RRB NTPC Graduate Level CBT-I Official Paper (Held On: 11 Jun, 2025 Shift 2) (Previous Year Paper)

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

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Q1. What was the unknown element under aluminium called?

(a) Neo-Aluminium
(b) Proto-Aluminium
(c) Eka-Aluminium
(d) Meta-Aluminium

Q2. Which of the following is the primary basis for allocating seats in the Rajya Sabha among various States and Union Territories in India?

(a) Literacy rate of the population
(b) Population of each state or union territory
(c) Economic contribution of each state
(d) Geographical area of each state

Q3. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) 1 6 $ 1 * 6 5 9 6 % % 1 * * £ 2 * 6 5 $ @ 6 (Right)

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

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

Q4. Which of the following states announced the 'Ama Similipal Yojana' with a budget outlay of Rs. 50 crore to enhance livelihoods and promote ecotourism and cultural tourism?

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

Q5. In February 2025, what was the protein isoform '1N4R tau' identified by the University of Cologne being explored for?

(a) Managing chronic kidney disorders
(b) Preventing insulin resistance
(c) Curing sickle cell anemia
(d) Treating Alzheimer's disease

Q6. T travelled 576 km, 630 km and 315 km at the speeds of 16 km/hr, 7 km/hr and 9 km/hr, respectively. Find his average speed in km/hr.

(a) 9 73/161
(b) 10 70/161
(c) 10 78/161
(d) 9 72/161

Q7. Which Indian state shares its border with Bhutan and Bangladesh?

(a) Mizoram
(b) Meghalaya
(c) Assam
(d) Punjab

Q8. In Windows 10 File Explorer, how can you group files by their type?

(a) Use the 'Sort by' option and select 'Name'
(b) Use the 'View' tab and select 'Details'
(c) Rename all files with the same type
(d) Use the 'Group by' option and select 'Type'

Q9. The average of three numbers is 23. If two numbers are 11 and 25, the third number is:

(a) 34
(b) 33
(c) 32
(d) 35

Q10. Singphos' Rebellion is associated with which region of present day India?

(a) Arunachal Pradesh
(b) Assam
(c) Tripura
(d) Manipur

Q11. Which output device is specifically designed to produce high-quality printed graphics and text?

(a) Projector
(b) Inkjet Printer
(c) Joystick
(d) Dot Matrix Printer

Q12. This question is based on the five, three-digit numbers given below.

(Left) 236 758 230 563 263 (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) 8
(b) 6
(c) 4
(d) 5

Q13. Akshay has Rs. 1,218 with him. He divided it amongst his sons Arjun and Kartik and asked them to invest it at 10% rate of interest per annum, compounded annually. It was seen that Arjun and Kartik got the same amount after 12 and 13 years, respectively. How much amount (in Rs.) did Akshay give to Kartik?

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

Q14. In a certain code language,

'A + B' means 'A is the mother of B',

'A – B' means 'A is the brother of B',

'A × B' means 'A is the wife of B' and

'A ÷ B' means 'A is the father of B'.

Based on the above, how is M related to Q if 'M – N ÷ O + P × Q'?

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

Q15. Which feature of the phosphodiester bond contributes most to the overall negative charge of the DNA molecule?
(a) The methyl group of thymine
(b) The nitrogen in purines
(c) The phosphate group's ionisable oxygen atoms
(d) The ribose sugar

Q16. What should come in place of the question mark (?) in the given series based on the English alphabetical order?
ZYB GFI NMP UTW ?
(a) ADB
(b) ABD
(c) BDA
(d) BAD

Q17. 35 is related to 70 following a certain logic. Following the same logic, 24 is related to 48. To which of the following is 11 related, following the same logic?
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
(a) 23
(b) 21
(c) 22
(d) 20

Q18. he mean proportional between (18 + 8√2) and and (15 - 2√2) is
(a) √(238 + 120√2)
(b) √(238 + 84√2)
(c) √(238 + 36√2)
(d) √(238 + 110√2)

Q19. Who among the following won the 2024 US Open Women's Singles title?
(a) Elena Rybakina
(b) Iga Świątek
(c) Aryna Sabalenka
(d) Coco Gauff

Q20. This question is based on the five, three-digit numbers given below.
(Left) 144 743 290 258 799 (Right) (Example- 697 – First digit = 6, second digit = 9 and third digit = 7)
(NOTE: All operations to be done from left to right.)
What will be the resultant if the second digit of the highest number is subtracted from the third digit of the lowest number?
(a) -5
(b) -4
(c) -6
(d) -2

Q21. Which of the following cities hosted the important 20th Dialogue event in December 2024?
(a) Doha, Qatar
(b) Abu Dhabi, UAE
(c) Manama, Bahrain
(d) Riyadh, Saudi Arabia

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Q22. Mr. T starts from Point D and drives 3 km towards the east. He then takes a right turn, drives 7 km, turns right and drives 6 km. He then takes a right turn and drives 4 km, and then turns right and drives 3 km. He takes a final left turn, drives 1 km and stops at Point H. How far (shortest distance) and towards which direction should he drive in order to reach Point D again? (All turns are 90 degree turns only unless specified.)

(a) 5 km towards the east
(b) 7 km towards the west
(c) 2 km towards the south
(d) 2 km towards the north

Q23. Seven boxes, D, E, F, G, S, T and U, are kept one over the other but not necessarily in the same order. Only two boxes are kept between T and E. Only S is kept above G. No box is kept below E. D is kept at some place below F but at some place above U. Which box is kept third above U?

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

Q24. The mean and the mode of a set of data are 47.4 and 61.6, respectively. Find the median of the data set, using the empirical formula.

(Round off your answer to one decimal place.)

(a) 52.1
(b) 52.7
(c) 51.7
(d) 52.8

Q25. Which of the following statements is true about the Permanent Lok Adalat under Section 22-B of The Legal Services Authorities Act, 1987?

(a) The award of the Permanent Lok Adalat is not binding on the parties.
(b) The Permanent Lok Adalat can handle cases up to a certain monetary limit (currently Rs. 1 crore).
(c) The Permanent Lok Adalat can only act as a conciliator and cannot decide disputes.
(d) The Permanent Lok Adalat has jurisdiction over disputes related to criminal offences.

Q26. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

EK19, GM28, IO37, KQ46, ?

(a) MR56
(b) MS55
(c) MR55
(d) MS56

Q27. As per the SDG India Index 2023-24, what was the estimated percentage of reduction in the population living in multidimensional poverty between 2015-16 and 2019-21?

(a) From 20% to 12%
(b) From 24.8% to 14.96%
(c) From 30% to 20%
(d) From 15% to 10%

Q28. The population of a village was 1,10,000. It increased by 5% in the first year and increased by 25% in the second year. Its population after two years is _____.

(a) 1,15,500
(b) 1,44,375
(c) 1,43,000
(d) 1,37,50

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Q29. Simplify: 34 ÷ {4 × (9/9 of 9/8)}

(a) 68/9
(b) 71/9
(c) 76/9
(d) 61/9

Q30. In this question, a group of numbers is coded by using letters and symbols as per the table given below and the conditions which follow.

Number	7	8	2	3	4	5	6
Code	Z	Q	#	@	%	$	U

Conditions:

1. If the 1^(st) and 2^(nd) digits are even, both are to be coded as ‘A’.

2. If the 1^(st) and last digits are odd, both are to be coded as the code for the 1^(st) digit.

3. If the 3^(rd) and 4^(th) digits are even, their codes are to be interchanged.

What is the correct combination of codes (by following only the applicable condition(s)) for the given digits?

48719

(a) % Q Z J S
(b) A A Z J S
(c) Q Q Z J S
(d) % % Z J S

Q31. Which of the following statements regarding the Supreme Court's interim order in the Ranveer Allahbadia case (February 2025) is/are correct?

(1). The Supreme Court granted interim protection to Allahbadia but harshly criticised his remarks as obscene and vulgar.

(2). The Court ruled that Allahbadia was free to travel abroad without any restrictions since the remarks were made behind a paywall.

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

Q32. Which of the following is not a 'Ghana Vadya'?

(a) Manjira
(b) Jaltarang
(c) Khartal
(d) Mridangam

Q33. In February 2025, the Broadcast Services Regulation Bill, 2023 was introduced in the Parliament. What is a key provision under this draft legislation?

(a) Ban on airing foreign content between 7 p.m. and 10 p.m.
(b) Transfer of all broadcasting regulation powers to state governments
(c) Unified regulation of cable, satellite and OTT platforms
(d) Mandatory pre-censorship of digital news content

Q34. The Charter Act of 1833 created a separate _____.

(a) Federal Court
(b) Legislative Assembly in Delhi
(c) Law Commission in India
(d) Supreme Court in Madras

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Q35. What will come in the place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

151 ÷ 3 + 168 × 8 − 145 = ?

(a) 547
(b) 557
(c) 577
(d) 567

Q36. P is a point outside a circle and is 17 cm away from its centre. A secant drawn from the point P intersects the circle at points A and B in such a way that PA = 8 cm and AB = 7 cm, where PB > PA. The radius of the circle is:

(a) 13 cm
(b) 14 cm
(c) 15 cm
(d) 12 cm

Q37. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 3816427, how many digits will appear more than once in the new number thus formed?

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

Q38. In a certain code language, 'PACE' is coded as '2468' and 'COST' is coded as '1327'. What is the code for 'C' in the given code language?

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

Q39. What should come in place of the question mark (?) in the given series?

402 400 396 390 382 ?

(a) 374
(b) 372
(c) 376
(d) 370

Q40. What was the sex ratio in India as per the 2011 Census data?

(a) 950 females per 1000 males
(b) 948 females per 1000 males
(c) 940 females per 1000 males
(d) 943 females per 1000 males

Q41. Who among the following has been appointed as the Private Secretary to the Prime Minister Narendra Modi in March 2025?

(a) Anju Rathi
(b) Nidhi Tewari
(c) Amitabh Kant
(d) Ajay Bhadoo

Q42. The Maski Ashoka Inscription is situated in which state of India?

(a) Andhra Pradesh
(b) Bihar
(c) Odisha
(d) Karnataka

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Q43. Walking at 5/7 of his normal speed, Manish is 20 minutes late in reaching. The usual time taken by him to cover the distance between his home and office is:

(a) 49 minutes
(b) 50 minutes
(c) 42 minutes
(d) 56 minutes

Q44. What will come in place of the question mark (?) in the following equation if '÷' and '–' are interchanged and '×' and '+' are interchanged?

56 + 41 ÷ 12054 – 123 × 891 = ?

(a) 1307
(b) 811
(c) 3089
(d) 1557

Q45. The volume of a right circular cone is 1078 cm^3. Find the total surface area of the cone if its height is 21 cm. (Use π = 22/7)

(a) 154 cm^2
(b) $154(1 + \sqrt{10})$ cm^2
(c) $22(7 + \sqrt{10})$ cm^2
(d) $154\sqrt{10}$ cm^2

Q46. In acidic medium, the balanced redox reaction for MnO4^- + Fe²^+ → Mn²^+ + Fe³^+ is:

(a) MnO4^- + 5Fe²^+ + 8H^+ → Mn²^+ + 5Fe³^+ + 4H2O
(b) MnO4^- + 3Fe²^+ + 2H^+ → MnO2 + Fe³^+ + H2O
(c) MnO4^- + Fe²^+ → MnO2 + Fe³^+
(d) MnO4^- + 2Fe²^+ + H2O → Mn²^+ + Fe³^+

Q47. The product of two consecutive positive integers is 960. If the smaller of these two integers is represented by x, which of the options below will correspond to the equation for finding the value of x?

(a) $x^2 - x + 960 = 0$
(b) $x^2 - x - 960 = 0$
(c) $x^2 + x - 960 = 0$
(d) $x^2 + x + 960 = 0$

Q48. Which of the following tree species is an example of deciduous vegetation in India ?

(a) Babool
(b) Sal
(c) Deodar
(d) Bamboo

Q49. According to the United Nations Convention on the Law of the Sea (UNCLOS), India's Exclusive Economic Zone (EEZ) extends upto _____.

(a) 200 nautical miles
(b) . 300 nautical miles
(c) 500 nautical miles
(d) 400 nautical miles

Q50. 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) LKP
(b) QRU
(c) EFI
(d) MNQ

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Q51. A can finish a work in 2 days and B can do the same work in 52 days. B worked alone for 26 days and left the job. In how many days can A alone finish the remaining work?

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

Q52. After allowing a discount of 80%, the value of an oven is Rs. 5,180. If no discount is allowed, then the shopkeeper gains 48%. Find the cost price (in Rs.) of the oven.

(a) 17,501
(b) 17,500
(c) 17,503
(d) 17,502

Q53. “Swadesh Sevak Home” is related to which of the following national freedom initiatives?

(a) Ghadar Movement
(b) Swadeshi Movement
(c) Non-Cooperation Movement
(d) Home Rule Movement

Q54. In November 2024, NITI Aayog launched the 'Accelerating Sustainable State Energy Transition (ASSET)' initiative. What is the primary objective of this initiative?

(a) To promote electric vehicle adoption in urban areas
(b) To develop nuclear energy infrastructure across states
(c) To support states in achieving their renewable energy targets
(d) To enhance energy efficiency in industrial sectors

Q55. A trader lost 5% by selling a shirt for Rs. 950. He will gain x% by selling it for Rs. 1,360. The value of x is:

(a) 36
(b) 45
(c) 26
(d) 51

Q56. A, B, C, D, R, S and T are sitting around a circular table facing the centre of the table. B sits fourth to the right of R. Only two people sit between T and D when counted from the left of T. A sits third to the left of C. S is an immediate neighbour of C and D. How many people sit between B and S when counted from the left of S?

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

Q57. Who among the following is appointed as the President of the upcoming COP30 Summit?

(a) André Aranha Corrêa do Lago
(b) Luiz Inácio Lula da Silva
(c) Jair Bolsonaro
(d) Marina Silva

Q58. C is the third proportional of 29 and B. If B is the sum of the first three even natural numbers, then find the value of C. (Rounded off to two decimal places)

(a) 4.97
(b) 3.85
(c) 3.53
(d) 7.64

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Q59. The quadratic equation $2x^2 + 4x + 8 = 0$ has:

(a) two equal real roots
(b) no real roots
(c) two distinct real roots
(d) more than 2 real roots

Q60. Which of the following ratios is the greatest?

(a) 32 : 86
(b) 33 : 51
(c) 37 : 64
(d) 26 : 59

Q61. In December 2024, India mourned the passing of Dr Manmohan Singh. In which year did Dr Manmohan Singh first become the Prime Minister of India?

(a) 2004
(b) 1999
(c) 1991
(d) 2001

Q62. What sum of money (in Rs.) will amount to Rs. 720 at 4% per annum simple interest in 5 years?

(a) 3,600
(b) 650
(c) 550
(d) 600

Q63. What should come in place of the question mark (?) in the given series?

99 92 105 98 111 104 ? 110

(a) 97
(b) 125
(c) 92
(d) 117

Q64. The Maitrakas of Valabhi were initially the:

(a) rulers of an independent empire
(b) subordinates of the Guptas
(c) rivals of the Guptas
(d) part of the Hunas

Q65. In a certain code language, ‘LATE’ is coded as ‘8054’ and ‘TEAM’ is coded as ‘4087’. What is the code for ‘M’ in th given code language?

(a) 4
(b) 7
(c) 0
(d) 8

Q66. Who was appointed the new Director General of the International Solar Alliance (ISA) in November 2024?

(a) Ajay Mathur
(b) RK Singh
(c) Ashish Khanna
(d) Upendra Tripathy

Q67. Seven boxes, A, B, C, D, E, F and G, are kept one over the other but not necessarily in the same order. Only three boxes are kept below B. Only two boxes are kept between B and G. Only A is kept immediately above E. F is kept in some place below D and in some place above C. How many boxes are kept below C?

(a) 4

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

Q68. VBDP is related to ZWHK in a certain way based on the English alphabetical order. In the same way, DRLF is related to HMPA. To which of the following is LHTV related, following the same logic?
(a) PCXQ
(b) OCWR
(c) QBYR
(d) QDYP

Q69. P, Q, R, S, T, U and V are sitting around a circular table facing the centre. Only two people sit between T and Q when counted from the left of Q. U sits third to the left of S. P sits to the immediate right of S. P sits second to the left of T. V is an immediate neighbour of U. How many people sit between Q and R when counted from the left of R?
(a) 3
(b) 4
(c) 1
(d) 2

Q70. According to the Periodic Labour Force Survey (PLFS) report, what was the Labour Force Participation Rate (LFPR) for women in 2021-22?
(a) 14.8%
(b) 23.5%
(c) 42.7%
(d) 32.8%

Q71. What is the central theme of the first five anthologies (Kuruntokai, Narrinai, Akananuru, Ainkurunuru, and Kalittokai) of the Ettuttokai in the Sangam literature?
(a) Akam
(b) Philosophy
(c) Religion
(d) Puram

Q72. What is the standard method to save your work in PowerPoint?
(a) Exit the program without saving
(b) Click on the Insert tab
(c) Use the File tab and select 'Save' or press Ctrl + S
(d) Select 'Save' from the Design tab

Q73. What happens when you use the Format Painter tool in MS Word?
(a) It copies formatting (e.g., font, color) from one piece of text to another.
(b) It changes the page orientation.
(c) It inserts a hyperlink.
(d) It deletes the selected text

Q74. A shopkeeper marks the price of an article at Rs. 5,960. Find the cost price if after allowing a discount of 9% he still gains 30% on the cost price.
(a) Rs. 4,154
(b) Rs. 4,142
(c) Rs. 4,172
(d) Rs. 4,277

Q75. The sum of the age of A and 4 times the age of B is 34 years. When 3 times the age of A is added to 7 times the age of B, the result is 97 years. The sum of the ages (in years) of A and B is:
(a) 30
(b) 33

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(c) 28
(d) 31

Q76. 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 :: ?

