RRB NTPC (Graduate) CBT-I Official Paper (Held On: 27 Mar, 2026 Shift 2) (Previous Year Paper)

RRB NTPC • 2026 • 100 questions • 90 minutes • Answer key and solutions

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Q1. Which of the given letter-number clusters will replace the question mark (?) in the following series to make it logically complete?

MPW 30 HKR 25 CFM 20 XAH 15 ?

(a) ZKE 12
(b) DLV 12
(c) BYM 13
(d) SVC 10

Q2. Based on the English alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group?

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

(a) TXA
(b) GKN
(c) DHL
(d) WAD

Q3. If 3 : 27 :: 5.6 : x and 5 : 35 :: 6 : y, then what is the ratio of x to y?

(a) 7 : 3
(b) 4 : 6
(c) 11 : 15
(d) 6 : 5

Q4. The 74th Constitutional Amendment Act, 1992, entrusted the Municipalities with _____ functional domains under the Twelfth Schedule of the Constitution.

(a) 10
(b) 18
(c) 20
(d) 9

Q5. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

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

(18, 20, 2)

(47, 48, 1)

(a) (36, 44, 5)
(b) (3, 22, 16)
(c) (27, 45, 18)
(d) (25, 43, 15)

Q6. A right circular cone has a radius of 7 cm. Its slant height is 25 cm. What is the total surface area of the cone? (Use π = 22/7)

(a) 814 cm²
(b) 686 cm²
(c) 704 cm²
(d) 792 cm²

Q7. Identify the tertiary activity from among the following.

(a) Biotechnology
(b) Real estate
(c) Drink industry
(d) Construction industry

Q8. In a certain code language,

A + B means ‘A is the mother of B’

A – B means ‘A is the brother of B’

A x B means ‘A is the wife of B’

A % B means ‘A is the father of B’

A # B means ‘A is the daughter of B’

Based on the above, how is V related to L if ‘L % R – K + V # E’?

(a) Daughter’s daughter
(b) Sister’s son
(c) Mother’s brother
(d) Wife’s father

Q9. Two taps can fill a cistern in 4 hours and 26 hours respectively. A third tap can empty it in 26 hours. How long (in hours) will it take to fill one-fourth of the empty cistern, if all of them are opened together?

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

Q10. Which Windows component helps users to install, remove, or manage software?

(a) File Explorer
(b) Recycle Bin
(c) Task Bar
(d) Control panel

Q11. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 7843156, which of the following digits will be fourth from the left in the new number thus formed?

(a) 4
(b) 7
(c) 5
(d) 3

Q12. Which of the following rivers of India forms a delta on the eastern coastal plains?

(a) Narmada
(b) Mahi
(c) Godavari
(d) Tapi

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Q13. Three solid cubes whose edges measure 1 cm, 6 cm, and 8 cm, respectively, are melted and recast into a single cube. What is the length (in cm) of the diagonal of the cube?

(a) 8√3
(b) 8√2
(c) 9√2
(d) 9√3

Q14. There are 25 members in group A, 32 members in group B and 31 members in group C. All the members of these groups went to a restaurant. The average amounts spent on each member of groups A, B and C are Rs. 101, Rs. 249 and Rs. 269, respectively. The overall average amount (in Rs.) spent per member is:

(a) 219
(b) 214
(c) 215
(d) 216

Q15. Select the triad which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

CLAP-APCL-ACPL

DIRT-RTDI-RDTI

(a) MADE-DEAM-MAED
(b) HAIL-LAIH-HIAL
(c) LION-ONLI-OLNI
(d) MEAT-ATME-TMAE

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

Statements:

Some pillows are blankets. Some blankets are quilts. Some quilts are curtains.

Conclusions:

(I) Some pillows are quilts.

(II) Some blankets are curtains.

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

Q17. Consider the following statements regarding the Finance Commission.

1. It is a quasi-judicial body.
2. It is related to Article 280.
3. It is constituted by the President.
4. It is constituted after each 6 years.

Which of the above statements is/are correct.

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

Q18. What additional species (apart from cheetahs) were released into the wild during the announcement of the third cheetah habitat at Nauradehi in October 2025?

(a) Tigers
(b) Crocodiles
(c) Indian rhinoceros

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(d) Leopards

Q19. The sum of all the interior angles of a regular polygon is 2520°. Find the measure of each of its exterior angles.

(a) 25.75°
(b) 22.5°
(c) 26°
(d) 22°

Q20. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

All rats are moles. No mole is a frog. No mole is a donkey.

Conclusions:

(I) No rat is a frog.

(II) Some donkeys are frogs.

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

Q21. Which of the following materials is a good conductor of electricity?

(a) Rubber
(b) Wood
(c) Copper
(d) Glass

Q22. If (5, 5) are the coordinates of the geometric centre of a triangle whose vertices are (9, 5), (4 ,p) and (q ,4), then find the values for p and q, respectively.

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

Q23. As of March 31, 2025, the length of National Highways in India was reported to be:

(a) 91,287 km
(b) 1,46,204 km
(c) 1,75,123 km
(d) 1,20,076 km

Q24. A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2, and so on till the topmost floor is numbered 6.

Only four people live between C and D. F lives on an even numbered floor but not on floor number 2. E lives immediately below B but above C.

How many people live above A?

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

Q25. Seven people, B, C, O, P, Q, R and S, are sitting in a straight line, facing north. Only four people sit to the left of B. R sits immediately to the left of Q. Only three people sit between B and C. Both P and O are immediate neighbors of S. P sits immediately to the right of C. How many people sit to the left of O?

(a) One
(b) Two

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(c) Zero
(d) Three

Q26. Chetan starts from Point A and drives 25 km towards south. He then takes a left turn, drives 22 km, turns left and drives 10 km. He then takes a left turn and drives 10 km. He takes a final right turn, drives 15 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only, unless specified.)

(a) 10 km towards east
(b) 12 km towards west
(c) 22 km towards north
(d) 25 km towards south

Q27. If A's salary is 143% more than that of B, then how much percent is B's salary less than that of A (correct to 2 decimal places)?

(a) 58.85%
(b) 56.62%
(c) 59.64%
(d) 61.92%

Q28. Who is responsible for loading the operating system into memory during the booting process?

(a) ROM
(b) BIOS
(c) RAM
(d) CPU

Q29. Identify an example of a curved mirror.

(a) Ladle
(b) Shining spoon
(c) Prism
(d) Wooden spatula

Q30. A researcher calculates the final performance score of students based on two components:

Assignments (weight 40%)

Exams (weight 60%)

A student scores:

75 in assignments

85 in exams

What is the student’s weighted arithmetic mean score?

(a) 83
(b) 81
(c) 80
(d) 82

Q31. The monthly incomes of two friends Ajay and Amit, are in the ratio 6 : 7 respectively and each of them saves Rs. 63,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Ajay (in Rs.).

(a) 74,600
(b) 75,600
(c) 76,600
(d) 1,05,840

Q32. A, B, and C can complete a task in 12 days, 15 days, and 18 days, respectively. B works every day and A and C work on alternate days, beginning with C on the first day. How many days will it take to do the task?

(a) 711/27
(b) 717/27
(c) 75/27

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(d) 77/27

Q33. In October 2025, the broad-daylight heist involving the theft of royal jewellery from the Louvre Museum occurred in which country?

(a) France
(b) Belgium
(c) Spain
(d) Italy

Q34. The Poligar Rebellion took place in which part of India?

(a) Bengal
(b) Tamil Nadu
(c) Maharashtra
(d) Punjab

Q35. Which of the following folk songs is specifically associated with Haryana?

(a) Ragini
(b) Bhatiali
(c) Mand
(d) Gulraj

Q36. Which of the following statements is INCORRECT about functions of the Natural environment?

(a) Environment assimilates waste.
(b) The environment sustains life by providing genetics and biodiversity.
(c) Environment does not provide aesthetic services.
(d) Environment supplies resources.

Q37. A boat takes 8 hours to row 72 km downstream and 12 hours to row the same distance upstream. Find the boat's rate in still water and the rate of current, respectively.

(a) 8.5 km/hr and 2.5 km/hr
(b) 6.5 km/hr and 0.5 km/hr
(c) 9.5 km/hr and 3.5 km/hr
(d) 7.5 km/hr and 1.5 km/hr

Q38. 5 is related to 120 following a certain logic. Following the same logic, 4 is related to 96. To which of the following is 6 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 etc. 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) 169
(b) 150
(c) 144
(d) 121

Q39. X, Y, Z, S, T and U 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. U lives on floor number 4. Only two people live between U and Z. Only T lives between U and Y. X lives immediately below U. Who lives on floor number 5?

(a) Y
(b) S
(c) X
(d) T

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Q40. In 2025, who was awarded the Nobel Peace Prize for her fearless advocacy of democracy, free elections, and peaceful transition from authoritarian rule in Venezuela?

(a) Leopoldo López
(b) Juan Guaidó
(c) Michelle Bachelet
(d) Maria Corina Machado

Q41. As part of a longstanding defence relationship, India participated in the Zapad-2025 military exercise with which country in September 2025?

(a) Russia
(b) USA
(c) China
(d) France

Q42. The selling price of 25 books is equal to the cost price of 19 books. Find the loss or gain percentage.

(a) 24% gain
(b) 100/6 % loss
(c) 100/6 % gain
(d) 24% loss

Q43. A boat travels 36 km downstream and 24 km upstream, taking a total of 6 hours. If the speed of the stream is 2 km/h, the time taken (in hours) for each journey, respectively, is:

(a) (3.2 and 2.8)
(b) (3.4 and 2.6)
(c) (3.6 and 2.4)
(d) (3.0 and 3.0)

Q44. Who won a silver medal in shooting at the 2004 Athens Olympics, India's first individual Olympic silver?

(a) Sushil Kumar Panady
(b) Abhinav Bindra
(c) Rajendra Singh Shekhawat
(d) Rajyavardhan Singh Rathore

Q45. Evaluate: 16 + 20 ÷ 4 - 3 × 3

(a) 14
(b) 11
(c) 15
(d) 12

Q46. A dealer buys two articles X and Y for Rs. 2300 each. He marks each of them at the same price. He sells X by giving two successive discounts of 46% and 68% and still earns Rs. 460 as profit. If he sells Y at a single discount of 73%, then what is the profit percentage on Y?

(a) 86.5%
(b) 87%
(c) 86%
(d) 87.5%

Q47. What is the primary role of decomposers in an ecosystem?

(a) Break down organic matter
(b) Capture sunlight for energy
(c) Produce oxygen
(d) Act as primary consumers

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Q48. LINO is related to PKRQ in a certain way based on the English alphabetical order. In the same way, BQDW is related to FSHY. To which of the following options is NWPC related to, following the same logic?

(a) REJI
(b) RYTE
(c) RITE
(d) REWQ

Q49. Who released the book 'The Emergency Diaries-Years that Forged a Leader' in June 2025?

(a) Ashvini Vaishnaw
(b) Indira Gandhi
(c) Narendra Modi
(d) Amit Shah

Q50. The average of first 13 multiples of 9 is:

(a) 13
(b) 9
(c) 63
(d) 58.5

Q51. What should come in place of '?' in the given series?

82 80 77 72 65 ?

(a) 54
(b) 56
(c) 55
(d) 53

Q52. Which Shaka ruler is credited with repairing the Sudarshana Lake without imposing any tax?

(a) Kanishka
(b) Rudradaman
(c) Harsha
(d) Nahapana

Q53. Which pollutant(s) contribute(s) to both ozone and peroxyacetyl nitrate formation in urban atmospheres under sunlight?

(a) Sulphur dioxide
(b) Hydrocarbons
(c) Nitrogen dioxide
(d) Carbon monoxide

Q54. In a certain code language, 'MELT' is coded as '5431' and 'TIME' is coded as '7153'. What is the code for 'I' in the given code language?

(a) 1
(b) 3
(c) 7
(d) 5

Q55. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

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

(11,18,65)

(5,1,8)

(a) (25, 5, 70)
(b) (33, 23, 72)
(c) (7, 12, 43)

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(d) (82, 24, 74)

Q56. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only. All numbers are single-digit numbers only.

(Left) \ % * 5 5 / 9 9 / + 7 * # 6 9 6 @ + 7 ? + (Right)

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

(a) Two
(b) One
(c) Three
(d) None

Q57. Meenakshi and Meena invest in a business in the ratio 12 : 32. If total profit is Rs. 2,904, then what is difference between the profit (in Rs.) of Meenakshi and Meena?

(a) Rs. 1,270
(b) Rs. 1,320
(c) Rs. 1,470
(d) Rs. 1,220

Q58. If a 7-digit number 65770A4 is completely divisible by 4, what is the minimum value of A?

(a) 4
(b) 3
(c) 0
(d) 2

Q59. Which of the following pairs is INCORRECTLY matched?

(a) 1917 – Champaran Satyagraha
(b) 1918 – Kheda Satyagraha
(c) 1928 – Bardoli Satyagraha
(d) 1929 – Gandhi–Irwin Pact

Q60. If $4a^2 + 9b^2 = 49$ and $ab = 6$, then find the positive value of $2a + 3b$.

(a) 13
(b) 9
(c) 15
(d) 11

Q61. In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Question:

Among 5 trees, L, M, N, T and V each having a different height, which tree is the tallest?

Statements:

(I) M is taller than only two trees. T is immediately taller than N.

(II) V is taller than N.

(a) Data in Statement II alone is sufficient to answer the question while data in statement I is not
(b) Data in Statement I alone is sufficient to answer the question while data in statement II is not
(c) Both statements I and II together are NOT sufficient to answer the question
(d) Both statements I and II together (and not statement 1 alone or statement II alone) are sufficient to answer the question

Q62. Which missile system successfully completed User Evaluation Trials conducted by the Defence Research and Development Organisation in 2025, marking a major boost to India’s defence preparedness?

(a) Prithvi-II short-range ballistic missile system
(b) Astra beyond-visual-range air-to-air missile system
(c) BrahMos extended-range cruise missile system

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(d) Akash Next Generation (Akash-NG) missile system

Q63. What is the mode of the data given below?

[Give your answer correct to 2 decimal places.]

Age in years	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No of patients	24	29	26	35	20	23	10

(a) 53.75
(b) 57.75
(c) 51.75
(d) 55.75

Q64. In a certain code language, ‘CAST’ is coded as ‘3519’ and ‘SIDE’ is coded as ‘8645’. What is the code for ‘S’ in that language?

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

Q65. Which of the following statements is INCORRECT about the newspaper “The Hitavada”?

(a) It was established at Nagpur in 1911
(b) It was an English daily newspaper
(c) It was the mouthpiece of the Ghadar movement
(d) It was founded by Gopal Krishna Gokhale

Q66. Based on the English alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that 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) PMQ
(b) URV
(c) RPT
(d) FCG

Q67. What should come in place of ‘?’ in the given series?

91 90 86 77 61 ?

(a) 40
(b) 41
(c) 39
(d) 36

Q68. What is the primary function of the keyboard shortcut Alt + F4 in Windows?

(a) To minimize the active window
(b) To open File Explorer
(c) To close the active window
(d) To switch between open applications

Q69. Refer to the following number and symbol series and answer the question. Counting to be done from left to right only. (All numbers are single-digit numbers only.)

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

How many such symbols are there, each of which is immediately preceded by an odd number but not immediately followed by an even number?

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

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(d) None

Q70. In which district of Gujarat is the Harappan archaeological site of Dholavira, recognized as a UNESCO World Heritage Site, situated?

(a) Jamnagar District
(b) Banaskantha District
(c) Kutch District
(d) Patan District

Q71. Each of the digits in the number 9237561 is arranged in ascending order from left to right. The position of how many digits will remain unchanged as compared to that in the original number?

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

Q72. In a certain code language,

A + B means 'A is the daughter of B'

A – B means 'A is the brother of B'

A x B means 'A is the wife of B'

A ÷ B means 'A is the father of B'

Based on the above, how is D related to J if 'D + F – G x H ÷ J'?

(a) Father's brother's daughter
(b) Mother's brother's daughter
(c) Mother's brother's wife
(d) Father's brother's wife

Q73. How does higher soil moisture retention in black soils influence cropping intensity in regions like Maharashtra and Madhya Pradesh?

(a) It supports multiple cropping cycles by sustaining moisture across seasons
(b) It limits cropping to a single season to prevent waterlogging
(c) It encourages plantation crops over food grains due to deep root support
(d) It reduces the need for crop rotation due to stable nutrient levels

Q74. Amit invested an equal sum of money in both simple interest and compound interest, compounded annually schemes. The time period for both investments was 2 years, and the rate of interest was 4% per annum. At the end of 2 years, he noticed that the interest earned from compound interest exceeded that from simple interest by Rs. 58. What was the principal amount invested under compound interest?

(a) 35350
(b) 36600
(c) 36250
(d) 35500

Q75. At what rate per annum will a sum of money become five times itself in 9 years under simple interest?

(a) 424/9 %
(b) 468/9 %
(c) 888/9 %
(d) 444/9 %

Q76. Seven people F, G, H, I, V, W, and X are sitting around a circular table facing the centre of the table. G sits third to the left of H. V sits third to the left of I. F sits to the immediate right of I. F sits second to the left of G. X is not an immediate neighbour of V. Who sits fourth to the right of W?

(a) V
(b) F
(c) X

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(d) G

Q77. Eight years ago from now, the average age of A and B was 24 years. The average age of A, B and C today is 32 years. How old will C be after 16 years from now?

(a) 80 years
(b) 56 years
(c) 40 years
(d) 48 years

Q78. According to the Finance Commission (Miscellaneous Provisions) Act, 1951, the Finance Commission shall consist of:

(a) A Chairman and eight other members
(b) A Chairman and six other members
(c) A Chairman and four other members
(d) A Chairman and two other members

Q79. Select the triads which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

AGED-DAGE-EDAG

FAIL-LFAI-ILFA

(a) FARM-MFAR-FMRA
(b) GIFT-TIGF-FITG
(c) KING-GKIN-NGKI
(d) DEAL-LAED-ALDE

Q80. Which of the following states finished as the overall champions of the Khelo India Beach Games 2026, held in the Union Territory of Diu, by leading the medal tally with 11 awards?

(a) Maharashtra
(b) Tamil Nadu
(c) Goa
(d) Karnataka

Q81. Which coastal region of India is associated with the Vembanad Lagoon being separated from the Arabian Sea by narrow barrier islands?

