 + y^2$

The sum of squares can be expressed as $x^2 + y^2 = (x + y)^2 - 2xy$ or $(x - y)^2 + 2xy$.

Algebraic Identity for x^4 + y^4

The sum of fourth powers is given by $x^4 + y^4 = (x^2 + y^2)^2 - 2(xy)^2$.

Sum and Product relationship

If x + y = S and xy = P, then x and y are the roots of the quadratic equation $t^2 - St + P = 0$.

Q92. Answer: (d) Bhojpuri and Maithili

The Correct answer is Bhojpuri and Maithili.

Key Points

• Sharda Sinha is a renowned Indian folk singer, celebrated for her contributions to Bhojpuri and Maithili music.

• She is popularly known for her songs that are deeply rooted in the culture and traditions of Bihar.

• Her music resonates with the themes of festivals, social gatherings, and regional customs, making her a household name in the region.

• She has sung traditional songs for Chhath Puja, which are widely cherished and played during the festival.

• Sharda Sinha has contributed significantly to popularizing folk music on the national stage, earning her several awards and accolades, including the Padma Vibhushan in 2025.

• Her work has preserved and promoted the linguistic heritage of Bihar, showcasing the richness of its regional languages.

• She has also sung in Bollywood movies, such as her famous song "Kahe Toh Se Sajna" in the film "Maine Pyar Kiya".

Additional Information

• Marathi and Konkan

• Marathi is the state language of Maharashtra, while Konkan refers to the coastal region of Maharashtra, Goa, and Karnataka.

• Music in these languages often draws from the rich cultural and folk traditions of the region, with genres like Lavani and Natya Sangeet.

• These languages are known for their distinctive musical heritage, but Sharda Sinha is not associated with them.

• Assamese and Bodo

• Assamese is spoken predominantly in Assam, while Bodo is one of the languages of the Bodo community in northeastern India.

• Music in these languages reflects the vibrant cultural traditions of Assam, including genres like Bihu folk music and Bagurumba dance music.

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• Sharda Sinha has no known contributions to Assamese or Bodo music.

• Punjabi and Kashmiri

• Punjabi music is widely popular for its Bhangra and folk songs, while Kashmiri music often features instruments like the Santoor and highlights the region's serene beauty.

• These languages have distinct musical traditions, but Sharda Sinha specializes in Bhojpuri and Maithili music.

Q93. Answer: (c) Emilia Pérez

The correct answer is Emilia Pérez.

Key Points

• Emilia Pérez is the film that won the 2025 Golden Globe Award for Best Motion Picture– Non-English Language.

• The Golden Globe Awards are one of the most prestigious awards in the entertainment industry, recognizing excellence in film and television.

• Emilia Pérez is celebrated for its unique storytelling, exceptional performances, and its ability to resonate with audiences globally.

• The film was highly praised for its cinematic brilliance, including its visual aesthetics, direction, and screenplay.

• This category honors films that are made in languages other than English, promoting cultural diversity and global cinema.

• Emilia Pérez stood out among other contenders due to its critical acclaim and its impact on audiences worldwide.

Additional Information

• The Girl With The Needle

• This film focuses on a compelling narrative but did not achieve the same level of recognition as Emilia Pérez.

• It explores themes of resilience and personal transformation, attracting a niche audience.

• I’m Still Here

• I’m Still Here explores existential themes and character-driven storytelling.

• The film received moderate acclaim but lacked the widespread impact of Emilia Pérez.

• All We Imagine as Light

• While being visually stunning, All We Imagine as Light could not surpass the critical and audience reception of Emilia Pérez.

• The film delves into philosophical themes, earning praise from certain critics.

Q94. Answer: (d) Complex Roots (Imaginary Roots)

Shortcut Trick

The nature of roots is determined by the Discriminant (D) = b2 − 4ac.

Identify coefficients from 3x2 + 2x + 5 = 0: a = 3, b = 2, c = 5.

Calculate D: 22 − 4 × 3 × 5 = 4 − 60 = −56.

Since D < 0, the roots are always complex or imaginary.