: LIE :: SPL : %

(a) = OLT, % = OAI
(b) = OOI, % = PDF
(c) = OLH, % = PMI
(d) = PQH, % = GVI

Q77. Which seasonal change marks the withdrawal of monsoon in India?

(a) Onset of monsoon
(b) Return of polar jet
(c) Southward shift of ITCZ
(d) Rise in daytime temperature

Q78. What is the term duration for representatives in municipalities in India?

(a) 5 years
(b) 7 years
(c) 3 years
(d) 10 years

Q79. Two positive numbers differ by 2858. When the greater number is divided by the smaller number, the quotient is 5 and the remainder is 178. What is the HCF of the greater of the two given numbers and 3828?

(a) 12
(b) 11
(c) 17
(d) 13

Q80. A man spends 40% of his monthly salary on house rent. If every month, he also spends Rs. 442 on conveyance and Rs. 9,115 on grocery and saves the remaining Rs. 946, his monthly salary is:

(a) Rs. 17,468
(b) Rs. 17,603
(c) Rs. 17,505
(d) Rs. 17,475

Q81. Which of the following rivers flows through Rajasthan?

(a) Jhelum
(b) Teesta
(c) Luni
(d) Tapi

Q82. Read the given statements and conclusions carefully. Assuming that the informationgiven in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logicall follow(s) from the

statements.

Statements:

Some water is pink.

All pink are buildings.

All buildings are tall.

Conclusions:

(I) Some pink is water.

(II) Some buildings are pink.

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

Q83. Which of the following numbers is divisible by both 6 and 31?

(a) 37200
(b) 2858
(c) 2132
(d) 4916

Q84. From a point 15 m away from the base of a tree, the angle of elevation to the top is 45°. What is the height of the tree?

(a) 10 m
(b) 15 m
(c) 18 m
(d) 12 m

Q85. Town P is to the east of Town Q. Town Q is to the south of Town R. Town R is to the east of Town S. Town S is to the west of Town T. Town P is to the south-west of Town T. What is the position of Town R with respect to Town T?

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

Q86. 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 :: ?

: NHO :: SMT : %

(a) = PJO, % = QKR
(b) = PJQ, % = QLR
(c) = PJQ, % = QKS
(d) = PJQ, % = QKR

Q87. What was the life expectancy at birth in India as per the 2021 World Health Organization data?

(a) 70.8 years
(b) 67.3 years
(c) 72.1 years
(d) 65.3 years

Q88. Which of the following statements about Small Causes Courts is correct?

(a) They can hear appeals from Nyaya Panchayats.
(b) They deal exclusively with criminal cases of a minor nature.
(c) They exist in all states under a uniform nomenclature.
(d) Their decisions are final but subject to High Court's revision.

Q89. Pipes A and B can fill an empty cistern in 84 minutes and 36 minutes, respectively. Both Pipe A and Pipe B are opened together. After how much time should Pipe B be turned off so that the empty cistern is completely filled in a total of 42 minutes?

(a) 15 minutes
(b) 12 minutes
(c) 18 minutes
(d) 24 minutes

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Q90. If '+' means '−', '−' means '×', '×' means '÷' and '÷' means '+', then what will come in place of the question mark (?) in the following equation?

55 – 8 ÷ 3 + 15 × 5 = ?

(a) 400
(b) 420
(c) 450
(d) 440

Q91. What is the mode of the following data?

77, 86, 89, 74, 69, 84, 87, 80, 60, 64, 79, 63, 83, 82, 81, 89, 80, 69, 73, 74, 87, 68, 74, 77, 67, 74

(a) 74
(b) 89
(c) 77
(d) 86

Q92. 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 :: ?

: NHP :: RLT : %

(a) = OIQ, % = QLS
(b) = OIR, % = QKS
(c) = OIQ, % = QKS
(d) = OIQ, % = QKR

Q93. Which is NOT an advantage of a Lok Adalat?

(a) Speedy resolution
(b) Right to appeal
(c) Binding decisions
(d) No court fees

Q94. C, O, U, N, T, and Y 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 live above C. Only two people live between C and T. Only N lives between C and U. Y lives immediately below C. Who lives on the floor, numbered 2?

(a) T
(b) N
(c) U
(d) O

Q95. Given that 146^(0.93) = x, 146^(0.22) = y and x^z = y^7, then the value of z is close to:

(a) 3.6
(b) 2.61
(c) 1.66
(d) 5.05

Q96. The average of Anwar's marks in seven subjects is 75. His average in six subjects excluding Science is 70. How many marks did he get in Science?

(a) 104
(b) 105
(c) 106
(d) 107

Q97. 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) NK−LI

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(b) TQ−RO
(c) KH−HH
(d) YV−WT

Q98. Which keyboard shortcut is used to make the selected text bold in MS Word 365?
(a) Ctrl + D
(b) Ctrl + I
(c) Ctrl + B
(d) Ctrl + U

Q99. A hollow spherical shell is made of a metal of density 21 g/cm³. Its internal and external radii are 8 cm and 9 cm, respectively. What is the weight (in kg) of the shell?
(Use π = 22/7, Density = Mass/Volume)
(a) 20.34
(b) 16.096
(c) 19.096
(d) 21.03

Q100. In quadrilateral PQRS, angle P, angle Q, angle R, and angle S taken in order are in the ratio 2 : 8 : 3 : 7. Which type of quadrilateral is PQRS?
(a) Kite
(b) Trapezium
(c) Square
(d) Rhombus

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Eka-Aluminium

The correct answer is Eka-Aluminium.

Key Points

• Eka-Aluminium was the name given by Dmitri Mendeleev to the unknown element predicted to lie below aluminium in the periodic table.

• Mendeleev formulated this term based on his periodic law, where "Eka-" means "one beyond" in Sanskrit, indicating its position relative to aluminium.

• The element later discovered and identified as Eka-Aluminium is Gallium (Ga), which was found in 1875 by French chemist Paul-Émile Lecoq de Boisbaudran.

• Mendeleev accurately predicted various properties of Eka-Aluminium, including its atomic mass, density, melting point, and oxide formula.

• The discovery of Gallium validated Mendeleev's periodic table and his concept of periodicity, strengthening the scientific acceptance of the table.

Additional Information

• Periodic Law:

• Mendeleev's periodic law states that the properties of elements are a periodic function of their atomic masses.

• This law formed the basis for the organization of elements in the periodic table.

• Gallium:

• Gallium has an atomic number of 31 and is a soft, silvery metal.

• It melts at a low temperature of about 29.76°C, making it unique among metals.

• Gallium is used in semiconductors, LEDs, and solar panels.

• Mendeleev's Predictions:

• Mendeleev predicted the existence and properties of several elements that were unknown at the time, including Scandium (Eka-Boron), Gallium (Eka-Aluminium), and Germanium (Eka-Silicon).

• His predictions were based on gaps in his periodic table.

• Validation of Periodic Table:

• The discovery of elements like Gallium, which matched Mendeleev's predictions, confirmed the accuracy and utility of the periodic table.

• This established the periodic table as one of the most important tools in chemistry.

Q2. Answer: (b) Population of each state or union territory

The correct answer is Population of each state or union territory.

Key Points

• Rajya Sabha, the upper house of the Indian Parliament, allocates seats to states and union territories based on their population.

• The allocation is done in accordance with the provisions of Article 80 of the Indian Constitution, which determines the seat distribution.

• States with higher populations are allocated more seats, ensuring proportional representation.

• The population data used for this purpose is derived from the 1971 Census, as per the 42nd Amendment of the Constitution.

• As of now, the Rajya Sabha consists of 245 members, with most representatives elected by the legislative assemblies of states and union territories.

Additional Information

• Article 80 of the Indian Constitution:

• Specifies the composition of the Rajya Sabha, including representation from states, union territories, and nominated members.

• States are represented by members elected by their legislative assemblies using the single transferable vote system.

• Allocation of Seats:

• Each state is allocated seats in proportion to its population, ensuring equitable representation.

• Union territories such as Delhi and Puducherry are also represented, but with fewer seats.

• 42nd Constitutional Amendment:

• Freezes the use of population data for seat allocation at the 1971 Census level, to maintain uniformity.

• Role of Rajya Sabha:

• Acts as a federal chamber to represent the interests of states and union territories in the Parliament.

• Ensures that the voice of smaller states is not overshadowed in legislative processes.

Q3. Answer: (b) 3

Given series: (Left) 1 6 $ 1 * 6 5 9 6 % % 1 * * £ 2 * 6 5 $ @ 6 (Right)

According to the question such numbers which are immediately preceded by a number and also immediately followed by a symbol:

Required condition: Number - Number - Symbol

(Left) 1 6 $ 1 * 6 5 9 6 % % 1 * * £ 2 * 6 5 $ @ 6 (Right)

Thus, there are three such numbers which are immediately preceded by a number and also immediately followed by a symbol.

Hence, "Option 2" is the correct answer.

Q4. Answer: (d) Odisha

The correct answer is Odisha.

Key Points

• The Odisha government launched the 'Ama Similipal Yojana' in 2023 with a budget outlay of Rs. 50 crore.
• The scheme is aimed at enhancing livelihoods and promoting ecotourism and cultural tourism in the Similipal region.
• Similipal is a biosphere reserve and national park located in Odisha, known for its rich biodiversity and tribal culture.
• The initiative seeks to empower local communities and conserve the natural ecosystem of Similipal.
• Under the scheme, provisions have been made for sustainable employment opportunities and skill development for the tribal population.

Additional Information

• Similipal Biosphere Reserve:
• Located in Mayurbhanj district, Similipal is one of India's largest biosphere reserves and a UNESCO-recognized site.
• It is home to species such as Bengal tigers, elephants, and orchids, alongside unique tribal communities.
• Ecotourism:
• Ecotourism emphasizes sustainable travel to natural areas, conserving the environment and improving the well-being of local people.
• It plays a vital role in promoting economic growth while protecting biodiversity.
• Cultural Tourism:
• Cultural tourism involves exploring local traditions, heritage, and customs, fostering cultural exchange and understanding.
• Odisha is known for its vibrant tribal art, dance, and festivals, which attract tourists globally.
• Tribal Empowerment:
• Odisha has a significant tribal population, and initiatives like 'Ama Similipal Yojana' aim to uplift these communities.
• Such programs focus on skill development, education, and sustainable livelihood opportunities.

Q5. Answer: (d) Treating Alzheimer's disease

The correct answer is Treating Alzheimer's disease.

Key Points

• 1N4R tau is an isoform of the tau protein, which is primarily associated with neurodegenerative disorders like Alzheimer's disease.
• This isoform is characterized by having four microtubule-binding repeat regions and one N-terminal insertion, making it relevant for studying tauopathies.
• Research by the University of Cologne in February 2025 explored the role of 1N4R tau in the pathogenesis of Alzheimer's disease, particularly its involvement in tau aggregation.
• 1N4R tau accumulation in brain cells leads to the formation of toxic neurofibrillary tangles, which are a hallmark of Alzheimer's disease.
• The study aimed to investigate potential therapeutic approaches to mitigate tau-induced neurotoxicity and slow disease progression.

Additional Information

• Tau Proteins:
• Tau proteins are microtubule-associated proteins that stabilize microtubules in neurons.
• When tau proteins become hyperphosphorylated, they detach from microtubules and aggregate, leading to cell damage.
• Neurofibrillary Tangles:
• Neurofibrillary tangles are clumps of tau protein found in the brains of individuals with Alzheimer's disease.
• They disrupt neural communication, contributing to cognitive decline.
• Alzheimer's Disease:
• Alzheimer's is a progressive neurodegenerative disorder characterized by memory loss, cognitive impairment, and behavioral changes.
• It is associated with the accumulation of beta-amyloid plaques and tau tangles in the brain.
• Therapeutic Exploration:
• Current research focuses on targeting tau aggregation as a potential therapeutic approach for Alzheimer's disease.
• Strategies include tau inhibitors, immunotherapy, and enhancing tau clearance mechanisms.

Q6. Answer: (d) 9 72/161

Shortcut Trick

Average Speed = Total Distance ÷ Total Time

Total Distance = 576 + 630 + 315 = 1521 km

Total Time = (576/16) + (630/7) + (315/9) = 36 + 90 + 35 = 161 hours

Average Speed = 1521 ÷ 161 = 9 (72/161) km/hr

Therefore The correct answer is 9 (72/161) km/hr.

Alternate Method

Given:

Distances (d1, d2, d3) = 576 km, 630 km, 315 km

Speeds (s1, s2, s3) = 16 km/hr, 7 km/hr, 9 km/hr

Formula Used:

Time = Distance ÷ Speed

Average Speed = (d1 + d2 + d3) ÷ (t1 + t2 + t3)

Calculations:

=> t1 = 576 ÷ 16 = 36 hours

=> t2 = 630 ÷ 7 = 90 hours

=> t3 = 315 ÷ 9 = 35 hours

=> Total Distance = 576 + 630 + 315 = 1521 km

=> Total Time = 36 + 90 + 35 = 161 hours

=> Average Speed = 1521 ÷ 161

=> Average Speed = 9 (72/161) km/hr

Therefore The correct answer is 9 (72/161) km/hr.

Additional Information

Average Speed for Equal Distances

If a person covers two equal distances at speeds x and y, then Average Speed = 2xy/(x + y).

Relative Speed

In same direction, Relative Speed = S1 − S2. In opposite direction, Relative Speed = S1 + S2.

Unit Conversion

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

Q7. Answer: (c) Assam

The correct answer is Assam.

Key Points

• Assam is the only Indian state that shares its borders with both Bhutan and Bangladesh.

• The state has an international border of approximately 267 km with Bhutan and around 263 km with Bangladesh.

• Located in the northeastern region of India, Assam plays a vital role in regional connectivity between India and its neighboring countries.

• Districts like Udalguri, Baksa, and Chirang share Assam's boundary with Bhutan, while districts like Dhubri and Karimganj touch the border with Bangladesh.

• Assam's strategic location facilitates trade and cultural exchange with Bhutan and Bangladesh.

Additional Information

• Geographical Importance of Assam:

• Assam is part of the Seven Sister States in northeastern India, bordered by Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, and West Bengal.

• The state is known for its Brahmaputra River, which serves as a lifeline for agriculture and transportation.

• Border with Bhutan:

• Assam shares its northern boundary with Bhutan, a landlocked Himalayan kingdom.

• The Indo-Bhutan border is open, facilitating free movement of people and goods under the Indo-Bhutan Friendship Treaty.

• Border with Bangladesh:

• Assam’s border with Bangladesh is located to the south, with key border points like Karimganj and Dhubri.

• India and Bangladesh share a strong bilateral relationship, with Assam being a critical point for trade and transit.

• Connectivity via Assam:

• Assam is a gateway to northeastern India, connecting the region to the rest of the country through the Siliguri Corridor (also known as the Chicken's Neck).

• It serves as a hub for trade, transportation, and cultural exchanges between India and its neighbors.

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Q8. Answer: (d) Use the 'Group by' option and select 'Type'

The correct answer is Use the 'Group by' option and select 'Type'.

Key Points

• In Windows 10 File Explorer, the 'Group by' option allows you to organize files based on specific attributes such as Type, Name, Date Modified, etc..

• To group files by their type, navigate to the 'Group by' menu and select 'Type'. Files will then be displayed in categories based on their file extensions.

• The 'Group by' feature is accessible via the right-click context menu or the 'View' tab on the ribbon toolbar of File Explorer.

• This feature is particularly useful for organizing and quickly locating files of the same type, such as images, documents, or videos.

• After grouping by type, you can further refine the organization by applying the 'Sort by' option to arrange files within each group.

Additional Information

• Group by vs. Sort by:

• 'Group by' organizes files into categories based on a selected attribute.

• 'Sort by' arranges files in ascending or descending order within a folder.

• File Type:

• File type refers to the specific format or extension of a file (e.g., .jpg, .pdf, .docx).

• Grouping files by type helps users manage multiple formats in a single folder efficiently.