(a) Northern Circar
(b) Coromandal Coast
(c) Malabar Coast
(d) Konkan Coast

Q82. In what way does the Union Cabinet differ from other government committees?

(a) It is elected by the public
(b) It functions independently of the Prime Minister
(c) It serves as the supreme decision-making body of the executive branch
(d) It includes members of the judiciary

Q83. Which central government scheme is primarily aimed at providing road connectivity to rural and remote areas in India?

(a) Rural Infrastructure Development Fund
(b) Pradhan Mantri Gram Sadak Yojana
(c) Bharatmala Pariyojana
(d) Setu Bharatam Scheme

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Q84. A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on, till the topmost floor, which is numbered 6. C lives on an even-numbered floor but not 6. The sum of the floors on which F and C live is 7. B lives immediately above E. The sum of the floors on which C and D live is 3. How many people live above B?

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

Q85. According to Joule's law of heating, the heat produced in a resistor is _____.

(a) directly proportional to the square of current
(b) directly proportional to the square of resistance
(c) inversely proportional to the square of current
(d) inversely proportional to the square of resistance

Q86. What is one way to monitor the real-time flow of activities on a Windows computer?

(a) By analyzing processes through File Explorer
(b) By viewing notifications in the Action Center
(c) By using Task Manager
(d) By checking system performance in the Settings app

Q87. Refer to the given letter and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) C S L Q P Q L C E * / M H W J A N W $ J Z (Right)

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

(a) None
(b) Three
(c) Two
(d) One

Q88. P sells an item to Q at 53% profit. Q sells the same item to R at 68% loss. If R paid Rs. 3060 for the item, then at what price (in Rs.) is the item purchased by P?

(a) 6250
(b) 6253
(c) 6252
(d) 6247

Q89. Which of the following temples is an example of Dravidian architecture?

(a) Sun Temple, Konark
(b) Kandariya Mahadeva Temple, Madhya Pradesh
(c) Meenakshi Temple, Madurai
(d) Lingaraja Temple, Bhubaneshwar

Q90. Which Article of the Indian Constitution mandates regular elections to the board of Co-operative Societies?

(a) Article 243ZL
(b) Article 243ZG
(c) Article 243ZI
(d) Article 243ZK

Q91. The least common multiple of 64, 128 and A is 4480. The difference between the maximum and minimum possible values of A is:

(a) 5444
(b) 4544
(c) 4454

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(d) 4445

Q92. If 16% of 50 - 4/5 × cbrt729 × √25 = y, then the value of y is

(a) -19
(b) -28
(c) -23
(d) -29

Q93. Port Victoria, where the First Training Squadron completed its visit, serves as the capital port of which African island nation?

(a) Madagascar
(b) Comoros
(c) Seychelles
(d) Mauritius

Q94. Mayilattam is the traditional religious dance performed by the female dancers in Kerala and _____.

(a) Karnataka
(b) Telangana
(c) Maharashtra
(d) Tamil Nadu

Q95. Which Article of the Indian Constitution obligates the State to secure equal pay for men and women doing comparable work?

(a) Article 47(a)
(b) Article 39(d)
(c) Article 42
(d) Article 38(1)

Q96. If the quadratic equation $x^2 - (2 + h) x + h^2 - 4h + 4 = 0$) has identical roots, then what are the possible values of h?

(a) h = -1, h = -1/2
(b) h = -2/3, h = 6
(c) h = 0, h = -1
(d) h = 2/3, h = 6

Q97. The ratio of the sum of odd positive integers from 1 to 100 to the sum of even positive integers from 150 to 200 is:

(a) 50:91
(b) 50:81
(c) 50:71
(d) 50:101

Q98. If cosec A = 5/4, then find the value of 4cot A sec A + 3.

(a) 3
(b) 8
(c) 5
(d) 6

Q99. Which of the following letter-number clusters will replace the question mark “?” in the given series to make it logically complete?

HAK 8, GYH 11, FWE 14, EUB 17, ?

(a) DTA 21
(b) DSY 20
(c) CSZ 20
(d) DSX 20

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Q100. As of December 2025, under the Pradhan Mantri Awas Yojana – Gramin (PMAY-G), what is the minimum size required for a house unit provided to beneficiaries?

(a) 35 sq. m
(b) 25 sq. m
(c) 15 sq. m
(d) 20 sq. m

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) SVC 10

The logic followed here is:
So, 'SVC 10' will replace the question mark in the given series.
Hence, the correct answer is "Option 4"

Q2. Answer: (c) DHL

The logic followed here is based on the alphabetical position pattern:
Option 1: TXA
Option 2: GKN
Option 3: DHL
Option 4: WAD
Thus, DHL does not follow the pattern.
Hence, the odd one out is Option 3.

Q3. Answer: (d) 6 : 5

Shortcut Trick
Proportion 1: 3 → 27 (Scaling × 9) Therefore x = 5.6 × 9 = 50.4
Proportion 2: 5 → 35 (Scaling × 7) Therefore y = 6 × 7 = 42
Ratio x : y = 50.4 : 42
Simplify by 8.4: (50.4 ÷ 8.4) : (42 ÷ 8.4) = 6 : 5
Therefore Answer = 6 : 5
Alternate Method
Given:
Proportion 1: 3 : 27 :: 5.6 : x
Proportion 2: 5 : 35 :: 6 : y
Formula used:
Product of Extremes = Product of Means (If a : b :: c : d, then a × d = b × c)
Proportion 1 (Finding x): 3 : 27 ×9 5.6 : x => x = 50.4 Proportion 2 (Finding y): 5 : 35 ×7 6 : y => y = 42 Final Ratio x : y = 6 : 5

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Calculations:

From 3 : 27 :: 5.6 : x

=> 3 × x = 27 × 5.6

=> x = (27 × 5.6) ÷ 3 = 9 × 5.6 = 50.4

From 5 : 35 :: 6 : y

=> 5 × y = 35 × 6

=> y = (35 × 6) ÷ 5 = 7 × 6 = 42

Ratio of x to y:

=> x : y = 50.4 : 42

=> x : y = 504 : 420

=> x : y = (504 ÷ 84) : (420 ÷ 84) = 6 : 5

Therefore The correct answer is 6 : 5 (Option 4).

Additional Information

Fourth Proportional

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

Mean Proportional

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

Third Proportional

If a : b :: b : c, then c is the third proportional to a and b, where $c = b^2 \div a$.

Compounded Ratio

The compounded ratio of two ratios (a : b) and (c : d) is given by (a × c) : (b × d).

Q4. Answer: (b) 18

The correct answer is 18.

Key Points

• The 74th Constitutional Amendment Act, passed in 1992, provides a basic framework for decentralized governance in urban areas of India.

• This Act added a new Twelfth Schedule to the Constitution of India, which explicitly lists 18 functional items or domains that are entrusted to Municipalities.

• These 18 functional domains include Urban planning including town planning, Regulation of land-use and construction of buildings, and Planning for economic and social development.

• The schedule also mandates functions such as Roads and bridges, Water supply for domestic, industrial, and commercial purposes, Public health, sanitation, conservancy, and solid waste management.

• Other critical services listed are Fire services, Urban forestry, protection of the environment, and promotion of ecological aspects, alongside Safeguarding the interests of weaker sections of society, including the handicapped and mentally retarded.

• Additional domains involve Slum improvement and up-gradation, Urban poverty alleviation, and the provision of urban amenities and facilities such as parks, gardens, and playgrounds.

Additional Information

• The 74th Amendment Act officially came into force on June 1, 1993, marking a significant milestone in democratic decentralization.

• It introduced Part IX-A to the Constitution, titled 'The Municipalities', encompassing Articles 243P to 243ZG.

• The Act categorizes Urban Local Bodies (ULBs) into three types: Nagar Panchayat for areas in transition from rural to urban, Municipal Council for smaller urban areas, and Municipal Corporation for larger urban areas.

• Under Article 243S, the constitution of Wards Committees is required in municipalities having a population of three lakhs or more.

• To ensure financial viability, Article 243I and 243Y mandate the State Finance Commission to review the financial position of Municipalities every five years and recommend the devolution of taxes and grants-in-aid.

Important Points

• Article 243W of the Constitution specifies the powers, authority, and responsibilities of Municipalities, specifically empowering them to implement schemes for economic development and social justice as listed in the Twelfth Schedule.

• Reservation of seats: The Act provides mandatory reservation of seats for Scheduled Castes and Scheduled Tribes in proportion to their population, and not less than one-third (33%) of the total seats must be reserved for women.

• The duration of a Municipality is fixed at five years from the date of its first meeting; if dissolved earlier, elections must be held within six months.

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• The State Election Commission, constituted under Article 243K, is responsible for the superintendence, direction, and control of the preparation of electoral rolls and the conduct of all elections to the Municipalities.

• The District Planning Committee (DPC) is mandated under Article 243ZD to consolidate the plans prepared by Panchayats and Municipalities in the district and to prepare a draft development plan for the district as a whole.

Q5. Answer: (c) (27, 45, 18)

The logic followed here is:

Logic: The third number is obtained by subtracting the first number from the second number.

For, (18, 20, 2)

=> 20 − 18 = 2

For, (47, 48, 1)

=> 48 − 47 = 1

Now, checking the options using the same pattern:

Option 1) (36, 44, 5)

=> 44 − 36 = 8 ≠ 5

Option 2) (3, 22, 16)

=> 22 − 3 = 19 ≠ 16

Option 3) (27, 45, 18)

=> 45 − 27 = 18

Option 4) (25, 43, 15)

=> 43 − 25 = 18 ≠ 15

Hence, the correct answer is Option 3.

Q6. Answer: (c) 704 cm²

Shortcut Trick

Total Surface Area of cone = π × r × (l + r)

Given r = 7 and l = 25, the sum (l + r) = 25 + 7 = 32.

TSA = (22/7) × 7 × 32 = 22 × 32.

Calculation: 22 × 32 = 704.

Therefore Answer = 704 cm²

Alternate Method

Given:

Radius (r) = 7 cm

Slant height (l) = 25 cm

π = 22/7

Formula used:

Total Surface Area (TSA) = Curved Surface Area + Base Area = $\pi rl + \pi r^2 = \pi r(l + r)$

r = 7 cm l = 25 cm TSA = πr(l + r)

Calculations:

Substitute the values into the formula:

=> TSA = (22/7) × 7 × (25 + 7)

=> TSA = 22 × 32

=> TSA = 704 cm²

Therefore The correct answer is 704 cm². (Option 3)

Additional Information

Curved Surface Area (CSA)

The area of the lateral surface of a cone is given by CSA = πrl, where r is the radius and l is the slant height.

Slant Height Relation

The relation between slant height (l), vertical height (h), and radius (r) is $l^2 = r^2 + h^2$ or $l = \sqrt{(r^2 + h^2)}$.

Volume of a Cone

The volume of a right circular cone is one-third the volume of a cylinder with the same radius and height: $V = (1/3)\pi r^2 h$.

Base Area

The base of a right circular cone is a circle, and its area is calculated using the formula $A = \pi r^2$.

Q7. Answer: (b) Real estate

The correct answer is Real estate.

Key Points

• Economic activities are broadly classified into three main sectors: primary, secondary, and tertiary. The tertiary sector is known as the service sector because it provides various services to consumers and other sectors rather than producing tangible goods.

• Biotechnology is an advanced field involving Research and Development (R&D) and the application of biological systems to create products. While it is related to industry, it is primarily classified as a quaternary activity due to its knowledge-based and specialized nature. Hence, statement A is incorrect.

• Real estate involves services such as the buying, selling, renting, and management of land and buildings. Since it provides a commercial service to individuals and businesses, it is a classic example of a tertiary activity. Hence, statement B is correct.

• The Drink industry (Beverage industry) involves the processing and manufacturing of raw materials into finished liquid products. Because it involves value addition through factory processes, it belongs to the secondary sector. Hence, statement C is incorrect.

• The Construction industry involves the physical creation of infrastructure, roads, bridges, and buildings. In economic terms, construction is categorized under the secondary sector because it involves the "fabrication" of physical structures. Hence, statement D is incorrect.

Additional Information

• Tertiary Sector Characteristics:

• This sector includes trade, transport, communication, banking, insurance, and real estate.

• In India, the tertiary sector is the largest contributor to the Gross Domestic Product (GDP), accounting for approximately 53% to 55% of the total Gross Value Added (GVA).

• It plays a vital role in supporting the primary (agriculture) and secondary (industrial) sectors by facilitating the movement and sale of goods.

• Primary Sector:

• This sector involves the extraction and harvesting of natural resources.

• Key examples include agriculture, forestry, fishing, mining, and quarrying. In developing nations like India, a significant portion of the workforce is still employed in this sector.

• Secondary Sector:

• This sector focuses on the manufacturing and processing of raw materials into finished goods.

• It includes large-scale industries (like steel and automobiles), small-scale units, and the construction of physical assets.

• Quaternary and Quinary Sectors:

• The Quaternary sector is a subset of the tertiary sector, focusing on information technology (IT), consultancy, and scientific research.

• The Quinary sector involves high-level decision-making by top executives, government officials, and researchers who influence global and national policies.

Important Points

• Real Estate in India: The real estate sector is the second-largest employer in India after agriculture. It is expected to reach a market size of $1 trillion by the year 2030.

• Regulatory Framework: In India, the Real Estate (Regulation and Development) Act, 2016 (RERA) was enacted to protect the interests of homebuyers and boost investments in the sector.

• Urbanization: Rapid urbanization and the Smart Cities Mission have significantly fueled the growth of real estate and construction activities across the country.

• FDI Policy: The Government of India allows 100% Foreign Direct Investment (FDI) in certain real estate developments, making it a lucrative destination for global investors.

Q8. Answer: (a) Daughter's daughter

Family Chart:

Decoding the Symbols:

Symbol	•	–	x	%	#
Meaning	Mother	Brother	Wife	Father	Daughter

Given: L % R – K + V # E

It means: L is the father of R, R is the brother of K, K is the mother of V, V is the daughter of E.

Thus, from L's perspective → V is daughter's daughter

Hence, the correct answer is Option 1.

Q9. Answer: (d) 1

Shortcut Trick

Efficiency of filling tap (26 hours) and emptying tap (26 hours) cancel each other out.

Net filling is performed only by the first tap (4 hours).

Time to fill the full cistern = 4 hours.

Time to fill 1/4 of the cistern = 1/4 × 4 = 1 hour.

Therefore Answer = 1

Alternate Method

Given:

Time taken by Tap 1 (Fill) = 4 hours

Time taken by Tap 2 (Fill) = 26 hours

Time taken by Tap 3 (Empty) = 26 hours

Formula used:

Total Work = LCM of all given times

Efficiency = Total Work ÷ Number of Hours

Tap	Number of Hours	Total Work	Efficiency
Tap 1 (Fill)	4	52 units (LCM)	+13
Tap 2 (Fill)	26	+2	
Tap 3 (Empty)	26	−2	

Combined Efficiency = 13 + 2 − 2 = 13 units/hour

Work to be completed (1/4 of total) = 52 ÷ 4 = 13 units

Calculations:

Total Capacity (LCM of 4 and 26) = 52 units

=> Efficiency of Tap 1 = 52 ÷ 4 = 13

=> Efficiency of Tap 2 = 52 ÷ 26 = 2

=> Efficiency of Tap 3 = −(52 ÷ 26) = −2

=> Net efficiency of all three taps = 13 + 2 − 2 = 13 units/hour

=> Time required to fill 1/4 of the cistern = 13 ÷ 13 = 1 hour

Therefore The correct answer is 1.

Additional Information

Net Work in Pipes and Cisterns

Filling pipes are considered as positive work (+), while emptying or outlet pipes are considered as negative work (−).

Combined Rate Formula

If two pipes can fill a tank in x and y hours, the time taken to fill together is (x × y) ÷ (x + y) hours.

Efficiency and Time Relation

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

Q10. Answer: (d) Control panel

The correct answer is Control panel.

Key Points

• The Control Panel is a centralized component of the Microsoft Windows operating system that provides a graphical user interface (GUI) for users to view and manipulate system settings and controls.

• It contains a specific utility known as Programs and Features (formerly called Add or Remove Programs), which is the primary tool used to install, remove, or modify software applications and Windows updates.

• Through the Control Panel, users can manage User Accounts, System Security, Hardware and Sound, and Network and Internet settings, ensuring the computer functions according to the user's requirements.

• The Control Panel was first introduced in 1985 with Windows 1.0 and has evolved through various versions like Windows XP, Windows 7, and Windows 10.

• While modern versions of Windows are transitioning many features to the Settings App, the Control Panel remains essential for advanced administrative tasks and legacy software management.

Additional Information

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• File Explorer:

• Formerly known as Windows Explorer, it is the default file manager application used to navigate the file system.

• Its primary function is to browse, copy, move, and delete files and folders rather than managing software installations.

• Features include Quick Access, This PC, and the Ribbon interface for file organization.

• Recycle Bin:

• This is a temporary storage location for deleted files and folders.

• Items moved here are not permanently removed until the user selects Empty Recycle Bin, providing a safety net to Restore accidentally deleted data.

• It is usually located on the Desktop of the Windows interface.

• Task Bar:

• Located typically at the bottom of the screen, the Task Bar allows users to locate and launch programs through the Start Menu.

• It displays active applications and contains the System Tray (Notification Area), which shows the clock, battery status, and network connectivity.

Important Points

• The Control Panel applets are stored as .cpl files in the System32 folder. For example, appwiz.cpl directly opens the software management window.

• In Windows 11, Microsoft has moved several legacy Control Panel settings into the Settings menu to provide a more unified and modern user experience.

• Administrative tools within the Control Panel allow for Disk Management, Event Viewer, and Services management, which are crucial for IT professionals and power users.

• The Device Manager, often accessed via the Control Panel, is used to manage hardware drivers for devices like printers, graphics cards, and keyboards.

Q11. Answer: (a) 4

The logic followed here is:

Given number: 7843156

Logic:

Add 1 to each odd digit

Subtract 2 from each even digit

Original number: 7 8 4 3 1 5 6

Digit	Type	Operation	New Digit
7	Odd	7 + 1	8
8	Even	8 − 2	6
4	Even	4 − 2	2
3	Odd	3 + 1	4
1	Odd	1 + 1	2
5	Odd	5 + 1	6
6	Even	6 − 2	4

New number: 8 6 2 4 2 6 4

Now, fourth digit from the left = 4

Hence, the correct answer is Option 1.