Therefore The correct answer is Complex Roots (Imaginary Roots).

Alternate Method

Given:

Quadratic equation: 3x2 + 2x + 5 = 0

Formula Used:

For a quadratic equation ax2 + bx + c = 0, the discriminant is D = b2 − 4ac.

Calculations:

=> Comparing the given equation with the standard form, we have: a = 3, b = 2, and c = 5.

=> Substitute these values into the discriminant formula: D = (2)2 − 4 × 3 × 5

=> D = 4 − 60

=> D = −56

=> According to the properties of quadratic equations, if D < 0, the roots are not real.

=> Therefore, the roots are Complex Roots (Imaginary Roots).

Therefore The correct answer is Complex Roots (Imaginary Roots).

Additional Information

Discriminant and Nature of Roots

The value D = b2 − 4ac determines the type of roots: D > 0 results in two distinct real roots, D = 0 results in one repeated real root, and D < 0 results in two complex conjugate roots.

Quadratic Formula

The roots can be explicitly found using x = (−b ± √D) ÷ 2a. When D is negative, the square root term involves the imaginary unit i.

Sum and Product of Roots

For ax2 + bx + c = 0, the sum of roots is −b/a and the product of roots is c/a, regardless of whether the roots are real or complex.

Q95. Answer: (b) Chhotanagpur Plateau

The correct answer is Chhotanagpur Plateau.

Key Points

• The River Damodar flows through the Chhotanagpur Plateau, which is located in the eastern part of India, primarily in the state of Jharkhand, with some parts extending to West Bengal.

• The Chhotanagpur Plateau is rich in mineral resources such as coal, iron ore, mica, and bauxite, making it a significant region for mining activities in India.

• The River Damodar is often referred to as the Sorrow of Bengal due to its history of frequent flooding, causing damage to agricultural lands and settlements.

• Several dams and reservoirs have been constructed in this region to control floods and harness the river for hydroelectric power generation. These include the Panchet, Maithon, and Konar dams, which are part of the Damodar Valley Corporation (DVC).

• The Chhotanagpur Plateau is characterized by its rugged terrain, with an average elevation ranging between 600 to 700 meters. It is composed of gneissic and granite rocks.

• The plateau is an important geographical feature that influences the drainage pattern of rivers, including the Damodar River, which flows through its valleys.

• The tributaries of the Damodar River, such as the Barakar, Konar, and Bokaro rivers, also originate in or flow through the Chhotanagpur Plateau.

Additional Information

• Deccan Plateau

• The Deccan Plateau is located in southern India and is known for its large size, covering multiple states including Maharashtra, Karnataka, Telangana, Andhra Pradesh, and Tamil Nadu.

• It is bounded by the Western Ghats, Eastern Ghats, and the Satpura Range.

• The Deccan Plateau is rich in black soil, which is ideal for cultivating cotton.

• Major rivers like the Godavari, Krishna, and Kaveri originate from or flow through this plateau.

• Malwa Plateau

• The Malwa Plateau is located in the western part of India, mainly in Madhya Pradesh, with some parts extending into Rajasthan.

• This plateau is known for its fertile black soil, which supports the cultivation of crops like cotton and soybean.

• The region is drained by rivers such as the Chambal, Mahi, and Betwa.

• Meghalaya Plateau

• The Meghalaya Plateau, also known as the Shillong Plateau, is located in northeastern India, primarily in the state of Meghalaya.

• It is rich in limestone and coal deposits.

• This plateau is characterized by its high rainfall, with places like Cherrapunji and Mawsynram receiving some of the highest rainfall in the world.

• Major rivers originating from this plateau include the Barak and Umiam rivers.

Q96. Answer: (c) 5.3 m

Shortcut Trick

In a 30°-60°-90° triangle, the side opposite to 30° is always half of the hypotenuse.

Height = Hypotenuse ÷ 2

Height = 10.6 ÷ 2 = 5.3 m

Therefore The correct answer is 5.3 m.