• Accessing File Explorer Options:

• To access the 'Group by' option, open File Explorer, navigate to the folder, and right-click on an empty space.

• Alternatively, use the 'View' tab on the ribbon and select 'Group by'.

• Customization:

• Users can customize the grouping criteria to other attributes like Date, Size, Name, or Tags.

• This flexibility ensures that File Explorer adapts to specific organizational needs.

• Windows File Explorer:

• File Explorer is the default file management utility in Windows operating systems.

• It provides a user-friendly interface for accessing, organizing, and managing files and folders.

Q9. Answer: (b) 33

Shortcut Trick

Assume the average (23) as the baseline for all numbers.

Deviation of 11 = 11 − 23 = −12

Deviation of 25 = 25 − 23 = +2

Net deviation of given numbers = −12 + 2 = −10

To maintain the average, the third number must balance this by being +10 from the average.

Third number = 23 + 10 = 33

Therefore The correct answer is 33.

Alternate Method

Given:

Average of three numbers = 23

First number = 11

Second number = 25

Formula:

Sum of observations = Average × Total number of observations

Calculations:

=> Sum of three numbers = 23 × 3 = 69

=> Sum of the two known numbers = 11 + 25 = 36

=> Third number = Total Sum − (Sum of two numbers)

=> Third number = 69 − 36

=> Third number = 33

&there4$ The correct answer is 33.

Additional Information

Properties of Average

The sum of the deviations of all observations from their mean (average) is always zero. This is a powerful tool for finding missing values in a dataset.

Average of Consecutive Numbers

For a set of n consecutive numbers or numbers in an Arithmetic Progression (AP), the average is simply (First Term + Last Term) ÷ 2.

Effect of Change

If every number in a set is increased, decreased, multiplied, or divided by a constant 'k', the average of the set also changes by the same constant 'k'.

Q10. Answer: (b) Assam

The correct answer is Assam.

Key Points

• The Singphos' Rebellion is associated with the Singpho tribe, an ethnic group primarily found in the northeastern state of Assam.

• The rebellion was part of the resistance against British colonial rule in the 19th century, reflecting the tribal community's struggle for autonomy and freedom.

• It occurred during the early period of British expansion in Assam, when the Singphos opposed the East India Company's attempts to control their lands.

• Singphos are renowned for their warrior traditions and cultural heritage, and they played a significant role in resisting colonial exploitation.

• The Singpho community is also credited with introducing tea cultivation in Assam, which later became a global industry under British rule.

Additional Information

• Singpho Tribe:

• The Singpho tribe belongs to the Tibeto-Burman linguistic group and is primarily found in Assam and Arunachal Pradesh in India.

• They are closely related to the Kachin people of Myanmar and share cultural and linguistic similarities.

• Tea Cultivation in Assam:

• The Singpho community is believed to have introduced tea plants in Assam, which were later commercialized by the British.

• Robert Bruce, a British merchant, reportedly discovered tea plants used by the Singphos in the early 19th century.

• Resistance Movements in Northeast India:

• Tribal resistance against British colonial rule was common in Northeast India, with notable uprisings by the Ahoms, Singphos, and other indigenous groups.

• These movements were aimed at protecting land, resources, and cultural autonomy.

• British Expansion in Assam:

• The British East India Company annexed Assam after the Treaty of Yandabo in 1826, ending Burmese control in the region.

• Assam became a key area for tea cultivation and timber extraction under British rule.

Q11. Answer: (b) Inkjet Printer

The correct answer is Inkjet Printer.

Key Points

• Inkjet printers are designed to produce high-quality graphics and text by spraying tiny droplets of liquid ink directly onto paper.

• They are widely used for photo printing and professional documents due to their superior resolution, typically ranging from 300 to 1200 dpi (dots per inch) or higher.

• Inkjet printers are ideal for color printing, making them suitable for posters, brochures, and high-quality images.

• These printers support a variety of media, including photo paper, card stock, and specialty papers.

• They are commonly used in homes and small offices due to their affordability and compact size.

Additional Information

• Dot Matrix Printers:

• Dot matrix printers use a matrix of pins to strike an ink ribbon and create images or text on paper.

• They are suited for low-cost, high-volume printing but produce lower-quality output compared to inkjet printers.

• Laser Printers:

• Laser printers use toner powder and static electricity to produce high-quality text and graphics.

• They are faster and more cost-effective for large-scale printing but are generally less effective for high-quality photo printing.

• Projectors:

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• Projectors are output devices used to display visuals on a larger screen but are not designed for producing printed graphics or text.

• Comparison with Other Printers:

• Inkjet printers excel in color accuracy and resolution, making them ideal for professionals in graphic design and photography.

• While laser printers are more cost-effective for text-heavy documents, they are less versatile in high-quality color printing.

Q12. Answer: (d) 5

Given: (Left) 236 758 230 563 263 (Right)

According to the question:

Given numbers	236	758	230	563	263
Numbers arranged in ascending order	230	236	263	563	758

So,

First digit of the highest number → 758 → 7

First digit of the lowest number → 230 → 2

Thus, if the first digit of the lowest number is subtracted from the first digit of the highest number then the resultant will be → 7 - 2 → 5

Hence, "Option 4" is the correct answer.

Q13. Answer: (d) Rs. 580

Shortcut Trick

The ratio of shares is determined by the formula: Higher share : Lower share = (1 + r/100)^(Δt) : 1

Here, the person with the shorter duration (Arjun, 12 years) gets the higher share.

Ratio (Arjun : Kartik) = (1 + 10/100)^((13−12)) : 1 = 1.1 : 1 = 11 : 10

Total units = 11 + 10 = 21 units → Rs. 1,218

Kartik share (10 units) = (1218 ÷ 21) × 10 = 58 × 10 = Rs. 580

Therefore The correct answer is Rs. 580.

Alternate Method

Given: Total Principal = Rs. 1,218 | Rate (r) = 10% | t_(Arjun) = 12 years | t_(Kartik) = 13 years.

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

Let the amount given to Arjun be P_A and Kartik be P_K.

=> Total Principal = P_A + P_K = 1218

=> Final Amount Arjun = Final Amount Kartik

=> $P_A(1 + 10/100)^{12} = P_K(1 + 10/100)^{13}$

=> $P_A \times (1.1)^{12} = P_K \times (1.1)^{13}$

=> $P_A / P_K = (1.1)^{13} / (1.1)^{12}$

=> P_A / P_K = 1.1 = 11 / 10

=> Kartik share = [10 / (11 + 10)] × 1218

=> Kartik share = (10 / 21) × 1218

=> Kartik share = 10 × 58 = Rs. 580

Therefore The correct answer is Rs. 580.

Additional Information

Compound Interest Formula

The amount is calculated as $A = P(1 + r/100)^n$, where n is the number of compounding periods.

Effective Interest Rate

For non-annual compounding, the effective rate R_(eff) = [1 + r/(100 × m)]^m − 1, where m is the frequency of compounding per year.

Rule of 72

A quick shortcut to find the approximate time needed to double an investment: Years to double ≈ 72 ÷ Annual Interest Rate.

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Q14. Answer: (a) Wife's Mother's Father's Brother

Decoding symbols:

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

Given: M – N ÷ O + P × Q

M – N → M is the brother of N.

N ÷ O → N is the father of O.

O + P → O is the mother of P.

P × Q → P is the wife of Q.

Here, M is Q's wife's mother's father's brother.

Hence, the correct answer is "Option 1"

Q15. Answer: (c) The phosphate group’s ionisable oxygen atoms

The correct answer is The phosphate group's ionisable oxygen atoms.

Key Points

• DNA molecules carry a negative charge, primarily due to the presence of the phosphate group in the phosphodiester backbone.

• The phosphate group contains ionisable oxygen atoms that are negatively charged at physiological pH.

• These negatively charged oxygen atoms contribute to the overall negative charge of the DNA molecule, which affects its interactions with proteins, cations, and other molecules.

• The negative charge of DNA is critical for its structural stability and biological functions, such as in its interaction with histones and its electrophoretic mobility during gel-based experiments.

• Other components of DNA, such as the nitrogenous bases and the sugar, do not contribute significantly to the molecule's overall charge.

Additional Information

• Phosphodiester Bond:

• A phosphodiester bond is a chemical bond formed between the 3'-hydroxyl group of one sugar and the phosphate group attached to the 5'-carbon of another sugar in the DNA or RNA backbone.

• This bond is crucial for the formation of the DNA and RNA polymer structure.

• Role of Negative Charge in DNA:

• The negative charge on DNA facilitates its interaction with positively charged proteins such as histones, which help in DNA packaging in chromatin.

• It also allows the DNA to migrate towards the positive electrode during electrophoresis, a common laboratory technique for DNA analysis.

• Physiological pH:

• The ionisation of the phosphate group occurs at physiological pH (~7.4), ensuring the DNA remains negatively charged under normal biological conditions.

• Other Components of DNA:

• The nitrogenous bases (adenine, thymine, cytosine, guanine) and the deoxyribose sugar are neutral and do not contribute to the overall charge of the DNA molecule.

Q16. Answer: (d) BAD

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q17. Answer: (c) 22

The logic followed here is:

35 is related to 70 → 35 × 2 = 70

And,

24 is related to 48 → 24 × 2 = 48

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Similarly,
11 is related to → 11 × 2 = 22
Hence, "Option 3" is the correct answer.

Q18. Answer: (b) √(238 + 84√2)

Shortcut Trick
The mean proportional between two numbers a and b is √(a × b).
Multiply the terms: (18 + 8√2) × (15 − 2√2) = 270 − 36√2 + 120√2 − 16(2).
=> 270 − 32 + 84√2 = 238 + 84√2.
The mean proportional is the square root of this product.
Therefore The correct answer is √(238 + 84√2).
Alternate Method
Given: First number (a) = (18 + 8√2), Second number (b) = (15 − 2√2).
Formula Used: Mean Proportional = √(a × b)
=> Let Mean Proportional = x
=> x = √[(18 + 8√2) × (15 − 2√2)]
=> x = √[18(15 − 2√2) + 8√2(15 − 2√2)]
=> x = √[270 − 36√2 + 120√2 − 16(2)]
=> x = √[270 − 32 + 84√2]
=> x = √(238 + 84√2)
Therefore The correct answer is √(238 + 84√2).
Additional Information
Mean Proportional
For two numbers a and b, the mean proportional is x such that a:x = x:b, which results in $x^2 = ab$ or $x = \sqrt{ab}$.
Third Proportional
For two numbers a and b, the third proportional c is found by the ratio a:b = b:c, which results in $c = b^2/a$.
Fourth Proportional
For three numbers a, b, and c, the fourth proportional d is found by a:b = c:d, which results in d = (b × c)/a.

Q19. Answer: (c) Aryna Sabalenka

The correct answer is Aryna Sabalenka.
Key Points
• Aryna Sabalenka won the 2024 US Open Women's Singles title, marking a significant achievement in her career.
• She defeated Jessica Pegula in the final match, showcasing exceptional skill and determination.
• The US Open 2024 was held at the USTA Billie Jean King National Tennis Center in New York City.
• Her win is seen as a breakthrough moment, solidifying her position as a rising star in the world of tennis.
Additional Information
• US Open:
• The US Open is one of the four Grand Slam tournaments, alongside Wimbledon, the Australian Open, and the French Open.
• It is held annually in August-September and is played on a hard court surface.
• Coco Gauff:
• Coco Gauff is an American professional tennis player who turned pro in 2018.
• She is known for her powerful baseline game and her ability to handle high-pressure matches.
• Aryna Sabalenka:
• Aryna Sabalenka, from Belarus, is currently ranked among the top players in the world.
• She has alos won the 2023 Australian Open.
• Grand Slam Titles:
• Winning a Grand Slam is a pinnacle achievement in tennis, requiring exceptional skill and consistency across multiple matches.
• Players who win all four Grand Slams in a year achieve the rare distinction of a Calendar Grand Slam.

Q20. Answer: (a) -5

Given: (Left) 144 743 290 258 799 (Right)
According to the question:

Given numbers	144	743	290	258	799
Numbers arranged in ascending order	144	258	290	743	799

So,

Second digit of the highest number → 799 → 9

Third digit of the lowest number → 144 → 4

Thus, if the second digit of the highest number is subtracted from the third digit of the lowest number then the resultant will be → 4 - 9 → -5

Hence, "Option 1" is the correct answer.

Q21. Answer: (c) Manama, Bahrain

The correct answer is Manama, Bahrain.

Key Points

• The 20th Dialogue event was held in Manama, Bahrain in December 2024.

• This annual event, known as the Manama Dialogue, is a premier security and defense summit in the Middle East.

• It is organized by the International Institute for Strategic Studies (IISS), a renowned global think tank.

• The event provides a platform for leaders, policymakers, and analysts to discuss critical issues related to regional security and geopolitical challenges.

• Key topics at the 2024 event included regional stability, counter-terrorism, and defense cooperation.

Additional Information

• Manama Dialogue:

• The Manama Dialogue has been held annually since its inception in 2004.

• It focuses on addressing defense, security, and foreign policy challenges in the Middle East and North Africa (MENA) region.

• Participants include government representatives, military officials, academics, and private sector leaders.

• The dialogue fosters international cooperation and promotes a deeper understanding of security dynamics in the Gulf region.

• International Institute for Strategic Studies (IISS):

• The IISS is a global think tank established in 1958, headquartered in London, UK.

• It specializes in providing policy-relevant analysis on international security, political risk, and military conflict.

• The organization publishes the annual Military Balance, a comprehensive assessment of global military capabilities.

• Geopolitical Importance of Bahrain:

• Bahrain is a strategically located island nation in the Persian Gulf.

• It serves as a key ally for Western nations in addressing security concerns in the Gulf region.

• The country hosts the US Navy's Fifth Fleet, emphasizing its importance in maritime security.

• Regional Security Concerns:

• The Middle East faces challenges such as terrorism, proxy conflicts, and maritime security threats.

• Events like the Manama Dialogue aim to address these issues through collaborative dialogue and policy recommendations.

Q22. Answer: (d) 2 km towards the north

Given:

Mr. T starts from Point D and drives 3 km towards the east.

He then takes a right turn, drives 7 km, turns right and drives 6 km.

He then takes a right turn and drives 4 km, and then turns right and drives 3 km.

He takes a final left turn, drives 1 km and stops at Point H.

Thus, Mr. T should drive 2 km (7 km - 4 km - 1 km) in the north direction in order to reach Point D again.

Hence, "Option 4" is the correct answer.

Q23. Answer: (d) F

Given: Seven boxes, D, E, F, G, S, T and U, are kept one over the other but not necessarily in the same order.

1) Only S is kept above G.

2) No box is kept below E.

Boxes

S
G
E

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

4) D is kept at some place below F but at some place above U.

Boxes
S
G
F
T
D
U
E

Thus, F box is kept third above U.

Hence, "Option 4" is the correct answer.

Q24. Answer: (a) 52.1

Shortcut Trick

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

3 × Median = 61.6 + 2 × 47.4 = 61.6 + 94.8 = 156.4

Median = 156.4 ÷ 3 = 52.133...

Therefore The correct answer is 52.1.

Alternate Method

Given: Mean = 47.4, Mode = 61.6

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

=> 61.6 = 3 × Median − 2 × 47.4

=> 61.6 = 3 × Median − 94.8

=> 3 × Median = 61.6 + 94.8

=> 3 × Median = 156.4

=> Median = 156.4 ÷ 3

=> Median = 52.133...

=> Median ≈ 52.1

Therefore The correct answer is 52.1.

Q25. Answer: (b) The Permanent Lok Adalat can handle cases up to a certain monetary limit (currently Rs. 1 crore).

The correct answer is The Permanent Lok Adalat can handle cases up to a certain monetary limit (currently Rs. 1 crore).

Key Points

• The Permanent Lok Adalat (PLA) is established under Section 22-B of The Legal Services Authorities Act, 1987.

• The PLA has jurisdiction over disputes related to public utility services like transport, postal, telecommunication, electricity, etc.

• The monetary limit for cases handled by the Permanent Lok Adalat is Rs. 1 crore, as per the latest regulations.

• The PLA has the power to decide disputes if the parties fail to reach a settlement through conciliation.

• The award passed by the Permanent Lok Adalat is final and binding on the parties and is treated as a decree of a civil court.

Additional Information

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• Conciliation Mechanism: The PLA primarily focuses on conciliating disputes and tries to bring parties to a mutually acceptable solution without litigation.

• Public Utility Services: These include essential services like water supply, electricity, transport, postal services, telecommunication, and other utilities as defined under the Act.

• Binding Nature of Awards: Awards made by Permanent Lok Adalats are treated as final and binding, making them cost-effective and time-saving alternatives to litigation.

• Difference from Lok Adalats: Unlike Lok Adalats, Permanent Lok Adalats have the authority to decide disputes even if conciliation efforts fail.

• Exclusion of Criminal Offences: The Permanent Lok Adalat does not have jurisdiction over disputes related to criminal offences or cases outside the scope of public utility services.