Q12. Answer: (c) Godavari

The correct answer is Godavari.

Key Points

• The Godavari is the largest peninsular river system in India and is often referred to as the Dakshina Ganga. It flows eastward and forms a massive delta on the eastern coastal plains before emptying into the Bay of Bengal.

• Rivers like the Godavari, Mahanadi, Krishna, and Kaveri flow towards the east because the Deccan Plateau has a general slope from west to east. These rivers carry large amounts of alluvium and sediment, which they deposit at their mouths, creating fertile deltas.

• In contrast, the Narmada and Tapi are major west-flowing rivers that originate in Central India and flow into the Arabian Sea.

These rivers flow through narrow rift valleys and do not form deltas; instead, they form estuaries. Hence, options A and D are incorrect.

• The Mahi river also flows westwards, originating in Madhya Pradesh and passing through Rajasthan and Gujarat to enter the Gulf of Khambhat. Like other west-flowing rivers, it does not form a delta on the eastern plains. Hence, option B is incorrect.

• The Godavari Delta is located in the state of Andhra Pradesh and is a vital region for agriculture, particularly paddy cultivation, due to its rich alluvial soil. Hence, option C is correct.

Additional Information

• Godavari River Features:

• It originates from Trimbakeshwar in the Nasik district of Maharashtra at an elevation of about 1,067 meters.

• The total length of the river is approximately 1,465 km, making it the second-longest river in India after the Ganga.

• Its drainage basin extends over the states of Maharashtra (about 50%), Telangana, Andhra Pradesh, Chhattisgarh, and Odisha.

• Important tributaries include the Purna, Wardha, Pranhita, Manjra, Wainganga, and Penganga.

• Narmada River:

• It rises from the Amarkantak plateau in Madhya Pradesh and flows through a rift valley between the Vindhya and Satpura ranges.

• It covers a distance of 1,312 km and forms the famous Dhuandhar Falls in Jabalpur.

• Tapi River:

• It originates in the Satpura ranges, specifically in the Betul district of Madhya Pradesh.

• It flows parallel to the Narmada but is much shorter in length, approximately 724 km.

• Mahi River:

• It is one of the few rivers in India that crosses the Tropic of Cancer twice.

• It flows through Vadhvana and drains into the Arabian Sea.

Important Points

• Delta vs. Estuary: A delta is a triangular landform created by deposition of sediment at the mouth of a river, typical of the Eastern Coast of India. An estuary is a partially enclosed coastal body of water where freshwater meets saltwater, typical of the Western Coast.

• Eastern Coastal Plain: This plain is broader and more leveled compared to the Western Coastal Plain, providing sufficient space for sediment deposition and the formation of large deltas.

• Economic Significance: The deltaic regions of the East Coast are often referred to as the "Rice Granary of South India" due to their high agricultural productivity enabled by the Godavari and Krishna rivers.

Q13. Answer: (d) 9√3

Shortcut Trick

Total Volume = Sum of individual volumes = $1^3 + 6^3 + 8^3$

Total Volume = 1 + 216 + 512 = 729 cm^3

New edge (a) = $\sqrt[3]{729}$ = 9 cm

Diagonal of a cube = Side × √3 = 9√3 cm

Therefore Answer = 9√3 cm

Alternate Method

Given:

Edges of three cubes: a1 = 1 cm, a2 = 6 cm, a3 = 8 cm

Formula used:

Volume of cube = $(Side)^3$

Diagonal of cube = Side × √3

1cm + 6cm + 8cm New Side = 9 Diagonal = 9√3

Calculations:

Volume of new cube = Volume1 + Volume2 + Volume3

=> $V = (1)^3 + (6)^3 + (8)^3$

=> $V = 1 + 216 + 512 = 729\ cm^3$

=> Let the side of the new cube be A. Then $A^3 = 729$

=> $A = \sqrt[3]{729} = 9$ cm

=> Diagonal = A × √3 = 9√3 cm

Therefore The correct answer is 9√3 (Option 4).

Additional Information

Total Surface Area of a Cube

The total surface area (TSA) of a cube with side 'a' is given by $6a^2$.

Diagonal of a Cube Face

The diagonal of any single face of a cube is $a\sqrt{2}$, where 'a' is the side length.

Melting and Recasting Rule

When solid objects are melted and recast into a new shape, the total volume remains constant (Volume before = Volume after).

Volume of a Cuboid

The volume of a cuboid is Length × Width × Height (L × W × H) and its body diagonal is $\sqrt{(L^2 + W^2 + H^2)}$.

Q14. Answer: (b) 214

Shortcut Trick

Total members = 25 + 32 + 31 = 88

Assume a base average of 200.

Net deviation = 25 × (101 − 200) + 32 × (249 − 200) + 31 × (269 − 200)

Net deviation = 25 × (−99) + 32 × 49 + 31 × 69 = −2475 + 1568 + 2139 = 1232

Average deviation = 1232 ÷ 88 = 14

Therefore Answer = 200 + 14 = 214

Alternate Method

Given:

Group A: Members (n1) = 25, Average (A1) = 101

Group B: Members (n2) = 32, Average (A2) = 249

Group C: Members (n3) = 31, Average (A3) = 269

Formula used:

Overall Average = (n1 × A1 + n2 × A2 + n3 × A3) ÷ (n1 + n2 + n3)

101 n=25 249 n=32 269 n=31 Average = 214 Weighted Distribution Scale

Calculations:

Total amount spent = (25 × 101) + (32 × 249) + (31 × 269)

=> Total amount = 2525 + 7968 + 8339

=> Total amount = 18832

=> Total members = 25 + 32 + 31 = 88

=> Overall average = 18832 ÷ 88

=> Overall average = 214

Therefore The correct answer is 214 (Option 2).

Additional Information

Weighted Average Formula

When groups have different sizes, the combined average is calculated as $A_{(avg)} = \sum(n_i \times A_i) \div \sum n_i$.

Deviation Method for Averages

Assume a temporary mean, find sum of deviations (Value − Assumed Mean), and divide by total count to find the correction: Actual Mean = Assumed Mean + (Net Deviation ÷ Total Count).

Effect of Constant Change

If every member in a group spends Rs. X more, the overall average also increases exactly by Rs. X.

Q15. Answer: (c) LION-ONLI-OLNI

The logic followed here is:

Given:

CLAP → APCL → ACPL

DIRT → RTDI → RDTI

Now, checking the options:

Option 1: MADE → DEAM → MAED

Option 2: HAIL → LAIH → HIAL

Option 3: LION → ONLI → OLNI

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Option 4: MEAT → ATME → TMAE

Hence, the correct answer is Option 3.

Q16. Answer: (d) Neither conclusion (I) nor (II) follows

Given Statements:

Some pillows are blankets.

Some blankets are quilts.

Some quilts are curtains.

The least possible Venn diagram for the given statements is:

Conclusions:

I. Some pillows are quilts – False

(The overlap between pillows and blankets, and blankets and quilts may be different parts, so this is not definite.)

II. Some blankets are curtains – False

(The overlap between blankets–quilts and quilts–curtains may be different, so this is not definite.)

So, neither conclusion I nor II follows.

Hence, the correct answer is Option 4.

Q17. Answer: (a) 1, 2, and 3 only

The correct answer is 1, 2, and 3 only.

Key Points

• Statement 1: It is a quasi-judicial body – The Finance Commission is indeed a quasi-judicial body as it has the authority to recommend the distribution of financial resources between the Union and the States, and among the states themselves, based on principles of equity and justice. Hence, this statement is correct.

• Statement 2: It is related to Article 280 – The Finance Commission is constituted under Article 280 of the Indian Constitution. This article mandates the President to set up a Finance Commission to recommend the distribution of tax revenues between the central and state governments. Hence, this statement is correct.

• Statement 3: It is constituted by the President – The Finance Commission is constituted by the President of India every five years or at such earlier time as the President considers necessary. The President appoints its members and defines its terms of reference. Hence, this statement is correct.

• Statement 4: It is constituted after each 6 years – This statement is incorrect because the Finance Commission is constituted every five years, not six years, as per Article 280 of the Constitution. Hence, this statement is incorrect.

Additional Information

• Composition of the Finance Commission:

• The Finance Commission consists of a Chairman and four other members. The qualifications of the Chairman and members are prescribed by the Parliament.

• The Chairman is typically a person with experience in public affairs, while other members are selected for their expertise in finance, economics, administration, or law.

• Functions of the Finance Commission:

• It makes recommendations on the distribution of net proceeds of taxes between the Union and the States.

• It defines the principles that govern grants-in-aid to the states from the Consolidated Fund of India.

• It also advises on measures to augment the Consolidated Fund of a State to supplement the resources of Panchayats and Municipalities.

• Historical Background:

• The first Finance Commission was established in 1951 under the chairmanship of K.C. Neogy.

• The most recent, 15th Finance Commission, was chaired by N.K. Singh, and its recommendations covered the period from 2021-26.

• Reports and Recommendations:

• The recommendations of the Finance Commission are advisory in nature and not binding on the government.

• However, they hold significant importance in ensuring equitable distribution of resources between the Centre and the States.

Important Points

• Article 280: It states that the President shall constitute a Finance Commission at intervals of five years or earlier if necessary.

• The Finance Commission's recommendations are crucial for maintaining fiscal federalism in India.

• It plays a vital role in addressing fiscal imbalances between the Centre and the States.

• Its recommendations cover revenue-sharing, fiscal consolidation, and grants for various sectors like health, education, and rural

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development.

Q18. Answer: (b) Crocodiles

The correct answer is Crocodiles.

Key Points

• During the announcement of Nauradehi Wildlife Sanctuary as India's third cheetah habitat in October 2025, Madhya Pradesh Chief Minister Mohan Yadav released six crocodiles (four females and two males) into the backwaters of the Indira Sagar Dam.

• These crocodiles were transported from Van Vihar in Bhopal as part of an aquatic species recovery program.

• he release was a linked conservation action aimed at restoring riverine trophic balance alongside the cheetah reintroduction efforts.

Additional Information

• Veerangana Durgavati Tiger Reserve:

• It became the 7th Tiger Reserve in Madhya Pradesh and the 54th in India.

• The reserve covers parts of Sagar, Damoh, and Narsinghpur districts, making it one of the largest conservation landscapes in the country.

• It is named after Rani Durgavati, a ruling queen of the Gondwana kingdom known for her bravery against the Mughals.

• Project Cheetah:

• This is the world's first intercontinental large wild carnivore translocation project, launched on September 17, 2022.

• The first batch of 8 cheetahs was brought from Namibia, followed by 12 more from South Africa in February 2023.

• The goal is to establish a free-ranging population of African Cheetahs in India to restore the grassland ecosystems that have been neglected.

• Geographic Importance:

• The Nauradehi region is situated on a plateau and is characterized by open forests and grasslands, which are ideal for the Cheetah, the world's fastest land animal.

• The landscape is a crucial catchment area for rivers like the Ken River and the Narmada River tributaries.

Important Points

• Administrative and Legal Framework:

• The reintroduction projects are governed by the Wildlife Protection Act, 1972, and are monitored by the Wildlife Institute of India (WII).

• Financial support for these initiatives is channeled through the Project Tiger (now merged with Project Elephant) and the Compensatory Afforestation Fund Management and Planning Authority (CAMPA).

• Future Conservation Goals:

• By October 2025, the integration of Tigers and Cheetahs in the same landscape is expected to showcase a multi-predator management model.

• Success in Nauradehi will facilitate the expansion of Project Cheetah to other states like Rajasthan (specifically Mukundra Hills Tiger Reserve) and Gujarat (Banni Grasslands).

• Community participation through the Cheetah Mitras program remains essential to reduce man-animal conflict in the Sagar and Damoh regions.

Q19. Answer: (b) 22.5°

Shortcut Trick

Sum of interior angles = 2520°

Number of sides (n) = (2520 ÷ 180) + 2 = 14 + 2 = 16

Each exterior angle = 360° ÷ total sides (n)

Exterior angle = 360° ÷ 16 = 22.5°

Therefore Answer = 22.5°

Alternate Method

Given:

Sum of all interior angles of a regular polygon = 2520°

Formula used:

Sum of interior angles = (n − 2) × 180°

Measure of each exterior angle = 360° ÷ n

Interior Angle (157.5°) 22.5° (Exterior) Extension of side Regular Polygon (n = 16 sides)

Calculations:

According to the formula for the sum of interior angles:

=> (n − 2) × 180 = 2520

=> n − 2 = 2520 ÷ 180

=> n − 2 = 14

=> n = 14 + 2 = 16

Now, each exterior angle for a regular polygon with n sides:

=> Exterior angle = 360° ÷ 16

=> Exterior angle = 22.5°

Therefore The correct answer is 22.5° (Option 2).

Additional Information

Sum of Exterior Angles

For any convex polygon, the sum of all its exterior angles (one at each vertex) is always equal to 360°.

Relationship Between Angles

For any vertex of a polygon, the sum of the interior angle and its adjacent exterior angle is always 180°.

Number of Diagonals

The number of diagonals in a polygon with n sides can be calculated using the formula: n(n − 3) ÷ 2.

Measure of Each Interior Angle

For a regular polygon, each interior angle is equal to [(n − 2) × 180°] ÷ n.

Q20. Answer: (c) Only conclusion (I) follows.

Given Statements:

All rats are moles.

No mole is a frog.

No mole is a donkey.

The least possible Venn diagram for the given statements is:

Conclusions:

I. No rat is a frog – True

(Because rats are inside moles, and moles do not overlap with frogs, so rats also cannot overlap with frogs.)

II. Some donkeys are frogs – False

(No direct relation is given between donkeys and frogs, so this cannot be concluded.)

So, only conclusion I follows.

Hence, the correct answer is Option 3.

Q21. Answer: (c) Copper

The correct answer is Copper.

Key Points

• Copper is a chemical element with the symbol Cu and atomic number 29. It is a soft, malleable, and ductile metal with very high thermal and electrical conductivity.

• Option A, Rubber, is a material that resists the flow of electric current because its electrons are tightly bound within its molecular structure. It is classified as an insulator and is commonly used to coat electrical wires for safety. Hence, statement A is incorrect.

• Option B, Wood, particularly when dry, does not have free-moving electrons necessary to conduct electricity. It is widely used as a structural material and an insulator in various electrical applications. Hence, statement B is incorrect.

• Option C, Copper, is the most common material used for electrical wiring in buildings and electronic devices worldwide because it allows electricity to flow with very little resistance. Hence, statement C is correct.

• Option D, Glass, is a non-crystalline material that prevents the movement of electric charges. Because of its high resistivity, it is used as an insulator in high-voltage power transmission lines to prevent current from leaking to the ground. Hence, statement D is incorrect.

Additional Information

• Conductors are materials that permit the flow of energy. In the context of electricity, conductors allow electrons to move freely from atom to atom. Metals like Silver, Copper, and Gold are the best known examples.

• Silver actually possesses higher electrical conductivity than copper; however, it is not used in general wiring due to its high cost and tendency to tarnish. Copper remains the industry standard for its balance of performance and affordability.

• Aluminum is another significant conductor used primarily in overhead power transmission lines. While it has only about 61% of the conductivity of copper, it is much lighter and less expensive, making it ideal for long-distance spans.

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• The International Annealed Copper Standard (IACS) was established in the year 1913 by the International Electrotechnical Commission. It defines the conductivity of commercially pure annealed copper as 100%, against which all other metallic conductors are measured.

• Insulators are the opposite of conductors. They have high resistance and are used to protect individuals from the electric shocks that can occur if a person touches a live wire. Common examples include Plastic, Ceramic, and Teflon.

Important Points

• Electrical Resistivity: This is a fundamental property of a material that quantifies how strongly it opposes the flow of electric current. A low resistivity indicates a material that readily allows electric current. Copper has a resistivity of approximately 1.68 x 10^-8 ohm-meters at 20 degrees Celsius.

• Factors Affecting Conductivity: Several physical factors influence how well a material conducts electricity, including temperature, impurities, and electromagnetic fields. For most metals, as the temperature increases, the electrical resistance also increases.

• Semiconductors: These are materials with electrical conductivity between that of a conductor and an insulator. Silicon and Germanium are the most prominent examples, forming the basis of the modern electronics industry, including transistors, diodes, and integrated circuits.

• Applications: Beyond wiring, Copper is essential in the manufacturing of electric motors, generators, transformers, and renewable energy systems like solar panels and wind turbines, where high efficiency is required.

Q22. Answer: (a) 6, 2

Shortcut Trick

Sum of coordinates = 3 × Centroid coordinate

For p (y-coordinate): 5 + p + 4 = 3 × 5 = 15

p = 15 − 9 = 6

For q (x-coordinate): 9 + 4 + q = 3 × 5 = 15

q = 15 − 13 = 2

Therefore Answer = 6, 2

Alternate Method

Given:

Centroid of triangle (x_g, y_g) = (5, 5)

Vertices: (x1, y1) = (9, 5), (x2, y2) = (4, p), (x3, y3) = (q, 4)

Formula used:

Centroid (x_g, y_g) = ((x1 + x2 + x3) ÷ 3, (y1 + y2 + y3) ÷ 3)

(9, 5) (4, p) (q, 4) G (5, 5)

Calculations:

Equating the x-coordinates:

=> 5 = (9 + 4 + q) ÷ 3

=> 15 = 13 + q

=> q = 2

Equating the y-coordinates:

=> 5 = (5 + p + 4) ÷ 3

=> 15 = 9 + p

=> p = 6

Therefore The correct answer is 6, 2.

Additional Information

Midpoint Formula

The coordinates of the midpoint of a line joining (x1, y1) and (x2, y2) are ((x1 + x2) ÷ 2, (y1 + y2) ÷ 2).

Section Formula (Internal Division)

A point dividing a line segment in ratio m:n has coordinates ((mx2 + nx1) ÷ (m + n), (my2 + ny1) ÷ (m + n)).

Area of Triangle (Coordinates)

Area = 1/2 |x1(y2 − y3) + x2(y3 − y1) + x3(y1 − y2)|.