Alternate Method

Given:

Length of the ladder (Hypotenuse AC) = 10.6 m

Angle with the ground (θ) = 30°

Formula Used:

sin θ = Perpendicular / Hypotenuse

Calculations:

=> sin 30° = height / 10.6

=> 1 / 2 = height / 10.6

=> height = 10.6 × (1 / 2)

=> height = 5.3 m

Therefore The correct answer is 5.3 m.

Additional Information

Trigonometric Ratios for 30°

sin 30° = 1/2, cos 30° = √3/2, and tan 30° = 1/√3.

Special Right Triangles

In a 30-60-90 triangle, the sides are in the ratio 1 : √3 : 2 corresponding to the angles.

Pythagoras Theorem

For any right-angled triangle, Base² + Perpendicular² = Hypotenuse².

Q97. Answer: (b) Bal Gangadhar Tilak

The Correct answer is Bal Gangadhar Tilak.

Key Points

• Gita Rahasya, also known as Srimad Bhagavad Gita Rahasya, is a famous philosophical interpretation of the Bhagavad Gita.

• It was written by Bal Gangadhar Tilak, a prominent freedom fighter, social reformer, and nationalist leader during the Indian independence movement.

• Tilak wrote this book while he was imprisoned in the Mandalay jail (Burma) during the years 1908-1914.

• In the book, Tilak emphasizes the concept of Karma Yoga, which highlights the importance of performing one's duty selflessly without attachment to the results.

• Tilak believed that the Bhagavad Gita was not merely a religious text but a guide for active participation in life and society.

• He used the teachings of the Gita to inspire Indians to fight for their rights and freedom during the colonial period.

• The book is written in Marathi and has been translated into various other languages over time.

• Tilak was often referred to as the "Lion of Maharashtra" for his bold stance against British rule and his advocacy for Swaraj (self-rule).

Additional Information

• Gopal Krishna Gokhale

• Gopal Krishna Gokhale was a renowned social reformer and moderate leader in the Indian National Congress.

• He was the founder of the Servants of India Society, which aimed to promote education and social welfare.

• Gokhale was a mentor to Mahatma Gandhi and played a key role in shaping Gandhi's early political views.

• Despite his contributions to India's freedom struggle, he did not write Gita Rahasya.

• Mahatma Gandhi

• Mahatma Gandhi is known as the "Father of the Nation" in India for his pivotal role in the freedom struggle.

• Gandhi's philosophy was centered around non-violence (Ahimsa) and truth (Satya).

• He authored several books, including Hind Swaraj, but he did not write Gita Rahasya.

• Aurobindo Ghosh

• Aurobindo Ghosh was a revolutionary turned spiritual leader who founded the Aurobindo Ashram in Pondicherry.

• His writings on the Bhagavad Gita focus on its spiritual and metaphysical aspects, particularly in his work Essays on the Gita.

• However, he was not the author of Gita Rahasya.

Q98. Answer: (c) Kerala

The Correct answer is Kerala.

Key Points

• Kerala became the first Indian state to establish a Senior Citizens Commission in March 2025.

• The commission was set up to address the issues and challenges faced by senior citizens, such as healthcare, social security, and protection of rights.

• This initiative aligns with Kerala's reputation for prioritizing social welfare and human development.

• The state has consistently ranked high in indices like the Human Development Index (HDI) due to its focus on education, healthcare, and social security.

• The Senior Citizens Commission aims to ensure the implementation of policies under the Maintenance and Welfare of Parents and Senior Citizens Act, 2007.

• Kerala has a significantly high proportion of elderly population compared to other states, making this commission a much-needed step.

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• This initiative is expected to serve as a model for other states in addressing the needs of the elderly population.

Additional Information

• Maharashtra

• Maharashtra is known for its initiatives in industrial growth and infrastructure development.

• The state has implemented various policies for senior citizens, including old-age pension schemes, but it has not yet established a Senior Citizens Commission.

• Maharashtra is home to several elderly welfare organizations working on social security and healthcare for older adults.

• Gujarat

• Gujarat is recognized for its economic growth and industrial policies.

• The state offers welfare schemes for the elderly, such as financial assistance and healthcare programs, but it does not have a dedicated Senior Citizens Commission.