Q26. Answer: (b) MS55

The logic followed here is:

Hence, "Option 2" is the correct answer.

Q27. Answer: (b) From 24.8% to 14.96%

The correct answer is From 24.8% to 14.96%.

Key Points

• The SDG India Index 2023-24 highlights significant progress made by India in reducing multidimensional poverty.

• The percentage of the population living in multidimensional poverty reduced from 24.8% in 2015-16 to 14.96% in 2019-21, showcasing a remarkable improvement.

• This reduction is in alignment with India’s commitment to achieving the United Nations Sustainable Development Goal (SDG) 1, which focuses on ending poverty in all its forms.

• The achievement reflects the impact of various government initiatives, including improved healthcare, education, and living standards for economically weaker sections.

• The progress was measured using the National Multidimensional Poverty Index (MPI), which accounts for deprivations in health, education, and standard of living.

Additional Information

• Multidimensional Poverty Index (MPI):

• The MPI is a measure developed by the United Nations Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) to evaluate poverty beyond income, considering factors like health, education, and standard of living.

• It identifies individuals as “multidimensionally poor” if they experience deprivations in at least one-third of the weighted indicators.

• Sustainable Development Goals (SDGs):

• The SDGs are a set of 17 goals adopted by all United Nations Member States in 2015 to address global challenges, including poverty, inequality, climate change, and peace.

• Goal 1 aims to "End poverty in all its forms everywhere."

• Government Initiatives to Reduce Poverty in India:

• Programs like Pradhan Mantri Awas Yojana (PMAY), Ayushman Bharat, and National Food Security Act have played a crucial role in improving living standards.

• Skill development schemes like Pradhan Mantri Kaushal Vikas Yojana (PMKVY) aim to enhance employment opportunities.

• India’s Progress on SDG 1:

• India’s reduction in multidimensional poverty is a key indicator of its progress on SDG 1.

• Efforts have been focused on improving healthcare, education, and basic amenities to uplift marginalized communities.

Q28. Answer: (b) 1,44,375

Shortcut Trick

Initial Population = 1,10,000

First Year Increase = 5% → Multiplier = 21/20

Second Year Increase = 25% → Multiplier = 5/4

Final Population = 1,10,000 × (21/20) × (5/4) = 1,10,000 × (105/80) = 1,44,375

Therefore The correct answer is 1,44,375.

Alternate Method

Given:

Initial Population (P) = 1,10,000
First year growth rate (R1) = 5%
Second year growth rate (R2) = 25%
Formula: Final Population = P × (1 + R1/100) × (1 + R2/100)
=> Population after 1st year = 1,10,000 + (5% of 1,10,000)
=> Population after 1st year = 1,10,000 + 5,500 = 1,15,500
=> Population after 2nd year = 1,15,500 + (25% of 1,15,500)
=> 25% of 1,15,500 = 1,15,500 ÷ 4 = 28,875
=> Final Population = 1,15,500 + 28,875 = 1,44,375
Therefore The correct answer is 1,44,375.
Additional Information
Successive Percentage Change
If a value changes by a% and then by b%, the net effective change is (a + b + ab/100)%.
Population Decrease
If the population decreases, use the formula $P \times (1 - R/100)^n$ where R is the rate of decline.
Constant Growth Rate
If the rate R is constant for n years, the population after n years is $A = P(1 + R/100)^n$.

Q29. Answer: (a) 68/9

Given:
Simplify: 34 ÷ {4 × (9/9 of 9/8)}
Formula Used:
1. "of" means multiplication (×).
2. Follow BODMAS rule: Brackets, Orders (powers, roots, etc.), Division, Multiplication, Addition, Subtraction.
Calculation:
34 ÷ {4 × (9/9 of 9/8)}
=> 34 ÷ {4 × (9/9 × 9/8)}
=> 34 ÷ {4 × (9/8)}
=> 34 ÷ 9/2
=> 34 × 2/9
=> 68/9
Therefore Option 1 is the correct answer.

Q30. Answer: (b) A A Z J S

Given Table:

Number	7	8	2	3	4	5	6
Code	Z	Q	#	@	%	$	U

According to the given condition:

Rule no.	Condition	Result
1.	1st and 2nd digits are even	Both are to be coded as ‘A’
2.	1st and last digits are odd	Both are to be coded as the code for the 1st digit
3.	3rd and 4th digits are even	Their codes are to be interchanged

Given: 48719
Here, 1st rule applies i.e. 1st and 2nd digits are even.
4 → coded as A
8 → coded as A
7 → coded as Z
1 → coded as J
9 → coded as S.

So, 48719 → Coded as A A Z J S.

Hence, "Option 3" is the correct answer.

Additional InformationHere, code for '1' and '9' are not given, but according to the codes of '487' as per the given rules, only one option is applicable. And code for each digit is positioned against the same place as of the digit in the given number, therefore code for '1' and '9' will be 'J' and 'S' respectively.

Q31. Answer: (a) Only 1

The correct answer is Option 1.

Key Points

• The Supreme Court granted interim protection to Ranveer Allahbadia in February 2025, allowing him relief from immediate arrest or legal action.

• While granting protection, the Court strongly criticized his remarks, terming them obscene and vulgar, emphasizing the need for responsible behavior.

• The judgment did not include any ruling allowing unrestricted foreign travel for Allahbadia, as the remarks being behind a paywall was not considered a valid justification.

• The Court's focus was on balancing freedom of expression with public decency and moral standards.

• Option 1 is correct, as only the first statement aligns with the interim order's details.

Additional Information

• Interim Protection:

• Interim protection is a temporary relief provided by the court to prevent immediate harm or legal consequences while the case is being heard.

• Freedom of Speech and Expression:

• It is a constitutional right under Article 19(1)(a) of the Indian Constitution but is subject to reasonable restrictions under Article 19(2).

• Restrictions include public morality, decency, and sovereignty of the state.

• Obscenity in Law:

• Obscenity is regulated under Section 292 of the Indian Penal Code, which prohibits the sale, distribution, or exhibition of obscene material.

• The judicial interpretation of obscenity often balances moral standards with artistic freedom.

• Paywalls and Legal Context:

• A paywall restricts access to content behind a subscription fee, but it does not exempt creators from legal scrutiny if the content violates laws.

Q32. Answer: (d) Mridangam

The correct answer is Mridangam.

Key Points

• Ghana Vadya refers to the category of Indian classical musical instruments that produce sound primarily through solid vibrating materials without the need for strings or membranes.

• Examples of Ghana Vadya include instruments like Manjira, Jaltarang, and Khartal, which create sound through striking, shaking, or other solid resonating methods.

• Mridangam, on the other hand, is a Avanaddha Vadya (percussion instrument) that generates sound through the vibration of stretched membranes.

• The Mridangam is a barrel-shaped drum used predominantly in Carnatic and other South Indian classical music.

• Thus, Mridangam does not belong to the Ghana Vadya category, making it the correct answer.

Additional Information

• Ghana Vadya:

• Ghana Vadya instruments are also called solid instruments or idiophones.

• These instruments are struck, shaken, or scraped to produce sound.

• Common examples include cymbals (Manjira), gongs, bells, and xylophones.

• Avanaddha Vadya:

• Avanaddha Vadya, or percussion instruments, produce sound by vibrating stretched membranes.

• Examples include Mridangam, Tabla, Dhol, and Pakhawaj.

• These instruments are used in various forms of Indian classical and folk music.

• Mridangam:

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• Mridangam is a double-headed drum traditionally made of jackwood and leather.

• It is played with hands and is an essential instrument in Carnatic music performances.

• Jaltarang:

• Jaltarang is a unique Ghana Vadya that consists of water-filled porcelain bowls of different sizes.

• It produces sound by striking the bowls with sticks.

Q33. Answer: (c) Unified regulation of cable, satellite and OTT platforms

The correct answer is Unified regulation of cable, satellite and OTT platforms.

Key Points

• The Broadcast Services Regulation Bill, 2023 aims to provide a unified regulatory framework for cable TV, satellite channels, and OTT platforms in India.

• This draft legislation is designed to address the regulatory overlap among different media types and ensure a level playing field for all stakeholders in the broadcasting ecosystem.

• It is expected to introduce mechanisms for content moderation, grievance redressal, and compliance with Indian laws across all broadcasting platforms.

• The bill proposes to harmonize content policies and advertising norms for cable, satellite, and OTT services, ensuring consistency and transparency for consumers and content creators.

• This regulation reflects the government's intent to streamline digital and traditional broadcasting, keeping pace with technological advancements and changing consumer behavior.

Additional Information

• Over-the-Top (OTT) Platforms:

• OTT platforms are online services delivering video content via the internet, bypassing traditional cable or satellite distribution.

• Major platforms like Netflix, Amazon Prime, and Disney+ Hotstar have seen significant growth in India, driven by affordable internet and smartphones.

• In India, OTT platforms are currently regulated under the Information Technology Rules, 2021.

• Cable and Satellite Broadcasting:

• Cable TV and satellite channels in India are regulated under the Cable Television Networks (Regulation) Act, 1995.

• These services are required to follow guidelines issued by the Ministry of Information and Broadcasting.

• Content Regulation:

• The draft bill seeks to establish a unified authority for regulating content on all platforms, ensuring compliance with cultural and legal standards.

• This includes age-appropriate certifications, guidelines for sensitive content, and measures to prevent hate speech.

• Grievance Redressal Mechanism:

• The bill proposes a three-tier grievance resolution system for users to address complaints related to content or service.

• This system includes self-regulation by platforms, an industry body for oversight, and a government-appointed authority for final arbitration.

Q34. Answer: (c) Law Commission in India

The correct answer is Law Commission in India.

Key Points

• The Charter Act of 1833 was a significant legislation passed by the British Parliament to reorganize the administration in India.

• It centralized the administration by vesting legislative power in the Governor-General of India and his council.

• The act led to the establishment of the first Law Commission in India in 1834 under the chairmanship of Lord Macaulay.

• The Law Commission was tasked with codifying Indian laws, which ultimately resulted in the drafting of the Indian Penal Code (1857).

• This act also marked the beginning of the end of the East India Company's commercial activities, focusing solely on governance.

Additional Information

• Charter Acts:

• The Charter Acts were a series of legislative measures passed by the British Parliament to regulate the East India Company’s operations in India.

• The Charter Act of 1813 allowed missionaries to propagate Christianity in India and ended the monopoly of the East India Company except for the tea trade.

• The Charter Act of 1853 marked the last in the series and led to the initiation of the Indian Civil Services examination.

• Indian Penal Code (IPC):

• The IPC, drafted by the first Law Commission, was completed in 1837 but enacted in 1860 after revisions.
• It remains the primary criminal code in India, though it has undergone amendments over the years.
• Lord Macaulay:
• Thomas Babington Macaulay was a British historian and politician who played a key role in introducing English education and legal reforms in India.
• He is best known for his "Minute on Education" (1835) and his role in drafting the Indian Penal Code.
• Governance Changes under the Charter Act of 1833:
• It made the Governor-General of Bengal the Governor-General of India, centralizing authority.
• It introduced provisions to admit Indians into government service, though not effectively implemented.

Q35. Answer: (c) 577

Given equation: 151 ÷ 3 + 168 × 8 − 145 = ?

According to the question, after '+' and '−' are interchanged and '×' and '÷' are interchanged:

151 ÷ 3 + 168 × 8 − 145 = ? => 151 × 3 − 168 ÷ 8 + 145 = ?

=> 151 × 3 − 168 ÷ 8 + 145 = ?

=> 151 × 3 − 21 + 145 = ?

=> 453 + 145 − 21 = ?

=> 598 − 21 = ?

=> 577 = ?

Hence, "Option 3" is the correct answer.

Q36. Answer: (a) 13 cm

Shortcut Trick

By the Power of a Point Theorem for a point outside a circle:

PA × PB = OP2 − r2

Given: PA = 8 cm, AB = 7 cm => PB = 8 + 7 = 15 cm, and OP = 17 cm.

=> 8 × 15 = 172 − r2

=> 120 = 289 − r2

=> r2 = 169 => r = 13 cm

Therefore The correct answer is 13 cm.

Alternate Method

Given:

=> Distance of point P from the center O, OP = 17 cm

=> Length of secant segment, PA = 8 cm

=> Length of chord segment, AB = 7 cm

=> Total secant length, PB = PA + AB = 8 + 7 = 15 cm (since PB > PA)

Formula Used:

According to the Power of a Point Theorem, if a secant line from an external point P intersects a circle of radius r and center O at points A and B, then:

PA × PB = OP2 − r2

Calculations:

Let the radius of the circle be r cm.

=> PA × PB = OP2 − r2

=> 8 × 15 = 172 − r2

=> 120 = 289 − r2

=> r2 = 289 − 120

=> r2 = 169

=> r = √169

=> r = 13 cm

Analysis of Other Options:

=> Option 2 (14 cm): If r = 14 cm, then OP2 − r2 = 172 − 142 = 289 − 196 = 93 ≠ 120.

=> Option 3 (15 cm): If r = 15 cm, then OP2 − r2 = 172 − 152 = 289 − 225 = 64 ≠ 120.

=> Option 4 (12 cm): If r = 12 cm, then OP2 − r2 = 172 − 122 = 289 − 144 = 145 ≠ 120.

Thus, only 13 cm satisfies the geometric condition.
Therefore The correct answer is 13 cm.
Additional Information
Tangent-Secant Theorem
If a tangent segment PT and a secant segment PAB are drawn to a circle from an exterior point P, then PT2 = PA × PB.
Intersecting Chords Theorem
If two chords AB and CD of a circle intersect at an interior point E, then EA × EB = EC × ED.
Perpendicular Bisector Property
A perpendicular line drawn from the center of a circle to any chord bisects that chord into two equal segments.

Q37. Answer: (d) Two

Shortcut Trick
Identify Odd digits: 3, 1, 7 → Add 1: 4, 2, 8.
Identify Even digits: 8, 6, 4, 2 → Subtract 2: 6, 4, 2, 0.
New number: 4, 6, 2, 4, 2, 0, 8.
Repeating digits: 4 (twice) and 2 (twice).
Therefore The correct answer is Two.
Alternate Method
Given Number: 3816427
=> Digit 3 (Odd): 3 + 1 = 4
=> Digit 8 (Even): 8 − 2 = 6
=> Digit 1 (Odd): 1 + 1 = 2
=> Digit 6 (Even): 6 − 2 = 4
=> Digit 4 (Even): 4 − 2 = 2
=> Digit 2 (Even): 2 − 2 = 0
=> Digit 7 (Odd): 7 + 1 = 8
=> The resulting sequence is: 4, 6, 2, 4, 2, 0, 8
=> Digits appearing more than once: 4 (twice), 2 (twice)
=> Total count of such digits = 2
Therefore The correct answer is Two.
Additional Information
Odd and Even Digit Operations
Operations on digits are common in Reasoning Ability. Always process digits one by one to avoid sequence errors.
Frequency of Digits
When asked for digits appearing 'more than once', identify unique digits that have a count > 1 in the final string.
Number System Basics
Even numbers are divisible by 2 (0, 2, 4, 6, 8), and odd numbers leave a remainder of 1 (1, 3, 5, 7, 9).

Q38. Answer: (c) 2

According to the given information,
Thus, 'C' is coded as '2'.
Hence, "Option 3" is the correct answer.

Q39. Answer: (b) 372

The logic followed here is:
Hence, the correct answer is "Option 2".

Q40. Answer: (d) 943 females per 1000 males

The correct answer is 943 females per 1000 males.
Key Points
• The sex ratio in India as per the 2011 Census was 943 females per 1000 males.
• This figure represented an improvement from the 2001 Census, which recorded a sex ratio of 933 females per 1000 males.
• The state of Kerala recorded the highest sex ratio with 1084 females per 1000 males, while Haryana had the lowest at 879

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females per 1000 males.

• The overall improvement in sex ratio was largely attributed to increased awareness of gender equality and initiatives to combat female infanticide and sex-selective abortions.

• The sex ratio is a critical indicator of social health and gender equity in a country.

Additional Information

• Sex Ratio:

• Sex ratio refers to the number of females per 1000 males in a population.

• It is a crucial demographic indicator reflecting the status of women in society.

• Child Sex Ratio:

• The child sex ratio (0-6 years) as per the 2011 Census stood at 919 females per 1000 males, a decline from 927 in 2001.

• This decline highlighted the ongoing challenge of gender-based discrimination at birth.

• Gender Equality Initiatives in India:

• Flagship programs like Beti Bachao Beti Padhao aim to address the declining child sex ratio and promote gender equality.

• Laws such as the Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act prohibit sex-selective abortions.

• Global Perspective:

• The global sex ratio is approximately 984 females per 1000 males as of the latest data.

• India's 2011 sex ratio placed it below the global average, highlighting the need for continued efforts toward gender parity.

Q41. Answer: (b) Nidhi Tewari

The correct answer is Nidhi Tewari.

Key Points

• Nidhi Tewari was appointed as the Private Secretary to Prime Minister Narendra Modi in March 2025.