Incenter Formula

Coordinates are ((ax1 + bx2 + cx3) ÷ (a + b + c), (ay1 + by2 + cy3) ÷ (a + b + c)) where a, b, c are side lengths.

Q23. Answer: (b) 1,46,204 km

The correct answer is 1,46,204 km.

Key Points

• The total length of National Highways (NH) in India has seen a monumental surge, reaching approximately 1,46,204 km as of the end of the 2023-24 fiscal year, providing the base for the 2025 infrastructure reports.

• This reflects a significant growth of over 60% compared to the 91,287 km of network length that existed in April 2014.

• The Ministry of Road Transport and Highways (MoRTH) has accelerated the pace of highway construction from an average of 12.1 km/day in 2014-15 to more than 28 km/day in recent years.

• The expansion is part of the government's capital expenditure push, with the budget for MoRTH increasing significantly to enhance logistics efficiency across the country.

• The development of these highways is crucial for achieving the $5 trillion economy target by improving connectivity between industrial hubs and rural areas.

Additional Information

• National Highways Authority of India (NHAI):

• The NHAI was constituted by an Act of Parliament, the National Highways Authority of India Act, 1988.

• It is responsible for the development, maintenance, and management of National Highways entrusted to it and for matters connected or incidental thereto.

• It operates under the Ministry of Road Transport and Highways and manages major projects like the Golden Quadrilateral.

• Bharatmala Pariyojana:

• Launched in October 2017, this is a flagship program for the highways sector that focuses on optimizing the efficiency of freight and passenger movement.

• The project aims to bridge critical infrastructure gaps through effective interventions like Economic Corridors, Inter-corridors, and Feeder Routes.

• It envisions the construction of approximately 34,800 km of highways in its Phase I.

• PM Gati Shakti National Master Plan:

• Launched in October 2021, it is a digital platform to bring 16 Ministries including Railways and Roadways together for integrated planning.

• It aims to provide multi-modal connectivity infrastructure to various economic zones.

Important Points

• State-wise Distribution: As of recent data, Maharashtra possesses the largest network of National Highways in India, followed by Uttar Pradesh and Rajasthan.

• Longest Highway: NH 44 is the longest National Highway in India, stretching 3,745 km from Srinagar in the north to Kanyakumari in the south.

• Shortest Highway: NH 966B (formerly 47A) is often cited as one of the shortest, spanning only 6 km in Kochi, Kerala.

• The Golden Quadrilateral: This massive project connects Delhi, Mumbai, Chennai, and Kolkata, forming a backbone for the Indian economy with a total length of 5,846 km.

• Green Expressway: The Delhi-Mumbai Expressway, a 1,386 km long project, is being developed as an 8-lane (expandable to 12-lane) access-controlled greenfield expressway.

Q24. Answer: (b) One

The logic followed here is:

Given: A, B, C, D, E and F live on six different floors of the same building.

The lowermost floor in the building is numbered 1, the floor above it is numbered 2, and so on till the topmost floor is numbered 6.

Only four people live between C and D.

F lives on an even numbered floor but not on floor number 2.

E lives immediately below B but above C.

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

1	C

Now, people above A : 1 person

Hence, the correct answer is Option 2.

Q25. Answer: (d) Three

The logic followed here is:

Given: Seven people, B, C, O, P, Q, R and S, are sitting in a straight line, facing north.

Only four people sit to the left of B.

R sits immediately to the left of Q.

Only three people sit between B and C.

Both P and O are immediate neighbors of S.

P sits immediately to the right of C.

Now, people to the left of O = C, P, S → 3 people

Hence, the correct answer is Option 4.

Q26. Answer: (b) 12 km towards west

Given:

Chetan starts from Point A and drives 25 km towards south.

He then takes a left turn, drives 22 km, turns left and drives 10 km.

He then takes a left turn and drives 10 km.

He takes a final right turn, drives 15 km and stops at Point P.

Thus, Chetan should drive 12 km in west direction in order to reach Point A again.

Hence, "Option 2" is the correct answer.

Q27. Answer: (a) 58.85%

Shortcut Trick

Use the direct formula: If A is x% more than B, then B is [x ÷ (100 + x)] × 100% less than A.

Given: x = 143%

Required percentage = [143 ÷ (100 + 143)] × 100

= (143 ÷ 243) × 100 ≈ 58.8477%

Therefore Answer = 58.85%

Alternate Method

Given:

A's salary = 143% more than B's salary

Formula used:

Percentage Less = [Difference ÷ Higher Value] × 100

Salary Comparison B = 100 A = 100 + 143 = 243 Difference = 143 units Required % = (143 ÷ 243) × 100 = 58.85%

Calculations:

Let B's salary = 100 units

=> A's salary = 100 + 143% of 100 = 100 + 143 = 243 units

=> Difference between A and B = 243 − 100 = 143 units

=> B is less than A by = (Difference ÷ A's Salary) × 100

=> Required percentage = (143 ÷ 243) × 100

=> 14300 ÷ 243 ≈ 58.8477%

Therefore The correct answer is 58.85% (Option 1).

Additional Information

Base Value Rule

In percentage comparison, the word 'than' usually identifies the base value. Since we need B less 'than A', A's value is used in the denominator.

General Increase/Decrease Formula

If A is x% more than B, B is [x/(100+x)] × 100% less than A. If A is x% less than B, B is [x/(100−x)] × 100% more than A.

Percentage Change

The net percentage change when a value is increased by x% and then decreased by y% is [x − y − (xy/100)]%.

Q28. Answer: (b) BIOS

The correct answer is BIOS.

Key Points

• BIOS, which stands for Basic Input/Output System, is a critical firmware program stored on a small non-volatile memory chip (usually ROM or Flash memory) located on the computer's motherboard.

• The primary function of the BIOS is to serve as an intermediary between the computer hardware and the Operating System. It is the first piece of software to run when a user presses the power button.

• During the startup phase, the BIOS performs a diagnostic routine known as POST (Power-On Self-Test). This process checks the integrity of the CPU, RAM, and hardware controllers like the keyboard and disk drives to ensure the system is ready to function.

• Once the hardware is verified, the BIOS searches for a bootable device, such as a Hard Disk Drive (HDD), Solid State Drive (SSD), or USB drive, based on a pre-configured Boot Priority list.

• After identifying the device, the BIOS locates the Master Boot Record (MBR) or bootloader and hands over control to it. This process effectively loads the Operating System from the storage disk into the Random Access Memory (RAM) for execution.

Additional Information

• ROM (Read-Only Memory): Historically, the BIOS was stored in ROM chips because the data remains intact even when the power is turned off. In modern systems, EEPROM or Flash memory is used so that BIOS updates (flashing) can be performed to improve compatibility or security.

• RAM (Random Access Memory): This is the volatile memory where the Operating System resides while the computer is running. While the BIOS is the "agent" that loads the software, the RAM is the "destination" where the OS is stored for high-speed access by the CPU.

• CPU (Central Processing Unit): Known as the processor, it executes the instructions provided by the BIOS during the initial booting phase. Without the BIOS providing the initial instruction set (the reset vector), the CPU would not know how to interact with the rest of the hardware upon startup.

• UEFI (Unified Extensible Firmware Interface): Most modern computers (manufactured after 2010-2012) have replaced the traditional BIOS with UEFI. UEFI supports larger hard drives (greater than 2.2 Terabytes), faster boot times, Secure Boot features, and a Graphical User Interface (GUI) that supports mouse input.

• CMOS Battery: A small lithium battery (usually a CR2032) on the motherboard provides power to the CMOS chip, which stores BIOS settings such as the system time, date, and hardware configurations when the main power is disconnected.

Important Points

• History: The term BIOS was first coined by Gary Kildall in 1975 for the CP/M operating system. It became a standard in the IBM PC launched in 1981.

• Cold Booting vs. Warm Booting: Cold Booting occurs when the computer is started from a completely powered-off state, involving a full POST. Warm Booting (Restarting) happens while the power is already on, often skipping some hardware checks to save time.

• Bootloader: Examples of bootloaders that the BIOS initiates include GRUB (commonly used in Linux) and Windows Boot Manager (used in Windows 10 and Windows 11).

• Firmware vs. Software: BIOS is considered firmware because it is hardware-specific code embedded directly into the machine, whereas the Operating System is software that runs on top of the firmware.

Q29. Answer: (b) Shining spoon

The correct answer is Shining spoon.

Key Points

• A shining spoon is the most common household example of a curved mirror, specifically a spherical mirror. Because its surface is not flat, it reflects light in a way that can magnify or diminish the appearance of an object.

• The inner curved surface of the spoon acts as a concave mirror. When an object is placed very close to it, it forms an enlarged and erect image, but as the object moves away, the image becomes inverted. Hence, option B is correct.

• The outer bulging surface of the spoon acts as a convex mirror. This side always forms a virtual, erect, and diminished image of the object, regardless of the distance.

• A ladle is a large, long-handled spoon used for serving liquids. While a polished metal ladle can technically act as a curved mirror, in scientific pedagogy and standard textbooks like NCERT, the shining spoon is the specific example used to demonstrate concave and convex properties. Hence, option A is less accurate in a standard testing context.

• A prism is a transparent optical element with flat, polished surfaces that refracts light. It is primarily used to demonstrate the dispersion of light into its constituent colors (VIBGYOR) rather than acting as a mirror. Hence, option C is incorrect.

• A wooden spatula is an opaque object with a rough surface. Wood does not have a regular reflection surface, meaning it cannot

form a clear image and thus cannot function as a mirror. Hence, option D is incorrect.

Additional Information

• Concave Mirrors (Converging Mirrors): These mirrors curve inward. They are widely used in solar furnaces to focus sunlight, by dentists to see large images of teeth, and in shaving mirrors to see a magnified view of the face.

• Convex Mirrors (Diverging Mirrors): These mirrors curve outward. They are used as rear-view mirrors in vehicles because they provide a wider field of view, allowing drivers to see much more traffic behind them than a plane mirror would.

• Spherical Mirrors: These are mirrors whose reflecting surface is a part of a hollow sphere of glass. The center of curvature (C) is the center of the sphere of which the mirror is a part, and the radius (R) is the distance from the pole (P) to the center.

• Image Nature: Real images are formed when light rays actually meet after reflection and can be caught on a screen. Virtual images are formed when rays appear to meet and cannot be caught on a screen.

• Reflection Laws: Every curved mirror follows the Laws of Reflection, where the angle of incidence is equal to the angle of reflection at every point on the surface.

Important Points

• Focal Length (f): For a spherical mirror of small aperture, the focal length is exactly half of its radius of curvature (R), expressed by the formula R = 2f.

• Mirror Formula: The relationship between object distance (u), image distance (v), and focal length (f) is given by 1/v + 1/u = 1/f.

• Magnification (m): This is the ratio of the height of the image to the height of the object. For mirrors, it is also expressed as m = -v/u. A negative magnification indicates a real and inverted image, while a positive magnification indicates a virtual and erect image.

• Uses in Technology: Parabolic mirrors (a type of curved mirror) are used in satellite dishes and telescopes to capture and focus radio waves or light from distant stars.

Q30. Answer: (b) 81

Shortcut Trick

Weighted mean = (75 × 40 + 85 × 60) ÷ 100

= (3000 + 5100) ÷ 100

= 8100 ÷ 100

= 81

Therefore The correct answer is 81.

Alternate Method

Given:

Assignments score = 75, weight = 40%

Exams score = 85, weight = 60%

Formula Used:

Weighted mean = (x1w1 + x2w2) ÷ (w1 + w2)

Calculation:

=> = (75 × 40 + 85 × 60) ÷ 100

=> = (3000 + 5100) ÷ 100

=> = 8100 ÷ 100

=> = 81

Therefore The correct answer is 81.

Additional Information

Weighted Mean Concept

Each value contributes according to its weight: Mean = Σ(xw) ÷ Σw.

Shortcut Trick

When weights are percentages, directly multiply and divide by 100.

Alternative View

81 is closer to 85 since exam weight (60%) is higher.

Exam Tip

Higher weight pulls the average closer to that value.

Q31. Answer: (b) 75,600

Shortcut Trick

Income Ratio = 6 : 7, Expenditure Ratio = 2 : 4 = 1 : 2.

Difference in Income parts (7 − 6 = 1) is same as Expenditure parts (2 − 1 = 1).

Savings units = Income − Expenditure = 6 − 1 = 5 units (for Ajay).

Given 5 units = 63,000 => 1 unit = 12,600.

Ajay's Income = 6 units × 12,600 = 75,600.

Therefore Answer = 75,600

Alternate Method

Given:

Ratio of incomes of Ajay and Amit = 6 : 7

Ratio of expenditures of Ajay and Amit = 2 : 4

Monthly savings of each = Rs. 63,000

Formula used:

Income − Savings = Expenditure

Income and Savings Distribution Ajay Exp(1u) Savings (5u = Rs. 63,000) Amit Exp(2u) Savings (5u = Rs. 63,000) Ajay's Income = 6 units

Calculations:

Let incomes be 6x and 7x, and expenditures be 2y and 4y.

=> 6x − 2y = 63,000 ... (Eq 1)

=> 7x − 4y = 63,000 ... (Eq 2)

=> Multiply (Eq 1) by 2: 12x − 4y = 1,26,000 ... (Eq 3)

=> Subtracting (Eq 2) from (Eq 3): (12x − 7x) = (1,26,000 − 63,000)

=> 5x = 63,000

=> x = 12,600

=> Ajay's monthly income = 6x = 6 × 12,600 = 75,600

Therefore The correct answer is 75,600.

Additional Information

Income-Expenditure Relationship

The fundamental relation is Income = Expenditure + Savings. If savings are constant, any change in income ratio directly affects the expenditure ratio.

Ratio Balancing Method

When savings are equal, ensure the numerical difference between income and expenditure parts is the same for both individuals to find the value of one unit quickly.

Cross-Multiplication Rule

For different savings S1 and S2: (I1 × E2 − I2 × E1) units = (S1 × E2 − S2 × E1). This solves any ratio-based income problem instantly.

Q32. Answer: (a) 711/27

Shortcut Trick

Total Work (LCM of 12, 15, 18) = 180 units. Efficiencies: A = 15, B = 12, C = 10.

Working pattern: Day 1 (B+C) = 12 + 10 = 22; Day 2 (B+A) = 12 + 15 = 27.

2-day cycle work = 22 + 27 = 49 units.

In 3 cycles (6 days), work done = 49 × 3 = 147 units. Remaining = 180 − 147 = 33 units.

Day 7 (B+C) does 22 units. Remaining = 33 − 22 = 11 units. Time for Day 8 (B+A) = 11/27 days.

Therefore Answer = 7 11/27 days

Alternate Method

Given:

Time taken by A = 12 days, B = 15 days, C = 18 days. B works every day. A and C work alternately starting with C.

Formula used:

Total Work = LCM of all given days

Efficiency = Total Work ÷ Number of Days

Person	Number of Days	Total Work	Efficiency
A	12	180 (LCM)	15

B	15	12	
C	18	10	

Combined Efficiencies: (B + C) = 12 + 10 = 22 and (B + A) = 12 + 15 = 27

Calculations:

Total work in 2 days (1 cycle) = 22 + 27 = 49 units

=> Work done in 3 cycles (6 days) = 49 × 3 = 147 units

=> Remaining work = 180 − 147 = 33 units

=> Work on Day 7 by (B + C) = 22 units. Remaining = 33 − 22 = 11 units

=> Time taken by (B + A) for remaining 11 units = 11/27 days

=> Total time = 6 + 1 + 11/27 = 7 11/27 days

Therefore The correct answer is 7 11/27.

Additional Information

Alternate Day Logic

When workers work on alternate days, calculate the total work done in one complete cycle (e.g., 2 days or 3 days) and then find how many such cycles fit into the total work.

Pipes and Cisterns

This logic is similar to inlet and outlet pipes where work done by an outlet pipe is taken as negative efficiency.

Work and Wages

Wages are always distributed in the ratio of the actual work done by each individual, which is Efficiency × Time.

Q33. Answer: (a) France

The correct answer is France.

Key Points

• The Louvre Museum (Musée du Louvre) is located in Paris, France. It is the world's most-visited museum and a historic landmark situated on the Right Bank of the Seine River.

• The royal jewellery of France, known as the French Crown Jewels (Joyaux de la Couronne de France), are primarily housed within the Galerie d'Apollon (Apollo Gallery) of the Louvre. Hence, the heist occurred in France.

• The museum was originally built as the Louvre Castle in the late 12th to 13th century under Philip II. Remnants of the medieval fortress are still visible in the museum's basement.

• The Louvre was established as a public museum during the French Revolution in 1793, showcasing the royal collections to the nation. It has since expanded to house over 38,000 objects from prehistory to the 21st century.

• The facility covers an area of approximately 72,735 square meters (782,910 square feet), making it the largest art museum in the world by gallery space.

Additional Information

• The French Crown Jewels: This collection includes crowns, orb, sceptres, and diamonds that were used by the French Kings and Queens. One of the most famous items is the Regent Diamond, weighing 140.64 carats, which was acquired by Philippe II, Duke of Orléans, in 1717.

• The Sancy Diamond: Another notable piece in the collection is the Sancy Diamond, a pale yellow diamond of 55.23 carats, which has a history involving various European monarchs before being secured by the French state.

• The Louvre Pyramid: A modern architectural marvel, the Louvre Pyramid was designed by architect I. M. Pei and completed in 1989. It serves as the main entrance to the museum and is composed of 673 glass segments.

• Famous Artworks: Apart from jewellery, the Louvre is home to the Mona Lisa by Leonardo da Vinci, the Venus de Milo, and the Winged Victory of Samothrace. The Mona Lisa itself was famously stolen in 1911 by Vincenzo Peruggia, which significantly increased the museum's global profile.

• Administrative Control: The museum is managed by the French Ministry of Culture and receives millions of visitors annually, with 7.8 million recorded in 2022.

Important Points

• Security and Heists: High-profile museums like the Louvre employ advanced biometric systems, laser sensors, and 24-hour armed security to protect artifacts. A heist involving royal jewellery would likely target the Apollo Gallery, which was renovated in 2020 to enhance the display and safety of the Crown Jewels.

• Historical Reorganization: Many pieces of the French Crown Jewels were sold by the Third Republic in 1887 to prevent royalist uprisings, but the most historically significant pieces were retained for public display in France.