• Gujarat has focused on promoting community-based programs to support the elderly.

• Tamil Nadu

• Tamil Nadu has enacted several policies for elderly welfare, including healthcare initiatives and pension schemes.

• The state is known for its robust healthcare infrastructure that benefits senior citizens.

• Although Tamil Nadu has taken significant steps for senior citizens, it does not have a Senior Citizens Commission as of now.

Q99. Answer: (c) Production of refrigerants and aerosol propellants

The Correct answer is Production of refrigerants and aerosol propellants.

Key Points

• Tetrachloromethane, also known as carbon tetrachloride (CCl_4), is a halogenated hydrocarbon compound widely used in various industrial applications.

• One of its primary applications is in the production of refrigerants such as CFCs (Chlorofluorocarbons) and HCFCs (Hydrochlorofluorocarbons).

• It serves as a key intermediate in the chemical processes used to manufacture these compounds, which are essential in refrigeration and air-conditioning systems.

• Aerosol propellants are another significant application of Tetrachloromethane, as it is used to create compressed gases that help dispense substances from aerosol containers.

• Due to its non-flammable nature and excellent properties as a solvent, Tetrachloromethane has been historically valued in these industries.

• Although its usage has declined in certain areas due to its ozone-depleting potential and toxicity concerns, its importance in the manufacturing of refrigerants remains significant in controlled environments.

• It is also employed in laboratories as a standard solvent for research and testing purposes.

Additional Information

• Textile dyeing and coloring of woollen clothes

• This process involves the use of dyes, mordants, and chemicals specific to fabric treatment rather than Tetrachloromethane.

• Wool dyeing requires compounds like acid dyes or chrome-based dyes, which are specially formulated for protein fibers like wool.

• Fertilizer production and pesticide refining

• The production of fertilizers typically involves chemicals such as ammonia, urea, and nitrates, while pesticides are often synthesized using organophosphates or organochlorines.

• Tetrachloromethane is not commonly used in these manufacturing processes.

• Glass manufacturing and ceramic treatment

• Glass and ceramic industries rely on materials like silica, feldspar, and alumina, which are heated at high temperatures to form durable products.

• Chemicals like carbon tetrachloride are not relevant to these processes.

Q100. Answer: (b) 49/144

Shortcut Trick

Given Ratio = 3 : 16 and Product (LCM × HCF) = 432.

Let numbers be 3x and 16x. Then HCF = x and LCM = 3 × 16 × x = 48x.

Product: $x \times 48x = 432 \Rightarrow 48x^2 = 432 \Rightarrow x^2 = 9 \Rightarrow x = 3$.

LCM = 48 × 3 = 144 and HCF = 3.

Sum of reciprocals = (1/144) + (1/3) = (1 + 48) / 144 = 49/144.

Therefore The correct answer is 49/144.

Alternate Method

Given: Ratio = 3 : 16, Product of LCM and HCF = 432.

Formula: Product of two numbers = LCM × HCF.

=> Let the numbers be 3x and 16x.

=> Product of numbers = (3x) × (16x) = 432

=> $48x^2 = 432$

=> $x^2 = 432 \div 48 = 9$

=> $x = 3$

=> HCF (highest common factor of 3x and 16x) = x = 3

=> LCM (least common multiple of 3x and 16x) = 48x = 48 × 3 = 144

=> Sum of reciprocals = (1/144) + (1/3)

=> Sum = (1 + 48) / 144 = 49/144

Therefore The correct answer is 49/144.

Additional Information

Fundamental Relation

For any two numbers a and b, the product of the numbers is always equal to the product of their HCF and LCM: a × b = HCF(a,b) × LCM(a,b).

LCM and HCF of Fractions

HCF of fractions = (HCF of Numerators) ÷ (LCM of Denominators). LCM of fractions = (LCM of Numerators) ÷ (HCF of Denominators).

Ratio Property

If two numbers are in the ratio a : b (where a and b are co-prime), and their HCF is h, then the numbers are ah and bh, and their LCM is abh.

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