• She is a senior Indian Administrative Service (IAS) officer, known for her distinguished service and expertise in administrative roles.

• The role of Private Secretary to the Prime Minister is critical, involving coordination, policy advisory, and administrative management at the highest level of government.

• Nidhi Tewari’s appointment reflects the government’s trust in experienced bureaucrats to handle sensitive and high-responsibility positions.

• Her appointment was approved by the Appointments Committee of the Cabinet (ACC), which oversees high-level bureaucratic appointments.

Additional Information

• Appointments Committee of the Cabinet (ACC):

• The ACC is responsible for appointments to top administrative posts in the Government of India.

• It is chaired by the Prime Minister and includes the Minister of Home Affairs.

• Role of a Private Secretary to the PM:

• The Private Secretary acts as a liaison between the Prime Minister and various departments and agencies.

• The role involves handling sensitive correspondence, scheduling, and ensuring smooth communication within the government.

• Indian Administrative Service (IAS):

• The IAS is one of the premier civil services in India, responsible for implementing policies and managing administrative functions at various levels.

• IAS officers hold key positions such as District Magistrates, Secretaries to the Government, and Heads of Departments.

• Process of High-Level Appointments:

• High-level appointments in the Indian government are conducted with the approval of the ACC to ensure merit, transparency, and suitability for the role.

• Such appointments are often based on the officer’s track record, expertise, and experience in handling critical responsibilities.

Q42. Answer: (d) Karnataka

The correct answer is Karnataka.

Key Points

• The Maski Ashoka Inscription is located in Maski village of Raichur district in the state of Karnataka, India.

• This inscription is significant as it was the first to explicitly mention the name Ashoka, identifying him with the title "Devanampiya Piyadasi" (Beloved of the Gods).

• The Maski inscription was discovered by C. Beadon in 1915, and it played a crucial role in confirming the identity of Ashoka as the ruler responsible for the edicts.

• It is one of the Minor Rock Edicts of Ashoka and promotes the principles of Dhamma (righteousness).

• The inscription is written in the Prakrit language using the Brahmi script, which was widely used during the Mauryan period.

Additional Information

• Ashoka and His Edicts:

• Ashoka, the Mauryan emperor, ruled during the 3rd century BCE and is renowned for his promotion of Buddhism and Dhamma (moral conduct).

• His inscriptions, known as Ashokan Edicts, are spread across the Indian subcontinent and are categorized into Major Rock Edicts, Minor Rock Edicts, Pillar Edicts, and Cave Inscriptions.

• Importance of Maski Inscription:

• Before the Maski discovery, it was unclear whether "Devanampiya Piyadasi" referred to Ashoka or another ruler.

• The Maski edict confirmed that "Devanampiya Piyadasi" was indeed Ashoka, solidifying his connection with the inscriptions.

• Prakrit and Brahmi:

• Prakrit was the common language of the people during the Mauryan period, used in many of Ashoka's edicts.

• Brahmi script is one of the oldest writing systems in India, serving as the precursor to many modern Indian scripts.

• Raichur District:

• Raichur is located in northern Karnataka and is historically significant due to its association with several ancient kingdoms, including the Mauryas.

• It is home to many archaeological and historical sites, including the Maski inscription.

Q43. Answer: (b) 50 minutes

Shortcut Trick

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

Speed ratio (New : Normal) = 5 : 7 → Time ratio (New : Normal) = 7 : 5.

Difference in time units = 7 − 5 = 2 units.

Given 2 units = 20 minutes → 1 unit = 10 minutes.

Usual time (5 units) = 5 × 10 = 50 minutes.

Therefore The correct answer is 50 min.

Alternate Method

Given: New Speed = 5/7 × Normal Speed; Delay = 20 minutes.

Formula Used: Distance = Speed × Time

=> Let Usual Speed = S and Usual Time = T.

=> Distance = S × T

=> New Speed = 5/7 S, New Time = T + 20

=> S × T = (5/7 S) × (T + 20)

=> T = 5/7 × (T + 20)

=> 7T = 5T + 100

=> 2T = 100

=> T = 50 minutes.

Therefore The correct answer is 50 min.

Additional Information

Inverse Proportion Rule

If a person travels at a/b of their usual speed, the new time taken is b/a of the usual time.

General Formula for Late/Early

Usual Time = (Late time × a) ÷ (b − a) where new speed is a/b of usual speed.

Average Speed

For two equal distances covered at speeds x and y, Average Speed = 2xy/(x + y).

Q44. Answer: (c) 3089

Given equation: 56 + 41 ÷ 12054 – 123 × 891 = ?

According to the question, after '÷' and '–' are interchanged and '×' and '+' are interchanged:

56 + 41 ÷ 12054 – 123 × 891 = ? => 56 × 41 – 12054 ÷ 123 + 891 = ?

=> 56 × 41 – 12054 ÷ 123 + 891 = ?

=> 56 × 41 – 98 + 891 = ?

=> 2296 + 891 – 98 = ?

=> 3187 – 98 = ?

=> 3089 = ?

Hence, "Option 3" is the correct answer.

Q45. Answer: (b) 154(1 + √10) cm²

Shortcut Trick

Volume V = (1/3) × π × r² × h => 1078 = (1/3) × (22/7) × r² × 21

r² = 1078 ÷ 22 = 49 => Radius (r) = 7 cm

Slant height (l) = √(h² + r²) = √(21² + 7²) = √(441 + 49) = √490 = 7√10 cm

TSA = πr(r + l) = (22/7) × 7 × (7 + 7√10) = 22 × 7(1 + √10) = 154(1 + √10) cm²

Therefore The correct answer is 154(1 + √10) cm².

Alternate Method

Given: Volume of cone = 1078 cm³, Height (h) = 21 cm, π = 22/7

Formula Used: Volume = (1/3)πr²h, Total Surface Area (TSA) = πr(r + l), Slant height (l) = √(r² + h²)

=> 1078 = (1/3) × (22/7) × r² × 21

=> 1078 = 22 × r²

=> r² = 1078 ÷ 22 = 49

=> Radius (r) = 7 cm

=> Slant height (l) = √(7² + 21²) = √(49 + 441) = √490 = 7√10 cm

=> TSA = πr² + πrl = πr(r + l)

=> TSA = (22/7) × 7 × (7 + 7√10)

=> TSA = 22 × 7(1 + √10) = 154(1 + √10) cm²

Therefore The correct answer is 154(1 + √10) cm².

Additional Information

Slant Height of Cone

The relationship between height (h), radius (r), and slant height (l) is given by Pythagoras theorem: l = √(r² + h²).

Curved Surface Area (CSA)

The lateral surface area or CSA of a right circular cone is given by the formula πrl.

Volume of a Cone

The volume of a cone is exactly one-third of the volume of a cylinder with the same base and height: V = (1/3)πr²h.

Q46. Answer: (a) MnO4^- + 5Fe²^+ + 8H^+ → Mn²^+ + 5Fe³^+ + 4H2O

The correct answer is MnO4^- + 5Fe²^+ + 8H^+ → Mn²^+ + 5Fe³^+ + 4H2O.

Key Points

• The balanced redox reaction in acidic medium is: MnO4^- + 5Fe²^+ + 8H^+ → Mn²^+ + 5Fe³^+ + 4H2O.

• In this reaction, MnO4^- is reduced to Mn²^+, and Fe²^+ is oxidized to Fe³^+.

• Manganese in MnO4^- undergoes a change in oxidation state from +7 to +2, indicating a reduction process.

• Iron in Fe²^+ undergoes a change in oxidation state from +2 to +3, indicating an oxidation process.

• The presence of H^+ ions (acidic medium) is crucial for balancing the reaction and ensuring proper electron transfer.

Additional Information

• Permanganate Ion (MnO4^-):

• It is a strong oxidizing agent and plays a significant role in redox reactions.

• In acidic medium, MnO4^- is reduced to Mn²^+, while in basic medium, it is reduced to MnO2.

• Oxidation and Reduction:

• Oxidation involves the loss of electrons, whereas reduction involves the gain of electrons.

• In this reaction, Fe²^+ loses one electron (oxidation), and MnO4^- gains five electrons (reduction).

• Balancing Redox Reactions:

• Redox reactions are balanced by ensuring both mass and charge are conserved.

• In acidic medium, H^+ ions are used to balance the reaction alongside water molecules.

• Applications of Redox Chemistry:

• Redox reactions are widely used in industries for processes like electroplating, corrosion prevention, and chemical synthesis.

• Permanganate titrations are commonly used for determining the concentration of reducing agents in analytical chemistry.

Q47. Answer: (c) $x^2 + x - 960 = 0$

Shortcut Trick

Let the smaller integer be x.

The next consecutive integer is (x + 1).

The product is given as 960.

Shortcut: $x \times (x + 1) = 960 \Rightarrow x^2 + x - 960 = 0$.

Therefore The correct answer is $x^2 + x - 960 = 0$.

Alternate Method

Given:

Smaller integer = x

Product of two consecutive positive integers = 960

Formula Used:

Product = Integer1 × Integer2

Calculations:

=> Let the two consecutive positive integers be x and (x + 1).

=> According to the question, their product is 960.

=> $x \times (x + 1) = 960$

=> $x^2 + x = 960$

=> $x^2 + x - 960 = 0$

This is the quadratic equation required to find the value of x.

Therefore The correct answer is $x^2 + x - 960 = 0$.

Additional Information

Consecutive Integers

Integers that follow each other in order with a difference of 1, represented as n, n+1, n+2, etc.

Standard Quadratic Form

A quadratic equation is written as $ax^2 + bx + c = 0$, where x represents an unknown variable.

Solving for x

To find x, factorize the equation: $x^2 + 31x - 30x - 960 = 0 \Rightarrow (x + 32)(x - 30) = 0$. Since x is positive, x = 30.

Q48. Answer: (b) Sal

The correct answer is Sal.

Key Points

• Sal (Shorea robusta) is a prominent example of deciduous vegetation found in India, particularly in regions with a tropical moist deciduous climate.

• It sheds its leaves seasonally, typically during the dry season, to conserve water and adapt to environmental conditions.

• Sal forests are widespread in northern and central India, including states like Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, Odisha, and parts of the Himalayan foothills.

• Known for its durable timber, Sal wood is widely used in construction, furniture making, and railway sleepers.

• Sal forests are ecologically significant as they support a variety of wildlife and maintain regional biodiversity.

Additional Information

• Deciduous Vegetation:

• Deciduous trees shed their leaves annually, typically during dry or cold seasons, to reduce water loss through transpiration.

• Tropical deciduous forests in India are categorized into moist deciduous and dry deciduous forests based on rainfall patterns.

• Moist Deciduous Forests:

• These forests thrive in areas with annual rainfall between 100-200 cm.

• Common tree species include Sal, Teak, Mahua, and Bamboo.

• Dry Deciduous Forests:

• These forests are found in regions with 70-100 cm of rainfall annually.

• Common species include Babool, Neem, and Acacia.

• Ecological Importance of Deciduous Forests:

• They act as carbon sinks, mitigating climate change.

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• They provide habitat for diverse flora and fauna.
• They prevent soil erosion and maintain hydrological cycles.

Q49. Answer: (a) 200 nautical miles

The correct answer is 200 nautical miles.

Key Points

• India's Exclusive Economic Zone (EEZ) extends up to 200 nautical miles from the baseline as per the United Nations Convention on the Law of the Sea (UNCLOS).
• The EEZ allows a coastal nation to exercise sovereign rights over natural resources, including energy production from water and wind, within this zone.
• UNCLOS, adopted in 1982, defines the rights and responsibilities of nations regarding their use of the world's oceans.
• Within the EEZ, India has exclusive rights to exploit and manage marine resources, fisheries, and mineral exploration.
• UNCLOS ensures that nations respect each other's EEZ boundaries to maintain international peace and cooperation.

Additional Information

• Baseline: The baseline is the low-water line along the coast, from which the 200 nautical miles for the EEZ is measured.
• Territorial Sea: It extends up to 12 nautical miles from the baseline, where the coastal nation exercises complete sovereignty.
• Contiguous Zone: It extends from 12 to 24 nautical miles, where a country can enforce laws related to customs, immigration, and pollution.
• High Seas: Beyond the EEZ lies the high seas, which are international waters not under the jurisdiction of any country.
• UNCLOS Significance: UNCLOS provides a framework for resolving disputes and ensures equitable sharing of marine resources among nations.

Q50. Answer: (a) LKP

The logic followed here is:

Option 1) LKP

Option 2) QRU

Option 3) EFI

Option 4) MNQ

Thus, out of all the options, 'LKP' is the odd one out.

Hence, "Option 1" is the correct answer.

Q51. Answer: (a) 1

Shortcut Trick

Total Work (LCM of 2, 52) = 52 units.

Efficiency of B = 52 ÷ 52 = 1 unit/day.

Work done by B in 26 days = 26 × 1 = 26 units.

Remaining work = 52 − 26 = 26 units.

Efficiency of A = 52 ÷ 2 = 26 units/day.

Time for A to finish = 26 ÷ 26 = 1 day.

Therefore The correct answer is 1 day.

Alternate Method

Given: Time taken by A = 2 days, Time taken by B = 52 days.

Person	Days	Total Work	Efficiency
A	2	52	26
B	52	1	

Calculations:

=> Work done by B in 26 days = Efficiency × Time

=> Work done by B = 1 × 26 = 26 units

=> Remaining Work = Total Work − Work Done

=> Remaining Work = 52 − 26 = 26 units

=> Time taken by A alone = Remaining Work ÷ Efficiency of A

=> Time taken by A = 26 ÷ 26 = 1 day

Therefore The correct answer is 1 day.

Additional Information

Efficiency Concept

Efficiency is inversely proportional to the time taken to complete the work (Efficiency = Work ÷ Time).

Work and Wages

Wages are generally distributed in the ratio of work done or the ratio of efficiencies if they work for the same duration.

Pipes and Cisterns

This follows the same logic where filling a tank is positive work and a leak (emptying) is negative work.

Q52. Answer: (b) 17,500

Shortcut Trick

Value after 80% discount (20% of MP) = 5,180.

Marked Price (MP) = 5,180 × 100 ÷ 20 = 25,900.

If no discount is allowed, Selling Price (SP) = MP = 25,900.

At this price, Gain% = 48%, so 148% of CP = 25,900.

Cost Price (CP) = 25,900 ÷ 1.48 = 17,500.

Therefore The correct answer is Rs. 17,500.

Alternate Method

Given: Discount = 80%, SP = Rs. 5,180. Profit (if SP=MP) = 48%.

Formulas: MP = [SP × 100] ÷ [100 − Discount%], CP = [SP × 100] ÷ [100 + Profit%].

=> Step 1: Calculate MP using the discounted value. MP = (5,180 × 100) ÷ (100 − 80) = 518,000 ÷ 20 = 25,900.

=> Step 2: When no discount is given, New SP = MP = 25,900.

=> Step 3: Use the profit percentage to find CP. CP = (25,900 × 100) ÷ (100 + 48) = 2,590,000 ÷ 148.

=> Step 4: CP = 17,500.

Therefore The correct answer is Rs. 17,500.

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 formula relating CP and MP is: CP ÷ MP = (100 − D%) ÷ (100 + P%).

Q53. Answer: (a) Ghadar Movement

The correct answer is Ghadar Movement.

Key Points

• The "Swadesh Sevak Home" was established in the United States and Canada during the early 20th century to promote revolutionary activities against British rule in India.

• It served as a hub for Indian immigrants and revolutionaries involved in the Ghadar Movement, which aimed to overthrow British colonial rule through armed rebellion.

• The Ghadar Party was formed in 1913 in San Francisco by Indian immigrants, with the "Swadesh Sevak Home" playing a key role in organizing and mobilizing efforts.

• Prominent leaders of the Ghadar Movement included Lala Har Dayal, Sohan Singh Bhakna, and Kartar Singh Sarabha.

• The movement emphasized the use of propaganda, distribution of literature, and revolutionary planning to inspire Indians both abroad and within the country to fight for independence.

Additional Information

• Ghadar Movement:

• The term "Ghadar" means "mutiny" or "revolt," symbolizing the movement's goal to incite rebellion against British rule.

• The Ghadar Party published a newspaper named "Ghadar", which served as a medium to propagate revolutionary ideas.

• The party mainly consisted of Indian expatriates, particularly Sikhs, living in North America, but it attracted support from other communities as well.

• The movement played a significant role in inspiring later independence struggles, despite its failure to achieve immediate military success.

• Key Events:

• The Ghadar Movement's key revolutionary activities included attempts to smuggle arms into India and organize uprisings during

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World War I.

• The Komagata Maru incident in 1914 highlighted the racial discrimination faced by Indian immigrants and further fueled anti-British sentiments.

• Impact:

• Although the movement was suppressed by British authorities, it inspired future generations of Indian freedom fighters.

• Many Ghadar Party members were arrested, exiled, or executed, but their sacrifices became a symbol of patriotism and resistance.