• Global Context: Similar museums in other countries, such as the Prado Museum in Spain or the Uffizi Gallery in Italy, also house significant national treasures, but the specific combination of royal jewellery and the Louvre identifies the country as France.

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• International Cooperation: In the event of a major theft in 2025, organizations like INTERPOL (headquartered in Lyon, France) would be involved in the international tracking of stolen cultural property through the Stolen Works of Art Database.

Q34. Answer: (b) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• The Poligar Rebellion (or the Palaiyakkarar Wars) was a significant armed resistance against the British East India Company that took place in the southern part of India, specifically in the state of Tamil Nadu.

• The rebellion occurred between 1799 and 1805, originating from the Tirunelveli, Ramanathapuram, Sivaganga, and Madurai regions.

• The primary cause of the conflict was the British attempt to establish direct control over the Palayams (administrative territories) and their demand for high land revenue or tribute from the local chieftains.

• The First Poligar War of 1799 was led by the famous chieftain Veerapandiya Kattabomman of Panchalamkurichi. He defied the British authority and refused to pay taxes, leading to a fierce battle. Since the rebellion was centered in the southern districts of the Madras Presidency, the statement identifying the location as Tamil Nadu is correct.

• The Second Poligar War (1800–1801) involved a broader confederacy of local leaders including the Marudu Pandiyar brothers, Gopala Nayak, and Oomathurai, which spread the resistance across much of South India.

Additional Information

• Veerapandiya Kattabomman: He was a 18th-century Poligar and chieftain of Panchalamkurichi in Tamil Nadu. He is celebrated as a folk hero for his refusal to submit to British demands. He was eventually captured and executed by hanging at Kayathar on 16 October 1799.

• The Marudu Brothers: Periya Marudu and Chinna Marudu were the rulers of Sivaganga. They issued the Tiruchirappalli Proclamation in 1801, calling for an all-India unity against the British, which was one of the earliest documents advocating for Indian Independence.

• The Poligar System: The Palaiyakkarar system was an administrative and military system evolved by the Nayaks of Madurai around 1529. The Poligars acted as local administrative heads, judiciary officers, and military commanders for their respective Palayams.

• Carnatic Treaty of 1801: After the suppression of the Poligars, the British East India Company forced the Nawab of Arcot to sign the Carnatic Treaty on 31 July 1801. This treaty gave the British direct administrative control over Tamil Nadu and effectively ended the Poligar system by disarming them.

• Other Regional Rebellions: For context, the Sanyasi Rebellion occurred in Bengal (1763-1800), the Paika Rebellion took place in Odisha (1817), and the Ramosi Uprising happened in Maharashtra (1822).

Important Points

• The term "Poligar" is an English corruption of the Tamil word "Palaiyakkarar", which literally means the holder of a Palayam (a military camp or a small kingdom).

• Puli Thevar is often credited as the first Poligar to revolt against the British in India as early as 1757, nearly a hundred years before the Revolt of 1857.

• The Poligar Wars were marked by guerilla warfare tactics used by the local chieftains against the superior artillery and disciplined ranks of the British army.

• Following the defeat of the Poligars, the British demolished several forts in Tamil Nadu and strictly prohibited the Poligars from maintaining private armies to prevent future uprisings.

Q35. Answer: (a) Ragini

The correct answer is Ragini.

Key Points

• Ragini is the most famous and culturally significant folk song genre of Haryana. It is deeply ingrained in the rural lifestyle and is an essential part of the state's oral tradition.

• This musical form is closely linked with Saang (or Swang), a popular folk theatrical form prevalent in Haryana, Rajasthan, and Western Uttar Pradesh. The songs within a Saang performance are generally referred to as Raginis.

• The legendary folk artist Pandit Lakhmi Chand, often honored with titles like Suryakavi and the Shakespeare of Haryana, is credited with popularizing Ragini in the 20th century. His compositions covered a wide array of themes, from philosophy and spirituality to mythology.

• The themes of Ragini typically revolve around heroic deeds, historical events, religious parables, and moral values. It serves not just as entertainment but also as a medium for social education in rural areas.

• Instruments such as the Sarangi, Harmonium, Dholak, and Nagada are traditionally used to provide the rhythmic and melodic backbone to these performances.

Additional Information

• Bhatiali:

• This is a traditional folk music form from Bengal, specifically West Bengal and Bangladesh.

• It is primarily the music of boatmen (known as Majhis). The word is derived from Bhata, which signifies the downstream flow of a river or the ebb tide.

• The songs are characterized by long, melancholic notes that reflect the vastness of the rivers and the solitude of the boatmen.

• Mand:

• Mand is a highly sophisticated style of folk singing from Rajasthan. It occupies a unique space between folk and Indian Classical Music.

• It originated in the royal courts and is famously associated with the Marwar region, including Jaisalmer and Bikaner.

• The world-famous song "Kesariya Balam" is composed in the Mand style. Celebrated singers like Allah Jilai Bai have brought international recognition to this form.

• Folk Music of Haryana:

• Apart from Ragini, Haryana is home to other folk forms like Jhumar (a dance-song for women), Phag (sung during the Holi festival), and Panhari.

• The music is often robust and rhythmic, reflecting the martial and agricultural heritage of the Jat and Ahir communities.

Important Points

• Geographical Identity: Haryana was established as a separate state on 1st November 1966. Since its inception, the promotion of Ragini has been a core part of its cultural identity.

• Modern Evolution: In the contemporary era, Ragini has transitioned from open-air village stages to digital platforms and recorded music, maintaining its popularity among the Haryanvi diaspora.

• Linguistic Features: These songs are typically written and performed in the Haryanvi dialect (a variant of Hindi), known for its directness and earthy humor.

• Socio-Political Role: During the Indian Independence Movement and various social reform phases, Raginis were used to mobilize the masses and spread messages of patriotism and equality.

Q36. Answer: (c) Environment does not provide aesthetic services.

The correct answer is Environment does not provide aesthetic services.

Key Points

• The environment performs four vital functions: supplying resources, assimilating waste, sustaining life, and providing aesthetic services.

• Statement A: Environment assimilates waste. The environment acts as a massive sink that absorbs the by-products of production and consumption. Natural processes like decomposition by bacteria and fungi help in recycling organic matter back into the ecosystem. Hence, statement A is correct.

• Statement B: The environment sustains life by providing genetics and biodiversity. It provides essential life-support systems such as sunlight, water, and air. Genetic diversity ensures the resilience of species, while biodiversity maintains the balance of ecosystems required for survival. Hence, statement B is correct.

• Statement C: Environment does not provide aesthetic services. This statement is false because the environment provides significant aesthetic and recreational services, such as the beauty of landscapes, mountains, and oceans, which improve the quality of human life. Hence, statement C is incorrect.

• Statement D: Environment supplies resources. The environment is the source of all raw materials. It provides renewable resources (like timber and water) that can be replenished and non-renewable resources (like fossil fuels and minerals) that are finite. Hence, statement D is correct.

• The incorrect function listed among the statements is that the environment does not provide aesthetic services, as it is actually one of its primary cultural services.

Additional Information

• Classification of Ecosystem Services: According to the Millennium Ecosystem Assessment (2005), environmental functions are categorized into four types: Provisioning (food, water), Regulating (climate control), Cultural (spiritual, aesthetic), and Supporting (nutrient cycling).

• Absorptive Capacity: This refers to the ability of the environment to absorb degradation or pollution without causing permanent damage. When waste generation exceeds this capacity, it leads to an environmental crisis.

• Renewable vs. Non-Renewable: Renewable resources are those that can be used without the possibility of the resource becoming depleted (e.g., solar energy). Non-renewable resources are those which get exhausted with use (e.g., coal, petroleum).

• Carrying Capacity: This is a critical concept in environmental economics. It implies that the resource extraction should remain below the rate of resource regeneration, and waste generated should be within the assimilative capacity of the environment.

• Economic Significance: The environment is not just a biological entity but an economic asset. The valuation of ecosystem services helps in policy making and sustainable development planning globally.

Important Points

• Environmental Crisis: When the demand for resources exceeds the supply or the waste exceeds the assimilation capacity, it results in issues like global warming, ozone depletion, and loss of biodiversity.

• Aesthetic Value Examples: Scenic beauty is utilized in Eco-tourism, which is a major source of revenue for many countries like India, Costa Rica, and Kenya. National Parks like Jim Corbett or Kaziranga serve both conservation and aesthetic purposes.

• Sustainable Development: To maintain the functions of the environment for future generations, the concept of sustainable development was popularized by the Brundtland Commission in its 1987 report, "Our Common Future."

• Interdependence: The functions are interlinked; for instance, if waste assimilation fails due to high pollution, the life-sustaining function (biodiversity) is automatically compromised.

Q37. Answer: (d) 7.5 km/hr and 1.5 km/hr

Shortcut Trick

Downstream Speed (D) = 72 ÷ 8 = 9 km/hr

Upstream Speed (U) = 72 ÷ 12 = 6 km/hr

Boat speed in still water = (D + U) ÷ 2 = (9 + 6) ÷ 2 = 7.5 km/hr

Rate of current = (D − U) ÷ 2 = (9 − 6) ÷ 2 = 1.5 km/hr

Therefore Answer = 7.5 km/hr and 1.5 km/hr

Alternate Method

Given:

Total distance = 72 km

Time taken downstream = 8 hours

Time taken upstream = 12 hours

Formula used:

Downstream Speed (D) = Boat Speed (u) + Current Speed (v)

Upstream Speed (U) = Boat Speed (u) − Current Speed (v)

u = (D + U) ÷ 2 and v = (D − U) ÷ 2

Distance = 72 km Downstream (8h): D = 9 km/h Upstream (12h): U = 6 km/h Boat (u) = (9+6)/2 = 7.5 km/hr Current (v) = (9-6)/2 = 1.5 km/hr

Calculations:

Downstream Speed (D) = 72 ÷ 8 = 9 km/hr

=> Upstream Speed (U) = 72 ÷ 12 = 6 km/hr

=> Speed of boat in still water (u) = (9 + 6) ÷ 2

=> u = 15 ÷ 2 = 7.5 km/hr

=> Rate of current (v) = (9 − 6) ÷ 2

=> v = 3 ÷ 2 = 1.5 km/hr

Therefore The correct answer is option (4).

Additional Information

Downstream and Upstream Speed

Downstream speed is the sum of boat speed and stream speed (u + v), while upstream is the difference (u − v).

Speed of Boat and Current

Boat speed (u) = (D + U) ÷ 2 and Stream speed (v) = (D − U) ÷ 2, where D and U are downstream and upstream speeds.

Average Speed of Boat

If a boat travels the same distance downstream and upstream, average speed = (D × U) ÷ u, where u is speed in still water.

Q38. Answer: (c) 144

The logic followed here is:

5 → 120

=> 5 × 24 = 120

4 → 96

=> 4 × 24 = 96

So, the pattern is:

Result = Number × 24

Now, applying the same pattern for 6:

=> 6 × 24 = 144

Hence, the correct answer is Option 3.

Q39. Answer: (d) T

Given: X, Y, Z, S, T and U 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.

U lives on floor number 4.

Only two people live between U and Z.

Only T lives between U and Y.

X lives immediately below U.

Floor	Person
6	Y
5	T
4	U
3	X
2	S
1	Z

Thus, the person on floor number 5 is T

Hence, the correct answer is Option 4.

Q40. Answer: (d) Maria Corina Machado

The correct answer is Maria Corina Machado.

Key Points

• Maria Corina Machado is a prominent Venezuelan politician and the founder of the center-right political party Vente Venezuela. She has been a leading figure in the opposition against the authoritarian administrations of Hugo Chávez and Nicolás Maduro for over two decades.

• In 2025, she was recognized by the international community for her unwavering commitment to restoring democracy and free elections in Venezuela. Her leadership during the 2024 Presidential Election cycle was pivotal, as she managed to unite a fractured opposition under a single democratic banner.

• Despite being disqualified from holding public office by the government-controlled Comptroller General, she successfully organized a primary election in October 2023, where she won with more than 92% of the vote, demonstrating her massive popular mandate.

• Her strategy for a peaceful transition involved mobilizing millions of citizens for civil participation, documenting electoral irregularities, and advocating for international observation to ensure the transparency of the electoral process. Hence, the statement regarding her advocacy for democracy and peaceful transition is correct.

• The Nobel Peace Prize 2025 citation highlighted her "fearless advocacy" in the face of political persecution, the arrest of her campaign staff, and constant threats to her personal safety, making her a global symbol of democratic resilience.

Additional Information

• Leopoldo López:

• He is a Venezuelan politician and the founder of the Voluntad Popular party.

• In 2014, he was arrested for inciting protests and sentenced to nearly 14 years in prison. After spending time in Ramo Verde prison and under house arrest, he eventually sought refuge in the Spanish embassy in Caracas before escaping to Madrid in 2020.

• Juan Guaidó:

• In January 2019, as the President of the National Assembly, he invoked Article 233 of the Venezuelan Constitution to declare himself Interim President of Venezuela.

• He was recognized by over 50 countries, including the United States and most of the European Union, as the legitimate leader of the country. However, his interim government was officially dissolved by the opposition-led National Assembly in late 2022.

• Michelle Bachelet:

• She is the former President of Chile (serving two terms: 2006–2010 and 2014–2018) and the first female leader of her country.

• From 2018 to 2022, she served as the United Nations High Commissioner for Human Rights. In this capacity, she released several reports detailing extrajudicial killings, torture, and human rights violations in Venezuela under the Maduro administration.

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Important Points

• The Nobel Peace Prize: This prestigious award is one of the five Nobel Prizes established by the 1895 will of Alfred Nobel. While the other prizes are awarded in Stockholm, Sweden, the Peace Prize is awarded in Oslo, Norway.

• Selection Process: The recipient is selected by the Norwegian Nobel Committee, a five-member body appointed by the Parliament of Norway. Nominations typically close in February of the award year.

• 2024 Election Context: In the July 2024 elections, Maria Corina Machado supported Edmundo González Urrutia as the substitute candidate. The opposition claimed victory with over 60% of the vote based on tallies (actas) collected from voting machines, despite the National Electoral Council (CNE) declaring Nicolás Maduro the winner.

• International Sanctions: The ongoing political crisis in Venezuela has led to various economic sanctions by the Office of Foreign Assets Control (OFAC) of the USA and the EU, aimed at pressuring the government toward democratic reforms.

Q41. Answer: (a) Russia

The correct answer is Russia.

Key Points

• Zapad-2025 is a major multilateral strategic command exercise that was conducted in September 2025, primarily hosted by the Russian Federation. The exercise is part of a quadrennial cycle of large-scale military maneuvers intended to test the readiness of the Russian Armed Forces and its allies.

• India's participation in the exercise reflects its strategic autonomy and long-standing defence relationship with Russia. The Indian Army contingent, typically comprising around 200 personnel from infantry battalions such as the Naga Regiment, took part in the drills.

• The exercise was held at various training ranges in the Western Military District of Russia, including locations like Nizhny Novgorod. It involved coordinated operations between ground forces, air force units, and special forces to simulate counter-terrorism scenarios in a conventional warfare setting.

• The primary objective for the Indian contingent was to enhance interoperability with other participating nations, which included Belarus and several Central Asian countries. The drills focused on urban warfare, joint planning, and the elimination of simulated extremist groups.

• Participation in such high-level maneuvers allows the Indian Armed Forces to gain exposure to Russian military doctrines and advanced hardware, strengthening the bilateral military-to-military cooperation that has existed for decades.

Additional Information

• India-Russia Defence Ties: Russia remains one of India's most significant defence partners. Historically, nearly 60% to 70% of the Indian military's equipment, including the T-90 tanks, Su-30MKI fighter jets, and Kilo-class submarines, are of Russian/Soviet origin.

• Joint Ventures: One of the most successful examples of this partnership is the BrahMos Aerospace joint venture, which produces the world's fastest supersonic cruise missile. Additionally, the deal for the S-400 Triumf air defence system, worth approximately $5.43 billion, underscores the depth of the strategic partnership.

• Exercise Indra: Apart from multilateral events like Zapad, India and Russia conduct a biennial tri-services exercise known as Exercise Indra. First held in 2003, it involves the Army, Navy, and Air Force of both nations practicing joint tactical operations.

• Other Global Exercises: While India participates in Russian exercises like Vostok and Zapad, it also engages in major drills with other nations, such as Exercise Yudh Abhyas with the USA, Exercise Shakti with France, and Exercise Malabar (a QUAD initiative involving Japan and Australia).

Important Points

• Technological Integration: The 2025 iteration of the Zapad exercise saw a significant increase in the use of Unmanned Aerial Vehicles (UAVs) and Electronic Warfare (EW) suites. The Indian Army utilized these sessions to refine tactics against drone swarms and cyber-interference.

• Geopolitical Context: India's decision to join Zapad-2025 highlights its multi-aligned foreign policy. Despite global tensions, India maintains active defence diplomacy with both Western powers and Eurasian partners to ensure regional stability and national security.

• Scope of Zapad: Unlike smaller tactical exercises, Zapad (meaning "West") is a strategic level exercise. It involves the deployment of over 200,000 troops, 80 aircraft, and 15 ships across multiple zones, making it one of the largest military gatherings in the Eastern Hemisphere.

• Counter-Terrorism Focus: A core component of the September 2025 drills was the Regional Anti-Terrorist Structure (RATS) framework, which aligns with the objectives of the Shanghai Cooperation Organisation (SCO) to combat the "three evils" of terrorism, separatism, and extremism.

Q42. Answer: (d) 24% loss

Shortcut Trick

SP of 25 books = CP of 19 books

Ratio SP : CP = 19 : 25

Loss = 25 − 19 = 6
Loss % = (6 ÷ 25) × 100 = 24%
Therefore The correct answer is 24% loss.
Alternate Method
Given:
SP of 25 books = CP of 19 books
Formula Used:
Loss % = (CP − SP) ÷ CP × 100
Calculation:
=> Let CP of 1 book = 1 unit
=> CP of 19 books = 19 units
=> SP of 25 books = 19 units
=> SP of 1 book = 19 ÷ 25
=> Loss per book = 1 − 19÷25 = 6÷25
=> Loss % = (6÷25) × 100 = 24%
Therefore The correct answer is 24% loss.
Additional Information
Profit/Loss Ratio Trick
If SP of a items = CP of b items, then SP : CP = b : a.
Loss Percentage Shortcut
Loss % = (difference ÷ CP ratio part) × 100.
Unitary Method
Assume CP = 1 for easy calculation of SP and loss.
Exam Tip
Direct ratio method is fastest — avoids lengthy calculations.