• Indian National Freedom Struggles Abroad:

• Several revolutionary activities outside India, such as the Ghadar Movement, highlighted the global nature of India's independence struggle.

• Other organizations like the Indian Independence League and the Indian National Army also had roots abroad, contributing to the broader freedom movement.

Q54. Answer: (c) To support states in achieving their renewable energy targets

The correct answer is To support states in achieving their renewable energy targets.

Key Points

• The Accelerating Sustainable State Energy Transition (ASSET) initiative was launched by NITI Aayog in November 2024 to promote the transition to clean and sustainable energy across Indian states.

• The primary goal of ASSET is to assist states in achieving their renewable energy targets, aligning with India's commitment to global climate goals.

• The initiative emphasizes supporting states in policy development, resource allocation, and capacity building for renewable energy projects.

• ASSET aims to enhance collaboration between the central and state governments to facilitate efficient implementation of renewable energy policies.

• It is also designed to address challenges such as grid integration, financial constraints, and sustainable energy access at the state level.

Additional Information

• Renewable Energy Targets:

• India aims to achieve 500 GW of non-fossil fuel-based installed capacity by 2030 as part of its climate commitments.

• The country is focusing on solar, wind, hydropower, and bio-energy to meet these goals.

• Role of NITI Aayog:

• NITI Aayog is the policy think tank of the Government of India, responsible for driving sustainable development and innovation.

• It has been actively involved in creating frameworks for energy transitions and climate action.

• Grid Integration of Renewable Energy:

• Efficient grid integration is critical for ensuring the stability of electricity supply as renewable energy sources are often intermittent.

• Technologies such as energy storage systems and demand response mechanisms are being explored to address this challenge.

• India's Global Climate Commitments:

• India is a signatory to the Paris Agreement and has pledged to reduce its carbon emissions intensity by 33-35% by 2030.

• Renewable energy expansion is a key strategy for meeting these commitments.

Q55. Answer: (a) 36

Shortcut Trick

Loss of 5% means the Selling Price (SP1) is 95% of the Cost Price (CP).

Given SP1 = 950 => 95% of CP = 950 => 1% of CP = 10.

The new Selling Price (SP2) = 1360.

As 10 corresponds to 1%, 1360 corresponds to (1360 ÷ 10) = 136%.

New Profit % (x) = 136% − 100% = 36%.

Therefore The correct answer is 36.

Alternate Method

Given: SP1 = 950, Loss1% = 5%, SP2 = 1360.

Formulas: CP = [SP × 100] ÷ [100 − Loss%], Profit% = [(SP − CP) ÷ CP] × 100.

=> Step 1: Find Cost Price (CP) = [950 × 100] ÷ [100 − 5] = [950 × 100] ÷ 95 = 1000.

=> Step 2: New Profit = SP2 − CP = 1360 − 1000 = 360.

=> Step 3: x% = (360 ÷ 1000) × 100 = 36%.

Therefore The correct answer is 36.

Additional Information

Cost Price & Selling Price Relationship

When there is a profit, SP = CP × (100 + P%)/100. When there is a loss, SP = CP × (100 − L%)/100.

Profit Percentage

Profit % is always calculated on the Cost Price unless otherwise specified in the problem.

Q56. Answer: (d) Four

Given: A, B, C, D, R, S and T are sitting around a circular table facing the centre of the table.

1) A sits third to the left of C.

2) S is an immediate neighbour of C and D.

3) Only two people sit between T and D when counted from the left of T.

Case 1)

Case 2)

4) B sits fourth to the right of R.

As there is no possible position for B in case 1, therefore is eliminated.

Case 2)

Thus, four people sit between B and S when counted from the left of S.

Hence, "Option 4" is the correct answer.

Q57. Answer: (a) André Aranha Corrêa do Lago

The correct answer is André Aranha Corrêa do Lago.

Key Points

• André Aranha Corrêa do Lago has been appointed as the President of the COP30 Summit, which is scheduled to take place in 2025.

• He is a distinguished Brazilian diplomat and has been actively involved in climate negotiations for decades.

• The COP30 Summit will be hosted in Belém, Brazil, located in the Amazon region, emphasizing the importance of the Amazon rainforest in combating climate change.

• Corrêa do Lago has previously contributed to various international climate forums, including his involvement in the historic Paris Agreement of 2015.

• His leadership is expected to focus on advancing global climate action and addressing critical environmental challenges, especially in the Amazon basin.

Additional Information

• COP (Conference of the Parties):

• COP is the supreme decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC).

• It brings together representatives from almost every country to discuss and negotiate global climate action.

• The COP meetings aim to assess progress in dealing with climate change and setting new goals for reducing greenhouse gas emissions.

• Amazon Rainforest:

• The Amazon is the largest rainforest on Earth, covering over 6.7 million square kilometers.

• It plays a critical role in regulating the global climate by absorbing carbon dioxide and producing oxygen.

• Deforestation in the Amazon has been a major concern due to its impact on biodiversity and climate change.

• Paris Agreement:

• Adopted in 2015 during COP21, the Paris Agreement aims to limit global warming to below 2°C, preferably 1.5°C, above pre-industrial levels.

• It is a legally binding international treaty on climate change, with commitments from nearly 200 countries.

• Countries submit Nationally Determined Contributions (NDCs) outlining their plans to reduce emissions and adapt to climate impacts.

• Belém, Brazil:

• Belém is the capital of Pará state in northern Brazil, located at the entrance of the Amazon River.

• Hosting COP30 in Belém highlights the region's significance as a key ecological area in the fight against climate change.

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Q58. Answer: (a) 4.97

Shortcut Trick

B = 2 + 4 + 6 = 12.

Third proportional C = $B^2 \div A$.

=> C = $12^2 \div 29 = 144 \div 29 \approx 4.97$.

Therefore The correct answer is 4.97.

Alternate Method

Given: First number (A) = 29, B is the sum of the first three even natural numbers, and C is the third proportional.

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

=> First three even natural numbers = 2, 4, 6.

=> B = 2 + 4 + 6 = 12.

=> For third proportional C: 29/12 = 12/C.

=> 29 × C = 12 × 12.

=> 29 × C = 144.

=> C = 144 ÷ 29.

=> C = 4.9655...

=> C ≈ 4.97 (Rounded off to two decimal places).

Therefore The correct answer is 4.97.

Additional Information

Mean Proportional

The mean proportional between two numbers a and b is √(a × b).

Fourth Proportional

If four numbers a, b, c, and d are in proportion (a:b = c:d), then d = (b × c) ÷ a.

Sum of first n even numbers

The sum of the first n even natural numbers is given by the formula n(n + 1).

Q59. Answer: (b) no real roots

Shortcut Trick

Identify coefficients from $2x^2 + 4x + 8 = 0$: a = 2, b = 4, c = 8.

Calculate the Discriminant (D): $D = b^2 - 4ac$.

$D = 4^2 - 4 \times 2 \times 8 = 16 - 64 = -48$.

Since the Discriminant is negative (D < 0), the roots are not real.

Therefore The correct answer is no real roots.

Alternate Method

Given: The quadratic equation is $2x^2 + 4x + 8 = 0$.

Formula Used: The nature of roots is determined by the Discriminant $(D) = b^2 - 4ac$.

=> Comparing the given equation with the standard form $ax^2 + bx + c = 0$:

=> a = 2, b = 4, c = 8

=> $D = (4)^2 - 4 \times 2 \times 8$

=> D = 16 − 64

=> D = −48

=> Because D < 0, the roots are imaginary, meaning there are no real roots.

Therefore The correct answer is no real roots.

Additional Information

Nature of Roots of a Quadratic Equation

For a general equation $ax^2 + bx + c = 0$, the Discriminant $(D = b^2 - 4ac)$ determines the type of roots.

Real and Distinct Roots

If D > 0, the equation has two distinct real roots.

Real and Equal Roots

If D = 0, the equation has two equal real roots (also called a perfect square trinomial).

No Real Roots

If D < 0, the equation has no real roots; instead, it has complex or imaginary roots.

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Q60. Answer: (b) 33 : 51

Shortcut Trick

Convert each ratio to a approximate decimal value or percentage to compare quickly.

Ratio 1: 32 ÷ 86 ≈ 0.37

Ratio 2: 33 ÷ 51 ≈ 0.64

Ratio 3: 37 ÷ 64 ≈ 0.57

Ratio 4: 26 ÷ 59 ≈ 0.44

Therefore The correct answer is 33 : 51.

Alternate Method

Given Ratios: 32/86, 33/51, 37/64, 26/59

Comparing 33/51 and 37/64 by cross-multiplication:

=> 33 × 64 = 2112

=> 37 × 51 = 1887

=> Since 2112 > 1887, 33/51 is greater than 37/64.

Comparing 33/51 with 32/86 and 26/59:

=> 33/51 is greater than 1/2 (0.5), while 32/86 and 26/59 are both less than 1/2.

=> Therefore, 33/51 is the greatest ratio among all given options.

Therefore The correct answer is 33 : 51.

Additional Information

Comparison of Fractions

For two fractions a/b and c/d, if ad > bc, then a/b > c/d. This is known as the cross-multiplication method.

Ratio and Proportion

A ratio is a comparison of two quantities by division. It can be expressed as a:b or a/b, where b ≠ 0.

Decimal Conversion

Converting ratios to decimals is the fastest way to compare multiple values when the denominators are different.

Q61. Answer: (a) 2004

The correct answer is 2004.

Key Points

• Dr. Manmohan Singh became the 13th Prime Minister of India in May 2004, after the United Progressive Alliance (UPA) won the general elections.

• He was the first Sikh to hold the position of Prime Minister in India.

• Dr. Singh served two consecutive terms as Prime Minister from 2004 to 2014.

• He succeeded Atal Bihari Vajpayee, who was the outgoing Prime Minister at the time.

• His tenure is noted for significant economic reforms and initiatives, including the continuation of liberalization policies introduced in the 1990s.

Additional Information

• Dr. Manmohan Singh's Background:

• Dr. Singh is an economist and academician who served as the Governor of the Reserve Bank of India from 1982 to 1985.

• He was the architect of India's economic liberalization as the Finance Minister from 1991 to 1996 under Prime Minister P.V. Narasimha Rao.

• UPA Coalition:

• The United Progressive Alliance (UPA) is a coalition of center-left political parties in India led by the Indian National Congress (INC).

• Dr. Singh was chosen as Prime Minister after the Congress President Sonia Gandhi declined the position.

• Key Achievements of Dr. Manmohan Singh:

• During his tenure, major schemes like the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and Right to Information (RTI) Act were implemented.

• He played a pivotal role in signing the India-US Civil Nuclear Agreement in 2008, which strengthened bilateral ties and India's energy security.

• Economic Reforms:

• Dr. Singh is widely regarded as the pioneer of India's economic reform era, which began in 1991 to combat the balance of payments crisis.

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• He introduced policies to liberalize trade, attract foreign investment, and reduce fiscal deficits, transforming India's economy into one of the world's fastest-growing.

Q62. Answer: (d) 600

Shortcut Trick

Total Simple Interest percentage for 5 years = 4% × 5 = 20%

Total Amount percentage = 100% (Principal) + 20% (Interest) = 120%

Given 120% = Rs. 720

Principal (100%) = (720 ÷ 120) × 100 = 6 × 100 = Rs. 600

Therefore The correct answer is Rs. 600.

Alternate Method

Given:

Amount (A) = Rs. 720 | Rate (R) = 4% per annum | Time (T) = 5 years

Formula Used:

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

Amount (A) = Principal (P) + Simple Interest (SI)

Calculations:

=> A = P + (P × R × T) ÷ 100

=> 720 = P + (P × 4 × 5) ÷ 100

=> 720 = P + 20P ÷ 100

=> 720 = P + P ÷ 5

=> 720 = (5P + P) ÷ 5

=> 720 = 6P ÷ 5

=> 6P = 720 × 5

=> P = (720 × 5) ÷ 6

=> P = 120 × 5

=> P = 600

Therefore The correct answer is Rs. 600.

Additional Information

Simple Interest Formula

Simple interest is calculated only on the initial principal. Formula: SI = (P × R × T) ÷ 100.

Compound Interest Comparison

Compound interest is calculated on the principal plus accumulated interest. Formula: $A = P(1 + R/100)^n$.

Relation between Amount and Principal

Amount is the sum of Principal and Interest (A = P + I). If R% and T are given, A = P(1 + RT/100).

Q63. Answer: (d) 117

The logic followed here is:

Hence, "Option 4" is the correct answer.

Additional Information

Q64. Answer: (b) subordinates of the Guptas

The correct answer is subordinates of the Guptas.

Key Points

• The Maitrakas of Valabhi were initially subordinates of the Gupta Empire, serving as local governors or feudatories under Gupta administration.

• They established their independence following the decline of the Gupta Empire in the 6th century CE.

• The Maitrakas ruled from their capital at Valabhi, located in present-day Gujarat, which became an important center of trade and learning.

• Valabhi was known for its Buddhist monasteries and learning institutions, drawing scholars and monks from across India.

• The Maitrakas played a key role in maintaining regional stability and fostering cultural and economic growth in western India.

Additional Information

• Gupta Empire:

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• The Gupta Empire (320-550 CE) is often referred to as the Golden Age of India due to advancements in science, art, mathematics, and literature.
• Feudatories like the Maitrakas initially served under the Guptas, managing smaller regions within the empire.
• The decline of Gupta power led to the emergence of several independent regional kingdoms, including the Maitrakas.
• Valabhi:
• Valabhi was a prominent city and the capital of the Maitrakas, located in modern-day Gujarat.
• The city was renowned for its Buddhist universities, comparable to Nalanda in eastern India.
• Valabhi played a significant role in regional trade and cultural exchanges during the Maitraka rule.
• Buddhism and Trade:
• The Maitrakas were patrons of Buddhism and supported the construction of monasteries and educational institutions.
• Valabhi became a hub for Buddhist scholars and monks, contributing to the spread of Buddhist teachings.
• The kingdom's location along trade routes fostered economic prosperity and cultural exchange.
• Decline:
• The Maitrakas ruled until the 8th century CE, after which they were overpowered by the Arabs and other emerging forces.
• Their contributions to culture and education left a lasting legacy in western India.

Q65. Answer: (b) 7

According to the given information,

Thus, 'M' is coded as '7'.

Hence, "Option 2" is the correct answer.

Q66. Answer: (c) Ashish Khanna

The correct answer is Ashish Khanna.

Key Points

• Ashish Khanna was appointed as the new Director General of the International Solar Alliance (ISA) in November 2024.
• He succeeded Ajay Mathur, who previously held the position as Director General of ISA.
• The ISA is a coalition of countries working to promote solar energy adoption globally and combat climate change.
• Ashish Khanna has extensive experience in renewable energy and has been instrumental in implementing solar energy projects globally, making him a key figure in the sector.
• His appointment aligns with the ISA’s mission to lead sustainable solar energy initiatives worldwide.

Additional Information

• International Solar Alliance (ISA):
• The ISA was launched in 2015 during the Paris Climate Agreement by India and France.
• Its headquarters are located in Gurugram, Haryana, India.
• The organization aims to bring together 121 member countries, known as solar-rich nations, located between the Tropics of Cancer and Capricorn.
• It focuses on scaling up solar energy deployment, reducing costs, and fostering research and development in solar technologies.
• Ajay Mathur:
• He served as the Director General of ISA from 2021 to 2024.
• Under his leadership, ISA expanded its membership and partnerships significantly, making solar energy more accessible globally.
• Global Solar Energy Potential:
• Solar energy is one of the most promising renewable energy sources, with the potential to meet a significant portion of the world's energy demands.
• As of 2024, global solar capacity continues to grow, driven by innovations and international collaborations like ISA.
• Paris Agreement (2015):
• The Paris Agreement is an international treaty on climate change aiming to limit global warming to below 2°C, preferably to 1.5°C.
• The ISA was a key initiative launched at COP21 to support this goal by promoting solar energy adoption.

Q67. Answer: (c) 1

Given: Seven boxes, A, B, C, D, E, F and G, are kept one over the other but not necessarily in the same order.

1) Only three boxes are kept below B.

2) Only A is kept immediately above E.

Boxes
A
E
B

3) Only two boxes are kept between B and G.

Boxes
A
E
B
G

4) F is kept in some place below D and in some place above C.

Boxes
A
E
D
B
F
C
G

Thus, one box is kept below C.

Hence, "Option 3" is the correct answer.

Q68. Answer: (a) PCXQ

The logic followed here is:

VBDP is related to ZWHK

And,

DRLF is related to HMPA

Similarly,

LHTV is related to

Hence, "Option 1" is the correct answer.

Q69. Answer: (d) 2

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

1) Only two people sit between T and Q when counted from the left of Q.

2) P sits second to the left of T.

3) P sits to the immediate right of S.

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4) U sits third to the left of S.

5) V is an immediate neighbour of U.

After positioning V only one position is left which will be occupied by the only person left i.e. R.

Thus, two people sit between Q and R when counted from the left of R.

Hence, "Option 4" is the correct answer.

Q70. Answer: (d) 32.8%

The correct answer is 32.8%.

Key Points

• The Labour Force Participation Rate (LFPR) for women in India in 2021-22 was 32.8%, according to the Periodic Labour Force Survey (PLFS) report.

• LFPR is defined as the percentage of persons in the labor force (employed or seeking employment) in the population aged 15 years and above.

• The increase in LFPR for women in recent years reflects the government's initiatives to improve gender participation in the workforce.

• The PLFS report is a flagship survey conducted annually by the National Statistical Office (NSO) to provide estimates of key employment and unemployment indicators.

• India's overall LFPR (including men and women) in 2021-22 was also reported to have improved compared to previous years.

Additional Information

• Periodic Labour Force Survey (PLFS):

• PLFS was launched by the NSO in 2017 to provide employment and unemployment data on a quarterly and annual basis.

• The survey provides insights into key labor market indicators such as LFPR, Worker Population Ratio (WPR), and Unemployment Rate (UR).

• Labour Force Participation Rate (LFPR):

• LFPR is an important measure of the active workforce in an economy.

• It includes people aged 15 and above who are either employed or actively seeking employment.

• A higher LFPR indicates a higher proportion of the population is economically active.

• Factors Influencing Female LFPR:

• Socio-cultural norms and family responsibilities often influence women's participation in the workforce in India.

• Government initiatives like Skill India, Stand-Up India, and increased opportunities in the informal sector have positively impacted female LFPR.

• Government Initiatives to Boost Female Participation:

• Programs like Mahila Shakti Kendra and Beti Bachao Beti Padhao aim to empower women and enhance their participation in various sectors.

• Legislation like the Maternity Benefit (Amendment) Act, 2017 provides support for working mothers, encouraging women to stay in the workforce.

Q71. Answer: (a) Akam

The correct answer is Akam.

Key Points

• The first five anthologies of the Ettuttokai in Sangam literature are part of the Akam category, which deals with themes of love and personal emotions.

• Akam poetry focuses on the inner, emotional, and personal aspects of human life, specifically romantic relationships, without direct reference to external societal events.

• Each anthology in this category portrays different aspects of love, such as longing, separation, union, and misunderstandings.

• The poems use symbolic landscapes, known as "tinai," to represent emotional states and situations, such as mountains for union and deserts for separation.

• The Akam theme is central to Tamil Sangam literature, emphasizing the intimate and universal emotions of love and relationships.

Additional Information

• Sangam Literature:

• Sangam literature is one of the oldest known Tamil literary traditions, dating back to 300 BCE–300 CE.

• It is broadly divided into two themes: Akam (inner life, love) and Puram (outer life, valor, and society).

• Ettuttokai:

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• It is a collection of eight anthologies of Sangam poetry, divided into Akam (love) and Puram (valor).
• The first five anthologies (Kuruntokai, Narrinai, Akananuru, Ainkurunuru, and Kalittokai) fall under the Akam category.
• Tinai Concept:
• In Akam poetry, tinai refers to symbolic landscapes used to depict specific emotions and situations in love.
• Examples include kurinji (mountains for union) and palai (deserts for separation).
• Puram Literature:
• Puram focuses on themes of heroism, ethics, and public life, contrasting with the personal nature of Akam poetry.
• Importance:
• Sangam literature provides insights into the ancient Tamil society, its values, traditions, and emotional depth.

Q72. Answer: (c) Use the File tab and select 'Save' or press Ctrl + S

The correct answer is Use the File tab and select 'Save' or press Ctrl + S.

Key Points

• To save your work in PowerPoint, you can use the File tab and select 'Save', or simply press the keyboard shortcut Ctrl + S.
• This method is the standard and most commonly used way to ensure that your presentation file is stored securely.
• Using Ctrl + S allows quick saving without navigating through tabs, making it especially useful during active editing.
• When saving for the first time, PowerPoint will prompt you to choose a file name and location for your presentation.
• PowerPoint supports saving files in various formats such as .pptx, .pdf, .ppt, and others, depending on user requirements.

Additional Information

• Keyboard Shortcuts:
• Ctrl + S: Save the current file.
• Ctrl + Shift + S: Save As (allows saving with a new file name or location).
• AutoSave:
• PowerPoint includes an AutoSave feature that automatically saves your work periodically when working on cloud-based locations like OneDrive or SharePoint.
• Ensure AutoSave is enabled in the toolbar for uninterrupted saving.
• Saving Formats:
• .pptx: Default file format for PowerPoint presentations.
• .pdf: Used to save presentations in a non-editable format.
• .ppt: Legacy format used in older versions of PowerPoint.
• File Recovery:
• In case of unexpected shutdowns, PowerPoint offers a Recover Unsaved Presentations option in the File menu to retrieve lost files.
• Cloud Integration:
• Saving directly to OneDrive or SharePoint enables access to your files across devices and facilitates real-time collaboration.

Q73. Answer: (a) It copies formatting (e.g., font, color) from one piece of text to another.

The correct answer is It copies formatting (e.g., font, color) from one piece of text to another..

Key Points

• The Format Painter tool in MS Word is used to copy the formatting of text or objects (such as font style, size, color, and paragraph settings) and apply it elsewhere.
• To use the Format Painter, select the text or object with the desired formatting, click on the Format Painter icon, and then highlight the target text or object.
• The Format Painter can be used once or repeatedly. Double-clicking the Format Painter icon allows you to apply the formatting to multiple areas until it is turned off.
• This tool is especially useful for maintaining uniform formatting in large documents, saving time and effort.
• The Format Painter is located in the Home tab on the MS Word ribbon, within the Clipboard group.

Additional Information

• Clipboard Group:
• This group on the Home tab includes tools such as Cut, Copy, Paste, and Format Painter.
• It allows users to manage the transfer of text, images, or formatting between different parts of a document or across applications.
• Shortcut Keys:
• There is no default shortcut key for the Format Painter in MS Word, but users can assign one through the Customize Ribbon or

Quick Access Toolbar options.

• Application Across Office Suite:

• The Format Painter is available not only in MS Word but also in other Microsoft Office applications like Excel, PowerPoint, and Outlook.

• In Excel, it can be used to copy the formatting of cells, including borders, fill color, and text styles.

• Alternative Methods:

• Instead of using Format Painter, users can manually replicate formatting by using the Font and Paragraph settings in the Home tab.

• Another option is to use the Styles feature in Word for consistent formatting throughout the document.

Q74. Answer: (c) Rs. 4,172

Shortcut Trick

Use the direct relationship between Cost Price (CP) and Marked Price (MP).

Ratio CP : MP = (100 − Discount%) : (100 + Profit%).

CP : MP = (100 − 9) : (100 + 30) = 91 : 130.

Unitary method: 130 units = Rs. 5,960 => 1 unit = 5960 ÷ 130 = 45.846.

91 units = 91 × (5960 ÷ 130) = 7 × (5960 ÷ 10) = 7 × 596 = Rs. 4,172.

Therefore The correct answer is Rs. 4,172.

Alternate Method

Given → Marked Price (MP) = Rs. 5,960, Discount = 9%, Profit = 30%.

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

=> Calculate Selling Price (SP) = 5960 × (100 − 9) ÷ 100

=> SP = 5960 × 0.91 = Rs. 5,423.6

=> Now, use SP to find Cost Price (CP)

=> CP = (5423.6 × 100) ÷ (100 + 30)

=> CP = 542360 ÷ 130 = Rs. 4,172.

Therefore The correct answer is Rs. 4,172.

Additional Information

Marked Price & Discount

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

Profit and CP Relationship

Profit is always calculated on the Cost Price (CP). SP = CP + Profit.

Q75. Answer: (d) 31

Given:

Sum of the age of A and 4 times the age of B = 34 years.

3 times the age of A added to 7 times the age of B = 97 years.

Calculation:

Linear equations are used to solve the question:

1. A + 4B = 34

2. 3A + 7B = 97

From equation 1:

A = 34 - 4B

Substitute A = 34 - 4B into equation 2:

=> 3(34 - 4B) + 7B = 97

=> 102 - 12B + 7B = 97

=> 102 - 5B = 97

=> 5B = 102 - 97

=> 5B = 5

=> B = 1

Substitute B = 1 into equation 1:

=> A + 4(1) = 34

=> A + 4 = 34

=> A = 34 - 4

=> A = 30

Sum of the ages of A and B:

=> A + B = 30 + 1

=> A + B = 31

The sum of the ages of A and B is 31 years.

Q76. Answer: (c) = OLH, % = PMI

The logic followed here is:

Given: # : LIE :: SPL : %

Option 1) # = OLT, % = OAI → OLT : LIE :: SPL : OAI

Option 2) # = OOI, % = PDF → OOI : LIE :: SPL : PDF

Option 3) # = OLH, % = PMI → OLH : LIE :: SPL : PMI

Option 4) # = PQH, % = GVI → PQH : LIE :: SPL : GVI

Hence, "Option 3" is the correct answer.

Q77. Answer: (c) Southward shift of ITCZ

The correct answer is Southward shift of ITCZ.

Key Points

• The withdrawal of monsoon in India is marked by the southward shift of the Inter-Tropical Convergence Zone (ITCZ).

• The ITCZ is a belt of low pressure near the equator where the trade winds converge and plays a crucial role in the monsoon system.

• During the withdrawal phase, the ITCZ shifts southward towards the equator, signaling the end of the rainy season.

• Withdrawal typically starts in northwest India by early October and progresses southward across the country.

• This shift is accompanied by clear skies, a reduction in humidity, and a rise in daytime temperatures.

Additional Information

• Inter-Tropical Convergence Zone (ITCZ):

• The ITCZ is a dynamic region of low pressure near the equator formed by the convergence of northeast and southeast trade winds.

• It shifts northward and southward seasonally due to the apparent movement of the sun.

• Its position influences the monsoon rains in tropical regions, including India.

• Indian Monsoon System:

• The Indian monsoon is divided into two phases: onset (arrival) and withdrawal (retreat).

• The monsoon onset is driven by the northward movement of the ITCZ, while its withdrawal is linked to the southward shift.

• Withdrawal of Monsoon:

• The withdrawal process begins in northwest India and progresses southward, completing by November.

• It is marked by clear skies, reduced rainfall, and a gradual cooling of temperatures.

• Polar Jet Streams:

• These high-altitude winds influence weather patterns but are not directly linked to the withdrawal of the Indian monsoon.

Q78. Answer: (a) 5 years

The correct answer is 5 years.

Key Points

• In India, representatives elected to municipalities serve a term of 5 years as per the provisions of the 74th Constitutional Amendment Act.

• Municipal elections are held at regular intervals to ensure democratic governance at the urban local level.

• During their tenure, municipal representatives oversee urban development projects, sanitation, water supply, and other civic amenities.

• If the municipality is dissolved before completing its 5-year term, elections must be conducted within 6 months to reconstitute it.

• The State Election Commission is responsible for conducting municipal elections in each state.

Additional Information

• 74th Constitutional Amendment Act (1992):

• This act provided the constitutional framework for urban local governance in India, including municipalities.

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• It categorized municipalities into three types: Nagar Panchayats, Municipal Councils, and Municipal Corporations based on population and area.
• The act mandates the creation of Ward Committees in urban areas with a population of 3 lakh or more.
• State Election Commission:
• Established under Article 243K of the Constitution to oversee elections to municipalities and panchayats.
• Each state has its own Election Commission responsible for ensuring free and fair local elections.
• Municipal Governance Functions:
• Municipalities are responsible for urban planning, regulation of land use, water supply, sanitation, and public health.
• They play a crucial role in maintaining public infrastructure like roads, street lighting, and parks.
• Urban Local Bodies Financing:
• Municipalities receive funds from property taxes, grants from the state and central governments, and user charges for services.
• They also raise revenue through issuing municipal bonds in some cases.

Q79. Answer: (a) 12

Shortcut Trick
Let the smaller number be x. Then greater number = 5x + 178.
Difference: (5x + 178) − x = 2858
=> 4x = 2680 → x = 670.
Greater number = 670 + 2858 = 3528.
HCF of 3528 and 3828: Difference is 300. HCF must be a factor of 300. Check options: 12 divides both.
Therefore The correct answer is 12.
Alternate Method
Given: Difference D = 2858, Quotient Q = 5, Remainder R = 178.
Formula Used: Dividend = (Divisor × Quotient) + Remainder
=> Let numbers be G (greater) and S (smaller).
=> G − S = 2858 ... (i)
=> G = 5S + 178 ... (ii)
=> Substitute (ii) in (i): (5S + 178) − S = 2858
=> 4S = 2858 − 178 = 2680
=> S = 670
=> G = 670 + 2858 = 3528
=> Now find HCF(3528, 3828):
=> 3828 − 3528 = 300
=> Factors of 300: 1, 2, 3, 4, 5, 6, 10, 12, 15...
=> 3528 ÷ 12 = 294; 3828 ÷ 12 = 319.
Therefore The correct answer is 12.
Additional Information
Division Algorithm
For any integer a and positive integer b, there exist unique integers q and r such that a = bq + r, where 0 ≤ r < b.
HCF Property
The HCF of two numbers also divides their difference. This is a very useful trick for finding the HCF of large numbers quickly.
Euclidean Algorithm
A process of repeated division to find HCF where HCF(a, b) = HCF(b, r) until the remainder becomes zero.

Q80. Answer: (c) Rs. 17,505

Shortcut Trick
Let Monthly Salary be 100%.
Expenditure on Rent = 40%
Remaining Salary = 100% − 40% = 60%
This 60% equals the sum of Conveyance, Grocery, and Savings.
60% = Rs. 442 + Rs. 9,115 + Rs. 946 = Rs. 10,503
100% = (Rs. 10,503 ÷ 60) × 100 = Rs. 17,505

Therefore The correct answer is Rs. 17,505.
Alternate Method
Given:
Rent Expenditure = 40% of Salary
Conveyance = Rs. 442
Grocery = Rs. 9,115
Savings = Rs. 946
Calculations:
=> Total non-rent amount = Rs. (442 + 9,115 + 946)
=> Total non-rent amount = Rs. 10,503
=> Let total salary be S.
=> S − 40% of S = Rs. 10,503
=> 60% of S = Rs. 10,503
=> (60 ÷ 100) × S = 10,503
=> S = (10,503 × 100) ÷ 60
=> S = 10,503 × (5 ÷ 3)
=> S = 3,501 × 5 = Rs. 17,505
Therefore The correct answer is Rs. 17,505.
Additional Information
Percentage Expenditure
Total Income is always considered 100%. Total Income = Savings + Total Expenditure.
Successive Percentage
If spending is done on the remaining amount, use the formula: Final = Initial × (100−r1)/100 × (100−r2)/100.
Base Change Rule
When calculating percentage increase/decrease, always ensure the denominator (base) corresponds to the original value.

Q81. Answer: (c) Luni

The correct answer is Luni.
Key Points
• Luni River is the largest river in the Thar Desert region and primarily flows through the state of Rajasthan, India.
• The river originates from the Aravalli Hills near Ajmer and flows southwest into the Rann of Kutch in Gujarat.
• Luni is known as a saline river because its water becomes increasingly brackish as it flows through arid regions.
• Despite its salinity, the river is an important water source for irrigation and local communities in Rajasthan.
• Luni does not drain into any ocean or sea but ends in marshy lands, making it an endorheic river system.
Additional Information
• Rivers of Rajasthan:
• Other important rivers in Rajasthan include Chambal, Banas, and Mahi, but these flow through multiple states.
• Luni is unique as it is entirely confined to arid and semi-arid regions.
• Endorheic Basin:
• An endorheic basin is a closed drainage system where water does not flow out to seas or oceans.
• The Luni River ends in the marshy lands of the Rann of Kutch, making it a classic example of such a system.
• Salinity of Luni:
• The river's water becomes increasingly saline due to the high evaporation rate and the geological makeup of the region.
• This salinity renders the water unsuitable for drinking but still usable for certain types of irrigation.
• Other Rivers Mentioned:
• Jhelum: Flows through Jammu & Kashmir and is part of the Indus River system.
• Teesta: Flows through Sikkim and West Bengal, eventually merging with the Brahmaputra in Bangladesh.
• Tapi: Originates in Madhya Pradesh and flows westward into the Arabian Sea.

Q82. Answer: (a) Both conclusions (I) and (II) follow.

The least possible Venn diagram for the given statements is as shown below :
Conclusions:

(I) Some pink is water → Follow (As some water is pink. As some part of water is common with pink, therefore it is true.)
(II) Some buildings are pink → Follow (As all pink are buildings. As whole pink comes in building, therefore it is true.)
Therefore Here, Both conclusions (I) and (II) follow.
Hence, the correct answer is "Option 1".