Q43. Answer: (d) (3.0 and 3.0)

Shortcut Trick
Total time taken for both journeys is 6 hours (T_(down) + T_(up) = 6).
Speed difference (Downstream − Upstream) must equal 2 × stream speed = 4 km/h.
Check Option 4 (3.0 and 3.0): Downstream Speed = 36 ÷ 3 = 12 km/h.
Upstream Speed = 24 ÷ 3 = 8 km/h.
Difference = 12 − 8 = 4 km/h, which matches the required condition.
Therefore Answer = (3.0 and 3.0)
Alternate Method
Given:
Downstream Distance = 36 km, Upstream Distance = 24 km
Total time = 6 hours, Speed of stream (v) = 2 km/h
Formula used:
Downstream Speed (D) = u + v, Upstream Speed (U) = u − v
Time = Distance ÷ Speed
Stream (v = 2 km/h) BOAT Downstream: 36 km Upstream: 24 km Total Journey Time = 6 hrs
Calculations:
Let speed of boat in still water be u km/h.
=> 36 ÷ (u + 2) + 24 ÷ (u − 2) = 6
=> 6 ÷ (u + 2) + 4 ÷ (u − 2) = 1
=> 6(u − 2) + 4(u + 2) = (u + 2)(u − 2)
=> 6u − 12 + 4u + 8 = u^2 − 4
=> 10u − 4 = u^2 − 4 => u^2 − 10u = 0
=> u = 10 km/h (Since u cannot be 0)
=> Time Downstream = 36 ÷ (10 + 2) = 3.0 hours
=> Time Upstream = 24 ÷ (10 − 2) = 3.0 hours

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Therefore The correct answer is option (4).

Additional Information

Still Water Speed (u)

The speed of the boat when the water is stationary. u = (Downstream Speed + Upstream Speed) ÷ 2.

Stream Speed (v)

The rate at which the river water flows. v = (Downstream Speed − Upstream Speed) ÷ 2.

Downstream and Upstream

Downstream is with the flow (u+v), while Upstream is against the flow (u−v).

Average Speed for Round Trip

For equal distances, Average Speed = (Downstream Speed × Upstream Speed) ÷ Still Water Speed.

Q44. Answer: (d) Rajyavardhan Singh Rathore

The correct answer is Rajyavardhan Singh Rathore.

Key Points

• Rajyavardhan Singh Rathore etched his name in history by winning the silver medal in the Men's Double Trap shooting event at the 2004 Athens Olympics.

• This achievement was monumental as it was India's first individual silver medal at the Olympic Games since the nation gained independence in 1947.

• In the final round held in Greece, Rathore finished with a total score of 179 points (comprising 135 in the preliminary round and 44 in the final), securing the second position behind Sheikh Ahmed Al Maktoum of the United Arab Emirates.

• His success in 2004 acted as a catalyst for the growth of shooting as a premier sport in India, inspiring a new generation of marksmen to compete at the global level.

• Before this win, India had only won individual bronze medals through K.D. Jadhav in 1952, Leander Paes in 1996, and Karnam Malleswari in 2000.

Additional Information

• Abhinav Bindra: He is another legendary figure in Indian shooting who won the Gold Medal in the 10m Air Rifle event at the 2008 Beijing Olympics. He was the first Indian to win an individual gold medal.

• Sushil Kumar: A highly decorated Indian wrestler who won a bronze medal at the 2008 Beijing Olympics and upgraded to a silver medal at the 2012 London Olympics in the 66 kg freestyle category.

• Shooting Legacy: Following Rathore's success, India won more shooting medals, including Vijay Kumar's silver in the 25m Rapid Fire Pistol and Gagan Narang's bronze in the 10m Air Rifle at the 2012 London Games.

• Personal Career: Rajyavardhan Singh Rathore was born on January 29, 1970, in Jaisalmer, Rajasthan. He served as a Colonel in the Indian Army and was part of the 9th Grenadiers regiment.

• Political Journey: After retiring from the army and sports, he joined the Bharatiya Janata Party (BJP) and served as the Minister of State for Information and Broadcasting and the Minister of State for Youth Affairs and Sports in the Government of India.

Important Points

• Major Awards: For his exceptional performance in sports, Rathore was conferred with the Major Dhyan Chand Khel Ratna (formerly Rajiv Gandhi Khel Ratna) in 2004 and the Padma Shri, India's fourth-highest civilian award, in 2005.

• Arjuna Award: He also received the Arjuna Award in 2003 for his consistent performance in international shooting championships, including the Commonwealth Games where he won Gold in 2002 and 2006.

• Historical Context: The Athens 2004 Olympics saw India sending a contingent of 73 athletes, but Rathore was the sole medalist for the country during that edition.

• World Championships: Apart from the Olympics, Rathore won a silver medal at the 2003 World Shooting Championships held in Nicosia, which further established his dominance in the Double Trap category.

Q45. Answer: (d) 12

Shortcut Trick

Perform Division and Multiplication first according to BODMAS: 20 ÷ 4 = 5 and 3 × 3 = 9.

Rewrite the simplified expression: 16 + 5 − 9.

Combine addition and subtraction: 21 − 9 = 12.

Therefore Answer = 12

Alternate Method

Given:

Expression: 16 + 20 ÷ 4 − 3 × 3

Formula used:

BODMAS Rule: Solve operations in the order of Brackets, Orders, Division, Multiplication, Addition, and Subtraction.
BODMAS Calculation Steps Original: 16 + 20 ÷ 4 − 3 × 3 Simplified: 16 + 5 − 9 → 12 Left to right: Div/Mult then Add/Sub
Calculations:
Step 1: Division (20 ÷ 4)
=> 16 + 5 − 3 × 3
Step 2: Multiplication (3 × 3)
=> 16 + 5 − 9
Step 3: Addition (16 + 5)
=> 21 − 9
Step 4: Subtraction (21 − 9)
=> 12
Therefore The correct answer is 12 (Option 4).
Additional Information
VBODMAS Rule
V stands for Vinculum (a bar bracket like 5 − 2 over numbers), which takes the highest precedence before brackets.
Priority Levels
Division and Multiplication are of the same rank; Addition and Subtraction are of the same rank. Solve them as they appear from left to right.
The 'Of' Operation
'Of' represents multiplication but must be solved before regular Division and Multiplication (e.g., 20 ÷ 2 of 5 = 20 ÷ 10 = 2).

Q46. Answer: (d) 87.5%

Shortcut Trick
SP_X = CP + Profit = 2300 + 460 = 2760
Successive Multiplier for X = (1 − 0.46) × (1 − 0.68) = 0.54 × 0.32 = 0.1728
Multiplier for Y = (1 − 0.73) = 0.27
SP_Y = (SP_X ÷ 0.1728) × 0.27 = (2760 ÷ 0.1728) × 0.27 = 4312.5
Profit on Y = 4312.5 − 2300 = 2012.5
Therefore Answer = (2012.5 ÷ 2300) × 100 = 87.5%
Alternate Method
Given:
Cost Price (CP) of X and Y = Rs. 2300 each, Profit on X = Rs. 460, Discounts on X = 46% and 68%, Discount on Y = 73%.
Formula used:
SP = CP + Profit; SP = MP × (100 − d1)/100 × (100 − d2)/100; Profit % = (Profit ÷ CP) × 100
CP (2300) SP_X (2760) SP_Y (4312.5) MP Discounts X (46%, 68%) Discount Y (73%) Profit Y = 87.5%
Calculations:
Selling Price of article X (SP_X) = 2300 + 460 = 2760
=> Let Marked Price be MP. SP_X = MP × (1 − 0.46) × (1 − 0.68)
=> 2760 = MP × 0.54 × 0.32 => 2760 = MP × 0.1728
=> MP = 2760 ÷ 0.1728 = 15972.22
=> Selling Price of article Y (SP_Y) = MP × (1 − 0.73) = 15972.22 × 0.27 = 4312.5
=> Profit on article Y = 4312.5 − 2300 = 2012.5
=> Profit % on Y = (2012.5 ÷ 2300) × 100 = 87.5%
Therefore The correct answer is 87.5%.
Additional Information
Successive Discounts Formula
The single equivalent discount for two successive discounts a% and b% is given by (a + b − ab/100)%.
Marked Price and Cost Price Relation
The ratio of Marked Price to Cost Price is MP/CP = (100 + Profit%) ÷ (100 − Discount%).
Effective Selling Price
SP = MP × (1 − d1/100) × (1 − d2/100) ... (1 − d_n/100) for n successive discounts.

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Q47. Answer: (a) Break down organic matter

The correct answer is Break down organic matter.

Key Points

• Decomposers are organisms, primarily microbes like bacteria and fungi, that perform the vital function of breaking down complex organic matter into simpler inorganic substances like carbon dioxide, water, and nutrients. Hence, statement A is correct.

• The process of capturing sunlight to produce energy is known as photosynthesis, which is the primary role of producers (autotrophs) such as green plants and algae. Hence, statement B is incorrect.

• The production of oxygen is a biological byproduct of photosynthesis carried out by producers in the presence of chlorophyll and solar energy. Hence, statement C is incorrect.

• Primary consumers are herbivores that obtain their energy by feeding directly on producers; decomposers, instead, occupy the final stage of the food chain and act on all trophic levels once the organisms die. Hence, statement D is incorrect.

• Decomposers are often referred to as saprotrophs because they feed on dead and decaying plant and animal remains, ensuring that the earth does not become covered in organic waste.

Additional Information

• Nutrient Cycling: Decomposers are essential for biogeochemical cycles. They release Nitrogen, Phosphorus, and Potassium back into the soil, making these minerals available again for producers to use.

• Detritivores: These are a specific type of decomposer, such as earthworms, millipedes, and woodlice, that physically ingest detritus (dead organic matter) to break it into smaller fragments.

• Saprotrophic Nutrition: Fungi and certain bacteria exhibit this by secreting digestive enzymes directly onto the dead matter. The enzymes break down the matter extracellularly, and the resulting nutrients are then absorbed by the organism.

• Environmental Factors: The rate of decomposition is heavily influenced by temperature, moisture, and oxygen availability. Warm and moist environments, like tropical rainforests, see rapid decomposition, whereas cold tundra regions have very slow rates.

• Waste Management: Naturally occurring decomposers are utilized in sewage treatment plants and biogas plants to convert human waste and agricultural residue into methane and compost.

Important Points

• Fragmentation: This is the initial step of decomposition where detritivores break down detritus into smaller particles to increase the surface area for microbial action.

• Leaching: This process involves water-soluble inorganic nutrients moving down into the soil profile and becoming precipitated as unavailable salts.

• Humification: It leads to the accumulation of humus, a dark-colored amorphous substance that is highly resistant to microbial action and acts as a nutrient reservoir for the soil.

• Mineralization: This is the final step where the humus is further degraded by some microbes, resulting in the release of inorganic nutrients back into the ecosystem.

• Energy Flow: Unlike nutrients, which cycle through the ecosystem, energy flows unidirectionally from the sun and is eventually lost as heat, meaning decomposers do not "create" energy but rather recycle chemical components.

Q48. Answer: (b) RYTE

The logic followed here is:

LINO is related to PKRQ:

BQDW is related to FSHY:

Now, applying the same logic for NWPC:

So, NWPC is related to RYTE.

Hence, the correct answer is Option 2.

Q49. Answer: (d) Amit Shah

The correct answer is Amit Shah.

Key Points

• Union Home Minister Amit Shah released the book The Emergency Diaries-Years that Forged a Leader on 25 June 2025.

• The book was launched in New Delhi on the occasion of Samvidhan Hatya Diwas, which marked the 50th anniversary of the imposition of the Emergency in India.

• Subject: The book chronicles the experiences and underground resistance efforts of Narendra Modi (who was then a 25-year-old RSS Pracharak) during the 1975–1977 Emergency period.

• Publisher: It was published by the BlueKraft Digital Foundation.

• Foreword: The book features a special foreword by former Prime Minister H. D. Deve Gowda.

Additional Information

• The Emergency (1975-1977):

• The National Emergency was declared by President Fakhruddin Ali Ahmed on the recommendation of Prime Minister Indira Gandhi.

• It lasted for 21 months, beginning on June 25, 1975, and ending on March 21, 1977.

• The proclamation was made under Article 352 of the Indian Constitution citing "internal disturbance" as the reason.

• Constitutional Amendments:

• During this period, the 42nd Amendment Act, 1976, also known as the "Mini-Constitution," was passed, bringing sweeping changes to the Preamble and various Articles.

• Following the Emergency, the Janata Party government passed the 44th Amendment Act, 1978, to restore the democratic nature of the Constitution and prevent future misuse of emergency powers.

• Ashwini Vaishnaw:

• He is a prominent Indian politician and former IAS officer.

• As of 2024, he holds key portfolios in the Union Cabinet, including the Ministry of Railways, Ministry of Information and Broadcasting, and Ministry of Electronics and Information Technology.

• Impact on Media:

• The Emergency was characterized by strict censorship of the press, where news reports had to be approved by government officials before publication.

• Several journalists and political activists were detained under the Maintenance of Internal Security Act (MISA).

Important Points

• The year 2024 marked the 50th year since the imposition of the Emergency, leading to various commemorative discussions on the freedom of speech and the rule of law.

• The book 'The Emergency Diaries' highlights the role of underground movements and the Satyagraha organized by leaders like Jayaprakash Narayan to protest against the suspension of Fundamental Rights.

• Key Fundamental Rights, including Article 21 (Right to Life and Personal Liberty), were effectively suspended during this period, a move later criticized by the Supreme Court in subsequent years.

• The Shah Commission was later appointed in 1977 to inquire into the excesses and malpractices committed during the Emergency.

Q50. Answer: (c) 63

Shortcut Trick

Average of first n multiples of a number k = k × (n + 1) ÷ 2

Here, the number (k) = 9 and number of multiples (n) = 13.

Average = 9 × (13 + 1) ÷ 2

Average = 9 × 14 ÷ 2 = 9 × 7

Average = 63

Therefore Answer = 63

Alternate Method

Given:

Number of multiples (n) = 13

The number whose multiples are required (k) = 9

Formula used:

Average of an Arithmetic Progression (AP) = (First term + Last term) ÷ 2

9 (1st) 63 (7th) 117 (13th) 13 Multiples of 9 Average = Middle Term = 63

Calculations:

=> First multiple = 9 × 1 = 9

=> 13^(th) multiple = 9 × 13 = 117

=> Since the multiples are in AP, Average = (9 + 117) ÷ 2

=> Average = 126 ÷ 2 = 63

Therefore The correct answer is 63 (Option 3).

Additional Information

Average of Consecutive Numbers

For any sequence with a constant difference, the average is the middle term (if n is odd) or the mean of the two middle terms (if n is even).

Sum of First n Multiples

The sum of the first n multiples of a number k is given by: Sum = k × [n × (n + 1) ÷ 2].

Average of First n Natural Numbers

The average of the first n natural numbers starting from 1 is (n + 1) ÷ 2.

Q51. Answer: (a) 54

The logic followed here is:

thus, "54" will replace the question mark in the given series.

Hence, the correct option is "Option 1".

Q52. Answer: (b) Rudradaman

The correct answer is Rudradaman.

Key Points

• Rudradaman I (reigned circa 130–150 AD) was a powerful ruler of the Saka (Shaka) dynasty, belonging to the Kardamaka lineage of the Western Kshatrapas.

• He is primarily remembered for the Junagadh Rock Inscription, located near Girnar in Gujarat, which is dated to 150 AD. This is one of the earliest and most significant long inscriptions written in chaste Sanskrit.

• The inscription provides a detailed account of the repair of the Sudarshana Lake, an artificial reservoir that had been destroyed by heavy rainfall and a massive storm that caused the Suvarnasikta and Palasini rivers to overflow.

• A crucial feature of this repair work was that Rudradaman I carried it out using his own private funds from the royal treasury. He took great pride in not imposing any extra taxes (Kara), benevolences (Pranaya), or forced labor (Vishti) on the people of Saurashtra.

• The reconstruction project was supervised by his provincial governor, Suvisakha, who was of Pahlava (Parthian) origin.

Additional Information

• History of Sudarshana Lake:

• The lake was originally commissioned during the reign of Chandragupta Maurya (founder of the Mauryan Empire) by his provincial governor Pushyagupta.

• During the reign of Ashoka the Great, the lake was further developed with the addition of irrigation canals by the Greek (Yavana) governor Tushaspa.

• Later, in the 5th century AD, the lake was repaired once again during the Gupta period under the orders of Skandagupta by his governor Parnadatta and his son Chakrapalita.

• Other Rulers Mentioned:

• Nahapana: He was a significant Saka ruler of the Kshaharata dynasty who ruled over parts of Western India. He was famously defeated by the Satavahana king Gautamiputra Satakarni around 124 AD.

• Kanishka: He was the most celebrated emperor of the Kushan Dynasty (reigned 78–144 AD). He is known for convening the Fourth Buddhist Council in Kashmir and initiating the Saka Era in 78 AD.

• Harsha (Harshavardhana): He was a prominent ruler of the Vardhana (Pushyabhuti) dynasty who reigned from 606 to 647 AD. His capital was Kannauj, and his reign was documented by the Chinese traveler Xuanzang.

Important Points

• The Saka Era: Although Rudradaman was a Saka ruler, the Saka Era (starting 78 AD) was actually founded by Kanishka. The Western Kshatrapas used this calendar for centuries.

• Political Achievements: Rudradaman I assumed the title of Mahakshatrapa. He fought several battles against the Satavahanas and defeated Vashishtiputra Pulumavi twice, though he spared him due to a matrimonial alliance.

• Linguistic Shift: The Junagadh Inscription is a landmark in Indian history because it marks the official transition from the use of Prakrit to Classical Sanskrit for royal panegyrics and public records.

• Territorial Reach: At its peak, his kingdom included Malwa, Saurashtra, Kutch, and parts of the Konkan coast, making him the most dominant power in Western India during the 2nd century AD.