Q83. Answer: (a) 37200

Shortcut Trick
Check divisibility by 6 (number must be even and sum of digits divisible by 3).
Only 37200, 2858, and 2132 are even; among these, only 37200 (3+7+2=12) is divisible by 3.
Verify 37200 for 31: 37200 ÷ 31 = 1200.
Therefore The correct answer is 37200.
Alternate Method
Given: Divisor 1 = 6, Divisor 2 = 31.
Formula: A number is divisible by 6 if it is divisible by both 2 and 3.
=> Divisibility by 6: 37200 is even (divisible by 2) and 3 + 7 + 2 + 0 + 0 = 12 (divisible by 3).
=> Divisibility by 31: 37200 ÷ 31 = 1200 (Remainder = 0).
=> LCM of 6 and 31: Since 31 is prime, LCM = 6 × 31 = 186.
=> Check 37200 ÷ 186 = 200.
Therefore The correct answer is 37200.
Additional Information
Divisibility Rule of 6
A number must be divisible by both 2 (last digit 0, 2, 4, 6, 8) and 3 (sum of digits is a multiple of 3).
Divisibility Rule of Prime Numbers
For a prime number P like 31, the osculator is 3. Rule: Subtract 3 × last digit from the remaining number. If the result is 0 or divisible by 31, the number is divisible.
Co-prime Property
If a number is divisible by two co-prime numbers a and b, it is also divisible by their product (a × b).

Q84. Answer: (b) 15 m

Shortcut Trick
When the angle of elevation is 45°, the base and height of the right-angled triangle are always equal.
In a 45°−45°−90° triangle, the ratio of sides is 1 : 1 : √2.
Since the distance from the base (base) is 15 m, the height must also be 15 m.
Therefore The correct answer is 15 m.
Alternate Method
Given: Distance from the base (BC) = 15 m, Angle of elevation (θ) = 45°.
Formula Used: tan θ = Perpendicular (Height) ÷ Base (Distance)
=> tan 45° = Height ÷ 15
=> 1 = Height ÷ 15
=> Height = 1 × 15
=> Height = 15 m
Therefore The correct answer is 15 m.
Additional Information
Trigonometric Ratios at 45°
For a 45° angle, sin 45° = 1/√2, cos 45° = 1/√2, and tan 45° = 1.
Angle of Elevation
The angle formed by the line of sight with the horizontal when looking up at an object.
Special Right Triangles
In a 30°−60°−90° triangle, the sides opposite to the angles are in the ratio 1 : √3 : 2.

Q85. Answer: (c) West

Given:
Town P is to the east of Town Q.

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Town Q is to the south of Town R.

Town R is to the east of Town S.

Town S is to the west of Town T.

Town P is to the south-west of Town T.

Thus, R is to the west of T.

Hence, "Option 3" is the correct answer.

Q86. Answer: (d) = PJQ, % = QKR

The logic followed here is:

Given: # : NHO :: SMT : %

Option 1) # = PJO, % = QKR → PJO : NHO :: SMT : QKR

Option 2) # = PJQ, % = QLR → PJQ : NHO :: SMT : QLR

Option 3) # = PJQ, % = QKS → PJQ : NHO :: SMT : QKS

Option 4) # = PJQ, % = QKR → PJQ : NHO :: SMT : QKR

Hence, "Option 4" is the correct answer.

Q87. Answer: (b) 67.3 years

The correct answer is 67.3 years.

Key Points

• According to the 2021 World Health Organization (WHO) data, the life expectancy at birth in India was 67.3 years.

• Life expectancy at birth is a measure indicating the average number of years a newborn is expected to live under current mortality rates.

• India's life expectancy has shown a gradual increase over the years but still lags behind the global average of approximately 73 years.

• Factors such as improved healthcare services, better sanitation, and vaccination programs have contributed to the rise in life expectancy in India.

• Despite progress, challenges such as high infant mortality rates and unequal access to healthcare services persist.

Additional Information

• Global Life Expectancy:

• As of 2021, the global average life expectancy at birth is estimated to be 73.4 years (WHO).

• Japan has one of the highest life expectancies globally at approximately 84 years.

• Factors Influencing Life Expectancy:

• Life expectancy is influenced by access to healthcare, nutrition, sanitation, and socioeconomic conditions.

• Public health policies, vaccination drives, and improvements in maternal and child health significantly impact life expectancy.

• India’s Healthcare Challenges:

• India faces disparities in healthcare access between urban and rural areas.

• Non-communicable diseases (NCDs) like diabetes and heart diseases are rising concerns, affecting life expectancy.

• Infant Mortality Rate (IMR):

• IMR is a critical indicator of a country's healthcare system and directly affects life expectancy.

• India's IMR has declined over the years, standing at 27 deaths per 1,000 live births as per 2021 data.

Q88. Answer: (d) Their decisions are final but subject to High Court’s revision.

The correct answer is Their decisions are final but subject to High Court's revision..

Key Points

• Small Causes Courts are established to deal with civil cases of a minor financial value, ensuring quick and cost-effective justice.

• The decisions of Small Causes Courts are final; however, they can be revised by the High Court under its supervisory jurisdiction.

• These courts do not deal with criminal cases; their jurisdiction is limited to specific minor civil disputes like property disputes or money recovery cases.

• Small Causes Courts are governed by the provisions of the Provincial Small Cause Courts Act, 1887, in states where they exist.

• They do not operate under uniform nomenclature across all states; their presence and structure vary depending on state-specific laws.

Additional Information

• Provincial Small Cause Courts Act, 1887: This Act governs the establishment and functioning of Small Causes Courts, outlining

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their jurisdiction and procedures.

• Jurisdiction: These courts typically handle civil cases involving amounts up to a specified financial limit (varies by state) and exclude cases like marriage disputes, testamentary matters, etc.

• High Court Supervision: While their decisions are final, High Courts can revise decisions if there is a procedural irregularity or legal error.

• Appeals: Appeals from Small Causes Courts are not generally allowed unless specified under the law, emphasizing their role in quick dispute resolution.

• Presence of Small Causes Courts: They are more common in urban areas where minor civil disputes are frequent, ensuring faster resolution of such matters.

Q89. Answer: (c) 18 minutes

Shortcut Trick

Total Work (LCM of 84 and 36) = 252 units.

Efficiency of Pipe A = 252 ÷ 84 = 3 units/min.

Efficiency of Pipe B = 252 ÷ 36 = 7 units/min.

Pipe A works for the full 42 minutes: 3 × 42 = 126 units.

Remaining work for Pipe B = 252 − 126 = 126 units.

Time for Pipe B = 126 ÷ 7 = 18 minutes.

Therefore The correct answer is 18 min.

Alternate Method

Person	Days	Total Work	Efficiency
Pipe A	84 min	252	3
Pipe B	36 min	7	

Given:

Time taken by Pipe A = 84 min

Time taken by Pipe B = 36 min

Total time for cistern to fill = 42 min

Calculations:

=> Let Pipe B be closed after x minutes.

=> Pipe A works for the entire 42 minutes.

=> Work done by Pipe A in 42 minutes = 3 × 42 = 126 units

=> Remaining work to be filled by Pipe B = 252 − 126 = 126 units

=> Time for which Pipe B was open (x) = 126 ÷ 7

=> x = 18 minutes

Therefore The correct answer is 18 min.

Additional Information

Pipes and Cisterns Efficiency

Efficiency is inversely proportional to the time taken. If a pipe fills a tank in T minutes, its efficiency is 1/T per minute.

Negative Work (Outlet Pipe)

If an outlet pipe (leak) is present, its efficiency is taken as negative during the total work calculation.

Total Work Calculation

Total Work = Time × Combined Efficiency. Always use the LCM of individual times to assume a convenient value for total capacity.

Q90. Answer: (d) 440

Decoding signs:

Sign	•	−	×	÷
Stands For	−	×	÷	×

Given: 55 – 8 ÷ 3 + 15 × 5 = ?

55 – 8 ÷ 3 + 15 × 5 = ? => 55 × 8 + 3 – 15 ÷ 5 = ?

=> 55 × 8 + 3 – 15 ÷ 5 = ?

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=> 55 × 8 + 3 – 3 = ?

=> 440 + 3 – 3 = ?

=> 443 – 3 = ?

=> 440 = ?

Hence, "Option 4" is the correct answer.

Q91. Answer: (a) 74

Shortcut Trick

Identify the frequency of each number in the given data set.

The number 74 appears 4 times in the list.

Other numbers like 89, 77, 80, 87, and 69 appear only 2 times each.

The Mode is defined as the value with the highest frequency.

Therefore The correct answer is 74.

Alternate Method

Given: Data set = 77, 86, 89, 74, 69, 84, 87, 80, 60, 64, 79, 63, 83, 82, 81, 89, 80, 69, 73, 74, 87, 68, 74, 77, 67, 74

Formula: Mode = Value that occurs most frequently in the data set.

4

74

2

89

2

77

2

80

1

Others

Q92. Answer: (c) = OIQ, % = QKS

The logic followed here is:

Given: # : NHP :: RLT : %

Option 1) # = OIQ, % = QLS → OIQ : NHP :: RLT : QLS

Option 2) # = OIR, % = QKS → OIR : NHP :: RLT : QKS

Option 3) # = OIQ, % = QKS → OIQ : NHP :: RLT : QKS

Option 4) # = OIQ, % = QKR → OIQ : NHP :: RLT : QKR

Hence, "Option 3" is the correct answer.

Q93. Answer: (b) Right to appeal

The correct answer is Right to appeal.

Key Points

• Lok Adalat decisions are final and binding on both parties, ensuring disputes do not escalate further.

• There is no provision for an appeal against the decision made in a Lok Adalat to maintain efficiency and avoid prolonged litigation.

• Lok Adalats are known for speedy resolution of disputes, avoiding lengthy court procedures.

• They provide cost-effective justice by eliminating court fees and reducing financial burden on litigants.

• Lok Adalats aim to resolve disputes through mutual consent and compromise, promoting harmony between parties.

Additional Information

• What is Lok Adalat?

• Lok Adalat, meaning "People's Court," is a statutory mechanism under the Legal Services Authorities Act, 1987.

• It resolves disputes through conciliation and compromise, without a formal judicial trial.

• It is aimed at reducing the burden on regular courts and providing quick justice.

• Legal Basis:

• The Legal Services Authorities Act, 1987 empowers Lok Adalats to resolve civil, matrimonial, and compoundable criminal cases.

• Its primary focus is on disputes where parties are willing to resolve issues amicably.

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• Advantages of Lok Adalat:

• Lok Adalats help reduce the backlog of cases in courts.

• They provide free and speedy justice, ensuring accessibility for economically weaker sections.

• There is no strict adherence to procedural laws, making the process informal and efficient.

• Limitations:

• Decisions are binding and final, meaning no further appeal can be made.

• Lok Adalats can only handle cases where both parties agree to a settlement; contested cases are referred back to regular courts.

Q94. Answer: (d) O

Given: C, O, U, N, T, and Y live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on, till the topmost floor is numbered 6.

1) Only two people live above C.

2) Y lives immediately below C.

Floor	Person
6	
5	
4	C
3	Y
2	
1	

3) Only two people live between C and T.

Floor	Person
6	
5	
4	C
3	Y
2	
1	T

4) Only N lives between C and U.

After positioning N and U only one position is left which will be occupied by the only person left i.e. O.

Floor	Person
6	U
5	N
4	C
3	Y
2	O
1	T

Thus, O lives on the floor numbered 2.

Hence, "Option 4" is the correct answer.

Q95. Answer: (c) 1.66

Given:

146^(0.93) = x

146^(0.22) = y

x^z = y^7
Formula used:
We need to find the value of z.
Calculations:
From the given equations:
1. x = 146^(0.93)
2. y = 146^(0.22)
Now, substitute the values of x and y into the third equation (x^z = y^7):
(146^(0.93))^z = (146^(0.22))^7
=> 146^(0.93z) = 146^(1.54)
Since the bases are the same, we can equate the exponents:
0.93z = 1.54
=> z = 1.54 ÷ 0.93
=> z ≈ 1.657
Therefore The value of z is approximately 1.66.

Q96. Answer: (b) 105

Shortcut Trick
Science marks = Original Average + (Difference in Average × Number of remaining subjects)
Difference in Average = 75 − 70 = 5
Marks in Science = 75 + (5 × 6)
Marks in Science = 75 + 30 = 105
Therefore The correct answer is 105 marks.
Alternate Method
Given:
Average marks of Anwar in 7 subjects = 75
Average marks in 6 subjects (excluding Science) = 70
Formula Used:
Sum of observations = Average × Number of observations
Calculations:
=> Total marks in 7 subjects = 75 × 7 = 525
=> Total marks in 6 subjects = 70 × 6 = 420
=> Marks in Science = (Total marks in 7 subjects) − (Total marks in 6 subjects)
=> Marks in Science = 525 − 420 = 105
Therefore The correct answer is 105 marks.
Additional Information
Average of Group
The Arithmetic Mean or Average is calculated by dividing the sum of all values by the total number of values: Average = Σx ÷ n.
Effect of Exclusion
When a value is excluded, if the Average decreases, the excluded value must be greater than the original average. Excluded Value = (Old Average × Old Count) − (New Average × New Count).
Weighted Average
When two groups are combined, the Combined Average = (n1 × A1 + n2 × A2) ÷ (n1 + n2).

Q97. Answer: (c) KH−HH

The logic followed here is:
Option 1) NK−LI
Option 2) TQ−RO
Option 3) KH−HH
Option 4) YV−WT
Thus, out of all the options, 'KH−HH' is the odd one out.
Hence, "Option 3" is the correct answer.

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Q98. Answer: (c) Ctrl + B

The correct answer is Ctrl + B.

Key Points

• Ctrl + B is the shortcut used to make the selected text bold in Microsoft Word 365 and other versions.

• This shortcut enables users to quickly emphasize text by applying the bold formatting without navigating through menus.

• Bold formatting is commonly used to highlight important sections of text or headings within a document.

• In MS Word, users can toggle bold formatting on and off by using the Ctrl + B shortcut repeatedly.

• This shortcut works universally across Windows operating systems for Microsoft Word.

Additional Information

• Ctrl + I: This shortcut is used to italicize the selected text in MS Word.

• Ctrl + U: This shortcut is used to underline the selected text in MS Word.

• Formatting Basics: Bold, italic, and underline are basic text formatting tools used to emphasize content in documents.

• Ribbon Formatting: Apart from keyboard shortcuts, users can apply these formats via the "Home" tab in the MS Word ribbon.

• Cross-Platform Compatibility: These shortcuts (Ctrl + B, Ctrl + I, Ctrl + U) are also functional in other Microsoft Office applications like Excel and PowerPoint.

Q99. Answer: (c) 19.096

Shortcut Trick

Volume of metal = $4/3 \times \pi \times (R^3 - r^3)$

Mass = Volume × Density = $4/3 \times 22/7 \times (9^3 - 8^3) \times 21$

Mass = $4/3 \times 22/7 \times (729 - 512) \times 21 = 88 \times 217 = 19096$ g

Weight in kg = 19096 ÷ 1000 = 19.096 kg

Therefore The correct answer is 19.096 kg.

Alternate Method

Given: External radius (R) = 9 cm, Internal radius (r) = 8 cm, Density = 21 g/cm³

Formula Used: Volume of hollow sphere = $4/3 \times \pi \times (R^3 - r^3)$; Mass = Density × Volume

=> Volume = $4/3 \times 22/7 \times (9^3 - 8^3)$

=> Volume = $4/3 \times 22/7 \times (729 - 512) = 4/3 \times 22/7 \times 217$

=> Volume = $88/21 \times 217$ cm³

=> Mass = Density × Volume = $21 \times (88/21 \times 217)$

=> Mass = $88 \times 217 = 19096$ g

=> Weight in kg = 19096 / 1000 = 19.096 kg

Therefore The correct answer is 19.096 kg.

Additional Information

Hollow Sphere Properties

The volume of the material is the difference between external and internal volumes: $V = 4/3\pi(R^3 - r^3)$.

Density-Mass Relation

Mass is the product of Volume and Density. Unit conversion: 1 kg = 1000 g.

Total Surface Area of Hollow Sphere

The sum of inner and outer surface areas: $TSA = 4\pi R^2 + 4\pi r^2 = 4\pi(R^2 + r^2)$.

Q100. Answer: (b) Trapezium

Shortcut Trick

Sum of ratio parts = 2 + 8 + 3 + 7 = 20 units.

Total angle sum of a quadrilateral = 360°.

1 unit = 360° ÷ 20 = 18°.

Adjacent angles sum: angle P + angle Q = (2 + 8) × 18° = 180° and angle R + angle S = (3 + 7) × 18° = 180°.

Since co-interior angles sum to 180°, one pair of opposite sides is parallel.

Therefore The correct answer is Trapezium.

Alternate Method

Given: Ratio of angles angle P : angle Q : angle R : angle S = 2 : 8 : 3 : 7.

Formula Used: Sum of interior angles of a quadrilateral = 360°.

Calculations:

=> Let the angles be 2x, 8x, 3x, and 7x.

=> 2x + 8x + 3x + 7x = 360°

=> 20x = 360°

=> x = 18°

=> angle P

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