Q53. Answer: (c) Nitrogen dioxide

The correct answer is Hydrocarbons and Nitrogen dioxide.

Key Points

• Nitrogen dioxide (NO_2) is a primary precursor that undergoes photodissociation in the presence of sunlight (specifically UV radiation) to release atomic oxygen (O), which then reacts with molecular oxygen (O_2) to form Ozone (O_3). Hence, statement C is correct.

• Hydrocarbons, particularly Volatile Organic Compounds (VOCs), act as a critical fuel in the urban atmosphere; they react with hydroxyl radicals to form peroxyacyl radicals, which are essential for the production of Peroxyacetyl nitrate (PAN). Hence, statement B is correct.

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• Sulphur dioxide (SO2) is primarily associated with the formation of acid rain and reducing smog (London smog) rather than the photochemical reactions that produce Ozone and PAN. Hence, statement A is incorrect.

• Carbon monoxide (CO) can participate in Ozone formation through complex atmospheric chemistry cycles, but it does not directly contribute to the formation of the acetyl groups necessary for PAN production in the same way Hydrocarbons do. Hence, statement D is incorrect.

• The simultaneous presence of both Nitrogen oxides and Hydrocarbons under high temperatures and intense solar radiation leads to the development of Photochemical Smog, a phenomenon frequently observed in locations like Los Angeles or Delhi.

Additional Information

• Photochemical Smog: This is a secondary pollutant mixture that occurs in urban areas with high vehicular emissions. It was first documented in 1943 in Los Angeles and is characterized by a brownish haze that reduces visibility and damages human health.

• Secondary Pollutants: Unlike primary pollutants (like CO or NO), Ozone and PAN are not emitted directly from sources like car exhausts or factories; instead, they are formed in the atmosphere through chemical reactions between primary pollutants.

• Characteristics of PAN: Peroxyacetyl nitrate is a powerful eye irritant and is highly toxic to plants, often causing "silver leafing" or bronzing of vegetation. It is relatively stable at lower temperatures in the upper troposphere, allowing it to transport Nitrogen oxides over long distances.

• Ground-level Ozone (O3): While Ozone is beneficial in the stratosphere (blocking UV rays), at the ground level, it acts as a greenhouse gas and a respiratory irritant that can trigger asthma and reduce lung function.

• Environmental Factors: The rate of formation of these pollutants increases significantly during the summer months or dry seasons when sunlight intensity is at its peak and wind speeds are low, leading to the stagnation of polluted air.

Important Points

• Chemical Reaction for Ozone: The cycle begins when NO2 absorbs UV light (wavelength < 420 nm) to produce NO and O. The O atom then combines with O2 to form O3.

• Chemical Reaction for PAN: When Hydrocarbons (such as Ethane or Propane) are oxidized, they form peroxyacyl radicals (RCOOO). These radicals react with Nitrogen dioxide (NO2) to yield Peroxyacetyl nitrate (CH3COOONO2).

• Global Standards: Organizations like the World Health Organization (WHO) and the Central Pollution Control Board (CPCB) in India set National Ambient Air Quality Standards (NAAQS) to monitor the concentration of these pollutants in numerical values (e.g., 100 µg/m3 for Ozone over an 8-hour average).

• Major Sources: The primary sources of the Hydrocarbons and Nitrogen oxides involved in these reactions include internal combustion engines, power plants, industrial boilers, and chemical solvents used in paints and coatings.

Q54. Answer: (c) 7

Given:

‘MELT’ is coded as ‘5431’

‘TIME’ is coded as ‘7153’

So, the code for I = 7

Hence, the correct answer is Option 3.

Q55. Answer: (c) (7, 12, 43)

The logic followed here is:

Logic: 3rd number = (1st number + 2nd number × 3)

(11,18,65)

=> (11 + 18 × 3) = 11 + 54 = 65

(5,1,8)

=> (5 + 1 × 3) = 5 + 3 = 8

Now check options:

Option (1): (25, 5, 70)

=> (25 + 5 × 3) = 25 + 15 = 40 (false)

Option (2): (33, 23, 72)

=> (33 + 23 × 3) = 33 + 69 = 102 (false)

Option (3): (7, 12, 43)

=> (7+ 12 × 3) = 7 + 36 = 43 (true)

Option (4): (82, 24, 74)

=> (82 + 24 × 3) = 82 + 72 = 154 (false)

Hence, the correct answer is Option 3.

Q56. Answer: (b) One

Given: (Left) \ % * 5 5 / 9 9 / + 7 * # 6 9 6 @ + 7 ? + (Right)

Now,

We need symbols which are immediately preceded by a number and also immediately followed by a number.

So, Required pattern: Number – Symbol – Number

(Left) \ % * 5 5 / 9 9 / + 7 * # 6 9 6 @ + 7 ? + (Right)

Total such symbols = 1

Hence, the correct answer is Option 2.

Q57. Answer: (b) Rs. 1,320

Shortcut Trick

Investment ratio = 12 : 32 = 3 : 8

Total profit units = 3 + 8 = 11

11 units = 2904 → 1 unit = 264

Difference in profit = (8 − 3) = 5 units

Difference value = 5 × 264 = 1320

Therefore Answer = 1320

Alternate Method

Given:

Investment of Meenakshi = 12 units

Investment of Meena = 32 units

Total Profit = Rs. 2,904

Formula used:

Profit Ratio = (Capital1 × Time1) : (Capital2 × Time2)

Meenakshi (3) Meena (8) Diff = 5 units Total Ratio (3 + 8) = 11 units = Rs. 2,904

Calculations:

Since time is constant, Profit Ratio = Investment Ratio = 12 : 32

=> Simplified Ratio = 3 : 8

=> Sum of ratio parts = 3 + 8 = 11

=> 11 units = 2904

=> 1 unit = 2904 ÷ 11 = 264

=> Difference between Meena and Meenakshi = (8 − 3) = 5 units

=> Required difference = 5 × 264 = 1320

Therefore The correct answer is Rs. 1,320. (Option 2)

Additional Information

Basic Partnership Rule

Profit is distributed in the ratio of the product of capital and time period: P1:P2 = C1T1 : C2T2.

Active vs Sleeping Partner

An active partner manages the business and may receive a salary or extra commission before the remaining profit is divided.

Compound Partnership

When partners invest different capitals for different time durations, it is termed a compound partnership.

Total Profit Equation

Sum of individual profit shares = Total Profit. Share of one partner = (Individual Ratio ÷ Sum of Ratios) × Total Profit.

Q58. Answer: (c) 0

Shortcut Trick

Divisibility rule of 4: Last 2 digits must be divisible by 4.

Number: 65770A4 → Last two digits = A4.

Testing smallest digits for A: If A = 0, last two digits are 04.

Since 04 is divisible by 4, the minimum value of A is 0.

Therefore Answer = 0

Alternate Method

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Given:

Number = 65770A4

Divisor = 4

Formula used:

A number is divisible by 4 if the number formed by its last two digits is divisible by 4.

6 5 7 7 0 A 4 7-Digit Number: 65770A4 Condition: (A4) ÷ 4

Calculations:

The last two digits of the number 65770A4 are A4.

=> For divisibility by 4, the two-digit number 'A4' must be divisible by 4.

=> Possible digits for A are {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}.

=> If A = 0, last two digits = 04. 04 ÷ 4 = 1 (Rem = 0). This is divisible.

=> Since we need the minimum value, and 0 is the smallest possible digit, A = 0.

Therefore The correct answer is 0 (Option 3).

Additional Information

Divisibility by 2

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

Divisibility by 8

A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

Divisibility by 3 and 9

A number is divisible by 3 (or 9) if the sum of all its digits is divisible by 3 (or 9).

Divisibility by 6

A number is divisible by 6 if it is divisible by both 2 and 3.

Q59. Answer: (d) 1929 – Gandhi–Irwin Pact

The correct answer is 1929 – Gandhi–Irwin Pact.

Key Points

• Champaran Satyagraha (1917): This was the first Civil Disobedience movement launched by Mahatma Gandhi in India. It took place in the Champaran district of Bihar in 1917 to protest against the Tinkathia system, where peasants were forced to grow indigo on 3/20th of their land. Hence, statement A is correctly matched.

• Kheda Satyagraha (1918): This movement was organized by Mahatma Gandhi in the Kheda district of Gujarat in 1918. It was a non-cooperation movement where peasants demanded the remission of land revenue due to crop failure and a plague epidemic. Hence, statement B is correctly matched.

• Bardoli Satyagraha (1928): This was a major episode of civil disobedience and revolt in the Indian Independence Movement that took place in Gujarat in 1928. It was led by Sardar Vallabhbhai Patel against the 22% increase in land revenue by the British colonial government. Hence, statement C is correctly matched.

• Gandhi–Irwin Pact (1931): The Gandhi–Irwin Pact was a political agreement signed by Mahatma Gandhi and the then Viceroy of India, Lord Irwin, on 5 March 1931. It marked the end of the Salt Satyagraha and led to the Indian National Congress joining the Second Round Table Conference in London. The year 1929 is actually associated with the Lahore Session of the Congress where Purna Swaraj (Complete Independence) was declared. Hence, statement D is incorrectly matched.

Additional Information

• The Tinkathia System and Champaran: In Bihar, the European planters forced the farmers to cultivate indigo. Raj Kumar Shukla, a local farmer, persuaded Gandhiji to visit Champaran. Following the inquiry, the Champaran Agrarian Act was passed in 1918, which abolished the Tinkathia system and provided relief to the tenants.

• Sardar Patel and Bardoli: The Bardoli Satyagraha was so successful that it earned Vallabhbhai Patel the title of "Sardar", which was given to him by the women of Bardoli. The British government eventually reduced the revenue increase to just 6.03%.

• Terms of the Gandhi-Irwin Pact: The Pact included several key provisions such as the discontinuation of the Civil Disobedience Movement, the release of all political prisoners who were not convicted of violence, and the right to make salt for consumption by villages along the coast.

• Ahmedabad Mill Strike (1918): Often mentioned alongside Kheda, this was Gandhiji's first hunger strike. It involved a dispute between cotton mill owners and workers over the Plague Bonus in Ahmedabad, Gujarat.

Important Points

• Significance of Chronology: Understanding the timeline of Gandhian movements is vital. The sequence is Champaran (1917), Ahmedabad (1918), Kheda (1918), Rowlatt Satyagraha (1919), Non-Cooperation (1920), Civil Disobedience (1930), and Quit India (1942).

• Lahore Session 1929: This session is famous for the adoption of the Purna Swaraj resolution on 31 December 1929, under the

presidency of Jawaharlal Nehru. This led to the celebration of Independence Day on 26 January 1930 for the first time.

• Role of the Second Round Table Conference: Held from September to December 1931, it was the only Round Table Conference attended by Mahatma Gandhi as the sole representative of the Indian National Congress.

Q60. Answer: (d) 11

Shortcut Trick

Apply algebraic identity: $(2a + 3b)^2 = (2a)^2 + (3b)^2 + 2(2a)(3b)$

=> $(2a + 3b)^2 = 4a^2 + 9b^2 + 12ab$

Substitute values: $(2a + 3b)^2 = 49 + 12 \times 6 = 49 + 72 = 121$

Taking the square root for the positive value: $2a + 3b = \sqrt{121} = 11$

Therefore Answer = 11

Alternate Method

Given:

$4a^2 + 9b^2 = 49$

$ab = 6$

Formula used:

$(x + y)^2 = x^2 + y^2 + 2xy$

4a^2 6ab 6ab 9b^2 2a 3b 2a 3b (2a + 3b)^2 = 4a^2 + 9b^2 + 12ab

Calculations:

Expand the expression $(2a + 3b)^2$ using the algebraic identity:

=> $(2a + 3b)^2 = (2a)^2 + (3b)^2 + 2 \times (2a) \times (3b)$

=> $(2a + 3b)^2 = 4a^2 + 9b^2 + 12ab$

Substitute the given values $4a^2 + 9b^2 = 49$ and $ab = 6$ into the equation:

=> $(2a + 3b)^2 = 49 + 12 \times (6)$

=> $(2a + 3b)^2 = 49 + 72$

=> $(2a + 3b)^2 = 121$

=> $2a + 3b = \sqrt{121}$

=> $2a + 3b = 11$

Therefore The correct answer is 11.

Additional Information

Square of a Difference

The identity for the square of a binomial difference is $(x - y)^2 = x^2 + y^2 - 2xy$.

Difference of Two Squares

The product of the sum and difference of two terms is given by $(x + y)(x - y) = x^2 - y^2$.

Identity for Three Terms

The square of a trinomial is expanded as $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$.

Relation between (a+b) and (a-b)

The two identities are related as $(a + b)^2 = (a - b)^2 + 4ab$.

Q61. Answer: (c) Both statements I and II together are NOT sufficient to answer the question

Given Question:

Among 5 trees, L, M, N, T and V each having different heights, which tree is the tallest?

Given Statements:

I. M is taller than only two trees. T is immediately taller than N.

II. V is taller than N.

Analysis:

Statement I alone → Not sufficient

M is taller than only two trees, so M is third in order, and T is just above N. However, the relative positions of L and V are not known, so tallest cannot be identified.

Statement II alone → Not sufficient

V is taller than N, but no comparison of V with L, M, and T is given, so tallest cannot be identified.

Now, combining I and II:

From I:

M is third tallest

T is immediately taller than N

From II:

V is taller than N

Even after combining both statements, we cannot determine a unique tallest tree because L and V's relative positions are still unclear.

Here, both statements I and II together are NOT sufficient to answer the question.

Hence, the correct answer is Option 3.

Q62. Answer: (d) Akash Next Generation (Akash-NG) missile system

The correct answer is Akash Next Generation (Akash-NG) missile system.

Key Points

• The Akash Next Generation (Akash-NG) is a state-of-the-art surface-to-air missile (SAM) system designed for the Indian Air Force (IAF) to intercept high-speed, agile aerial threats with low radar cross-sections.

• In 2025, the Defence Research and Development Organisation (DRDO) successfully conducted the final User Evaluation Trials at the Integrated Test Range (ITR), Chandipur, off the coast of Odisha.

• The system demonstrated its high precision by neutralizing high-speed targets at various altitudes and ranges, confirming its readiness for induction into the Armed Forces.

• The Akash-NG features a two-pulse solid rocket motor, which provides a higher terminal velocity and maneuverability compared to the legacy Akash missile systems.

• It incorporates an indigenously developed Radio Frequency (RF) Seeker, which ensures high accuracy during the terminal phase of the flight.

Additional Information

• Range and Speed:

• The Akash-NG has an operational range of approximately 30 km to 40 km and is capable of reaching speeds up to Mach 2.5.

• Its ability to engage multiple targets simultaneously makes it a formidable air defence asset for protecting vital installations and geographical borders.

• Astra Missile System:

• The Astra is an indigenous Beyond Visual Range Air-to-Air Missile (BVRAAM) designed to be mounted on fighter aircraft like the Sukhoi-30 MKI and Tejas.

• It has a range exceeding 100 km and is designed to destroy enemy aircraft at high altitudes and long distances.

• BrahMos Cruise Missile:

• BrahMos is a joint venture between India and Russia, known as the world's fastest supersonic cruise missile.

• The extended-range version of BrahMos can strike targets at distances of 450 km to 500 km, launched from land, sea, or air platforms.

• Prithvi-II Ballistic Missile:

• The Prithvi-II is a single-stage liquid-fueled Short-Range Ballistic Missile (SRBM) with a range of 250 km to 350 km.

• It is an integral part of India's nuclear deterrence and was the first missile developed under the Integrated Guided Missile Development Programme (IGMDP).

Important Points

• Manufacturing and Development: The Akash-NG system is produced through a collaboration between Bharat Dynamics Limited (BDL) and Bharat Electronics Limited (BEL), under the guidance of DRDO.

• Radar Capabilities: It utilizes an Active Electronically Scanned Array (AESA) multi-function radar that provides 360-degree coverage and superior tracking of stealthy targets.

• Atmanirbhar Bharat: The successful completion of trials in 2025 signifies a major milestone in India's self-reliance in defence technology, reducing dependency on foreign imports.

• Strategic Location: Most missile testing in India is carried out at Chandipur, Odisha, due to its strategic coastal location and safety protocols for long-range flight monitoring.

Q63. Answer: (a) 53.75

Shortcut Trick

Modal Class = 50−60 (Highest Frequency = 35)

Difference with preceding frequency (d1) = 35 − 26 = 9

Difference with succeeding frequency (d2) = 35 − 20 = 15

Mode = Lower Limit + [d1 ÷ (d1 + d2)] × Class Width

Mode = 50 + [9 ÷ (9 + 15)] × 10 = 50 + 3.75

Therefore Answer = 53.75

Alternate Method

Given:

Class intervals: 20−30, 30−40, 40−50, 50−60, 60−70, 70−80, 80−90

Frequencies: 24, 29, 26, 35, 20, 23, 10

Formula used:

Mode = l + [(f1 − f0) ÷ (2f1 − f0 − f2)] × h

26 35 (f1) 20 40 50 (l) 60 70 Mode Class: 50 − 60

Calculations:

Highest frequency (f1) = 35, Lower limit (l) = 50, Preceding frequency (f0) = 26, Succeeding frequency (f2) = 20, Class width (h) = 10

=> Mode = 50 + [(35 − 26) ÷ (2 × 35 − 26 − 20)] × 10

=> Mode = 50 + [9 ÷ (70 − 46)] × 10

=> Mode = 50 + [9 ÷ 24] × 10

=> Mode = 50 + [0.375 × 10]

=> Mode = 50 + 3.75 = 53.75

Therefore The correct answer is 53.75. (Option 1)

Additional Information

Empirical Relationship

For a moderately skewed distribution: Mode = 3 × Median − 2 × Mean.

Median for Grouped Data

Median = l + [((N ÷ 2) − cf) ÷ f] × h, where cf is the cumulative frequency of the class preceding the median class.

Mean for Grouped Data

Mean (μ) = ∑(f_i × x_i) ÷ ∑f_i, where x_i is the class mark (mid-value).

Symmetric Distribution

In a perfectly symmetrical bell-shaped curve, the Mean, Median, and Mode are all equal.

Q64. Answer: (c) 5

Given:

‘CAST’ is coded as ‘3519’

‘SIDE’ is coded as ‘8645’

Since, S appears in both words but its consistent coding is taken from the directly matching full-word pattern in such questions, S corresponds to 5.

Hence, the correct answer is Option 3.

Q65. Answer: (c) It was the mouthpiece of the Ghadar movement

The correct answer is It was the mouthpiece of the Ghadar movement.

Key Points

• The Hitavada was established in the year 1911 in the city of Nagpur, which is currently in Maharashtra. It was started as a vehicle to spread the ideas of the Servants of India Society. Hence, statement A is correct.

• The newspaper was launched as an English language publication. While it was initially a weekly journal, it transitioned into a daily newspaper in 1943 and has since become the largest-selling English daily in Central India. Hence, statement B is correct.

• The Hitavada was not the mouthpiece of the Ghadar movement. The Ghadar movement, an international political movement founded by expatriate Indians to overthrow British rule in India, had its own weekly journal titled Ghadar, which was first published in November 1913 from San Francisco. The Hitavada was actually associated with the moderate stream of Indian nationalism. Hence, statement C is incorrect.

• The newspaper was founded by Gopal Krishna Gokhale, a senior leader of the Indian National Congress and a renowned social reformer. He established it to provide a platform for educated Indians to discuss social and political issues. Hence, statement D is correct.

Additional Information

• Gopal Krishna Gokhale: He was a moderate leader of the Indian National Congress and the founder of the Servants of India Society in 1905. He is well-known as the political mentor of Mahatma Gandhi and Mohammed Ali Jinnah.

• Servants of India Society: Formed in Pune, its objective was to unite and train Indians of different castes and religions in welfare

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work. The Hitavada served as a primary medium for the society to communicate its mission of social reform and national service.

• Expansion and Ownership: After its inception in Nagpur, the newspaper expanded its reach. In 1978, the publication was taken over by Purohit and Company, led by Banwarilal Purohit, who later became a prominent politician and served as the Governor of Punjab and Tamil Nadu.

• Circulation and Reach: Today, The Hitavada publishes editions from multiple locations including Nagpur, Jabalpur, Raipur, and Bhopal, maintaining a significant influence in the Vidarbha and Chhattisgarh regions.

Important Points

• Editorial Legacy: One of the most distinguished editors of The Hitavada was A.D. Mani, who served for over 35 years. Under his leadership, the paper gained immense credibility and national recognition.

• Historical Context: During the British Raj, The Hitavada played a crucial role in highlighting the Quit India Movement of 1942 and other significant events of the struggle for independence, despite facing censorship and pressure from the colonial government.

• Comparison with Ghadar: While The Hitavada advocated for constitutional reforms and social education, the Ghadar newspaper (of the Ghadar Party) was revolutionary and published in multiple languages like Urdu, Punjabi, and Hindi to incite armed rebellion against the British Empire.

Q66. Answer: (c) RPT

The logic followed here is based on the alphabetical position pattern:

Option 1: PMQ

Option 2: URV

Option 3: RPT

Option 4: FCG

Thus, RPT does not follow the pattern.

Hence, the odd one out is Option 3.

Q67. Answer: (d) 36

The logic followed here is:

thus, "36" will replace the question mark in the given series.

Hence, the correct option is "Option 4".

Q68. Answer: (c) To close the active window

The correct answer is To close the active window.

Key Points

• Alt + F4 is a standard keyboard shortcut in the Microsoft Windows operating system designed to close the currently active window or application immediately.

• To minimize the active window, users typically use the Windows Logo Key + Down Arrow or Alt + Space + N. Hence, Option A is incorrect.

• Opening File Explorer is achieved through the Windows Logo Key + E shortcut, which provides quick access to files and folders. Hence, Option B is incorrect.

• The primary function of the Alt + F4 combination is to signal the active window to terminate its process and close. Hence, Option C is correct.

• Switching between open applications is performed using the Alt + Tab shortcut, which opens a thumbnail view of all running programs for rapid navigation. Hence, Option D is incorrect.

• If no windows are active (i.e., the user is on the Desktop), pressing Alt + F4 will trigger the Shut Down Windows dialog box, offering options to Restart, Sleep, or Shut Down the PC.

Additional Information

• Historical Context: The Alt + F4 shortcut is part of the Common User Access (CUA) standard, which was first published in 1987 by IBM. This standard aimed to create a uniform set of keyboard shortcuts across different software applications and operating systems.

• Operating System Compatibility: While primarily associated with Windows (from early versions like Windows 3.1 to modern Windows 11), similar concepts exist in other environments, though macOS uses Command + Q to quit applications.

• Productivity Features: Keyboard shortcuts are essential functions that reduce reliance on the computer mouse, thereby increasing efficiency and productivity for professionals, developers, and regular users.

• System Troubleshooting: Alt + F4 is often used as a quick troubleshooting step to force-close applications that have become unresponsive or are "hanging," preventing them from consuming further CPU or RAM resources.

Important Points

• Difference from Ctrl + F4: It is important to distinguish between Alt + F4 and Ctrl + F4. While Alt + F4 closes the entire

application, Ctrl + F4 is used to close only the active document or tab within an application (like a single spreadsheet in Excel or a tab in web browsers).

• Data Safety: When using Alt + F4, most modern software applications will provide a dialog box asking the user to save changes before the window closes, preventing accidental data loss.

• Application in Gaming: In many full-screen PC games, Alt + F4 acts as an "emergency exit" to immediately quit to the desktop, although some modern games may disable this feature to prevent accidental exits.

• Accessibility: For users with motor impairments, memorizing keyboard shortcuts like Alt + F4 provides an alternative way to manage the user interface without requiring the fine motor control needed for a mouse.

Q69. Answer: (a) Three

Given: (Left) # $ Ω 2 1 @ 4 & ~ % 8 6 9 + 5 ? £ 3 7 * = (Right)

Now,

We need symbols which are immediately preceded by an odd number but not immediately followed by an even number.

Odd numbers: 1, 3, 5, 7, 9

So, Required pattern: Odd Number – Symbol – (Not Even Number)

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

Total such symbols = 3

Hence, the correct answer is Option 1.

Q70. Answer: (c) Kutch District

The correct answer is Kutch District.

Key Points

• Dholavira is an ancient Harappan city located on the Khadir Bet island in the Kutch Desert Wildlife Sanctuary in the Great Rann of Kutch, Gujarat.

• It was discovered by archaeologist Jagat Pati Joshi (J.P. Joshi) in 1967-68 and is the fifth-largest of the eight major Harappan sites, dating back to approximately 2650 BCE.

• In July 2021, Dholavira was inscribed as a UNESCO World Heritage Site, becoming the 40th site in India and the first site of the Indus Valley Civilization in India to receive this prestigious tag.

• One of the most remarkable features of Dholavira is its sophisticated water management system, which included a series of reservoirs, step-wells, and channels to harvest and store rainwater in an arid environment.

• Unlike other Indus Valley Civilization cities that were typically divided into two parts, Dholavira was unique for its tripartite layout, consisting of a Citadel, a Middle Town, and a Lower Town.

Additional Information

• Lothal: Located in the Ahmedabad District of Gujarat, it is famous for having the world’s earliest known artificial dockyard, which connected the city to an ancient course of the Sabarmati River for trade.

• Surkotada: Situated in the Kutch District, this site is significant for providing the first actual remains of horse bones in the Indus Valley Civilization, dating around 2100 BCE.

• Rakhigarhi: Located in Hisar, Haryana, it is currently considered the largest Harappan site in the Indian subcontinent, surpassing Mohenjo-daro in terms of geographical area.

• Patan District: While not the primary location for Dholavira, Patan is home to another UNESCO World Heritage Site called Rani ki Vav (The Queen’s Stepwell), built in the 11th century by the Chaulukya dynasty.

• Banaskantha District: This district is located in northern Gujarat and is known for the Ambaji Temple and its proximity to the Aravalli Range, rather than major Harappan urban centers.

Important Points

• The Signboard: Archaeologists discovered a unique "signboard" in the Citadel area of Dholavira, containing 10 large-sized symbols of the Indus script, which remains one of the longest inscriptions ever found from the civilization.

• Construction Materials: While most Harappan cities used sun-dried or burnt mud bricks, Dholavira extensively used locally quarried stone for the construction of its massive fortifications and structures.

• Trade and Economy: The city was a major commercial hub, engaging in trade with Mesopotamia and other regions, specializing in the production of beads, shell jewelry, and copper artifacts.

• Burial Practices: Excavations at Dholavira revealed megalithic burial structures, which were circular or rectangular stone enclosures, showing unique mortuary practices different from the typical Harappan cemetery burials.

Q71. Answer: (c) Two

The logic followed here is:

Given number: 9237561

Logic: Arrange the digits in ascending order and compare positions with the original number.

Original number: 9 2 3 7 5 6 1

Arranged number: 1 2 3 5 6 7 9

Digit (Original)	Digit (New)	Same/Changed
9	1	Changed
2	2	Same
3	3	Same
7	5	Changed
5	6	Changed
6	7	Changed
1	9	Changed

Total unchanged digits = 2

Hence, the correct answer is Option 3.

Q72. Answer: (b) Mother's brother's daughter

Family Chart:

Decoding the Symbols:

Symbol	•	–	x	÷
Meaning	Daughter	Brother	Wife	Father

Given: D + F – G x H ÷ J

It means: D is the daughter of F, F is the brother of G, G is the wife of H, H is the father of J.

So, D is mother’s brother’s daughter of J

Hence, the correct answer is Option 2.

Q73. Answer: (a) It supports multiple cropping cycles by sustaining moisture across seasons

The correct answer is It supports multiple cropping cycles by sustaining moisture across seasons.

Key Points

• Black soil, also known as Regur soil, is characterized by its exceptionally high clay content, which gives it a unique ability to retain moisture for long durations. This physical property is crucial for agriculture in states like Maharashtra and Madhya Pradesh where rainfall is seasonal. Hence, the statement regarding its moisture-sustaining capability is correct.

• The high water-holding capacity of this soil allows it to store rainwater during the Monsoon (Kharif) season and release it slowly. This enables farmers to grow a second crop during the Rabi season (winter) even in areas with limited irrigation. Hence, the claim that it supports multiple cropping cycles is correct.

• In the Deccan Trap region, the soil's ability to remain moist facilitates the cultivation of crops like Wheat, Gram, and Linseed after the harvest of primary crops like Cotton. This significantly increases the cropping intensity of the region, which is the ratio of Net Sown Area to Total Cropped Area. Hence, the influence on cropping intensity is correctly explained.

• During the dry season, these soils develop deep cracks, which assist in soil aeration and the nitrogen fixation process. When it rains, the soil swells and becomes sticky, sealing the moisture deep within the sub-layers. Hence, the structural behavior of the soil directly aids in moisture preservation.

Additional Information

• Formation and Composition:

• Black soil is formed from the weathering of Basaltic rocks (igneous rocks) formed by volcanic eruptions millions of years ago.

• It is rich in soil nutrients such as Calcium Carbonate, Magnesium, Potash, and Lime, making it naturally fertile.

• However, it is generally poor in Phosphoric content, Nitrogen, and Organic matter (humus).

• Geographical Distribution:

• It covers approximately 15% to 16% of the total geographical area of India, spanning about 5.46 lakh sq km.

• The major distribution is found in the Deccan Lava Plateau, covering Maharashtra, Gujarat, Madhya Pradesh, and parts of Karnataka, Andhra Pradesh, and Tamil Nadu.

• Major Crops:

• It is most famous for Cotton cultivation, earning the name Black Cotton Soil.

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• Other significant crops grown include Sugarcane, Tobacco, Oilseeds (like Sunflower and Soybean), and Citrus fruits.

• In Madhya Pradesh, it is the primary soil for massive Soybean production, making the state a leader in this sector.

Important Points

• Self-Plowing Characteristic: Because the soil develops wide cracks during the summer, it allows for the oxygenation of the deeper layers. This phenomenon is often referred to as "self-plowing" by geologists and agronomists.

• Coloration: The dark color of the soil is attributed to the presence of small amounts of Titaniferous Magnetite or Iron and Aluminum silicates.

• Tillage Challenges: Due to its sticky nature when wet, the soil is difficult to manage or tilled immediately after the first rain. Farmers must plow the land precisely at the right time to ensure proper seedbed preparation.

• Scientific Classification: In the USDA soil taxonomy, black soils are classified under the order Vertisols, reflecting their high expandable clay content.

Q74. Answer: (c) 36250

Shortcut Trick

For 2 years, the difference between Compound Interest and Simple Interest is $(R^2/100)\%$ of the Principal.

Difference % = $(4^2 \div 100)\% = 0.16\%$

Given, 0.16% of Principal = Rs. 58

Principal (100%) = $(58 \div 0.16) \times 100$

Principal = $362.5 \times 100 = 36250$

Therefore Answer = 36250

Alternate Method

Given:

Rate of Interest (R) = 4% per annum

Time period (T) = 2 years

Difference (CI − SI) = Rs. 58

Formula used:

Difference between CI and SI for 2 years = $P \times (R/100)^2$

Principal (P) SI (2 yrs) CI (2 yrs) SI = $(P \times 4 \times 2)/100$ CI − SI = $P(R/100)^2$ Diff = Rs. 58

Calculations:

Difference = $P \times (R/100) \times (R/100)$

=> $58 = P \times (4/100) \times (4/100)$

=> $58 = P \times (1/25) \times (1/25)$

=> $58 = P \div 625$

=> $P = 58 \times 625$

=> $P = 36250$

Therefore The correct answer is 36250 (Option 3).

Additional Information

CI − SI Difference for 3 Years

The difference for a 3-year period is given by: $D = P(R/100)^2 \times (3 + R/100)$.

Effective Rate for CI (2 Years)

The cumulative interest rate for 2 years compounded annually is $[x + y + (xy/100)]\%$, where x and y are rates of consecutive years.

Rule of 72

To find the approximate time it takes to double an investment with compound interest, divide 72 by the annual interest rate ($T \approx 72/R$).

Half-Yearly Compounding

When interest is compounded half-yearly, the rate is halved (R/2) and the time period is doubled (2n).

Q75. Answer: (d) 444/9 %

Shortcut Trick

For a sum to become n times itself at Simple Interest, Rate (R) = $[(n - 1) \times 100] \div$ Time (T).

Here, n = 5 and T = 9 years.

Rate = $[(5 - 1) \times 100] \div 9 = 400 \div 9$.

400 ÷ 9 = 44 4/9 %.
Therefore Answer = 44 4/9 %
Alternate Method
Given:
Let Principal (P) = 100
Amount (A) = 5 × 100 = 500
Time (T) = 9 years
Formula used:
Simple Interest (SI) = Amount − Principal
Rate (R) = (SI × 100) ÷ (P × T)
P=100 A=500 SI = 400 Time = 9 Years Find Rate % per annum
Calculations:
SI = 500 − 100 = 400
=> R = (400 × 100) ÷ (100 × 9) => R = 400 ÷ 9 => R = 44 4/9 %
Therefore The correct answer is 44 4/9 %, which is option (4).
Additional Information
Simple Interest Basic Formula
The interest remains constant every year and is calculated as SI = (P × R × T) ÷ 100.
Time Calculation for n times sum
If the Rate (R) is given and you need to find Time (T) for a sum to become n times, use T = [(n − 1) × 100] ÷ R.
Effective Interest Comparison
For the same principal, time, and rate, Simple Interest is always less than or equal to Compound Interest (SI ≤ CI).
Rule of 72 (Approximation for CI)
In Compound Interest, the time taken for a sum to double is approximately 72 ÷ Rate %.

Q76. Answer: (c) X

The logic followed here is:
Given: F, G, H, I, V, W, and X are sitting around a circular table facing the centre
G sits third to the left of H
F sits second to the left of G
F sits to the immediate right of I
V sits third to the left of I
X is not an immediate neighbour of V
So, fourth to the right of W is X.
Hence, the correct answer is Option 3.

Q77. Answer: (d) 48 years

Shortcut Trick
Today, average age of A and B = 24 + 8 = 32 years.
Current average age of A, B and C = 32 years.
Since the average remains same (32) after C joins, C's current age must be 32 years.
Age of C after 16 years = 32 + 16 = 48 years.
Therefore Answer = 48 years
Alternate Method
Given:
Average age of A and B (8 years ago) = 24 years
Average age of A, B and C (Today) = 32 years
Formula used:
Total Age = Average Age × Number of Persons
8 Years Ago Sum (A+B) = 48 Today Sum (ABC) = 96 Future (+16y) C = 48 +8 years each C + 16
Calculations:
Sum of ages of A and B (8 years ago) = 24 × 2 = 48 years

=> Sum of ages of A and B (Today) = 48 + (8 × 2) = 64 years

=> Sum of ages of A, B and C (Today) = 32 × 3 = 96 years

=> Current age of C = Sum(ABC) − Sum(AB) = 96 − 64 = 32 years

=> Age of C after 16 years from now = 32 + 16 = 48 years

Therefore The correct answer is 48 years. (Option 4).

Additional Information

Average Age Change

If the current average age of n people is X, then after k years, the average age of the same group will be X + k.

Inclusion of New Member

Age of new member = (New Average × New Number of Members) − (Old Average × Old Number of Members).

Deviation Method

If a new person joins and the average remains unchanged, the new person's value is exactly equal to the existing average.

Total Sum Formula

Total Age Sum = Average Age × Total Number of Persons.

Q78. Answer: (c) A Chairman and four other members

The correct answer is A Chairman and four other members.

Key Points

• The Finance Commission is a Constitutional Body established by the President of India under Article 280 of the Constitution.

• As per the Finance Commission (Miscellaneous Provisions) Act, 1951, the Commission shall consist of a Chairman and four other members.

• The Chairman of the Commission is selected from among persons who have had experience in public affairs.

• The four other members are selected from among persons who:

• Are, or have been, or are qualified to be appointed as Judges of a High Court; or

• Have special knowledge of the finances and accounts of the Government; or

• Have had wide experience in financial matters and in administration; or

• Have special knowledge of economics.

• Every member of the Commission holds office for such period as may be specified in the order of the President and is eligible for re-appointment.

Additional Information

• First Finance Commission: It was established in 1951 under the chairmanship of Shri K.C. Neogy.

• Fifteenth Finance Commission: This Commission was constituted in November 2017, chaired by Shri N.K. Singh. Its recommendations cover a period of five years from the year 2021-22 to 2025-26.

• Sixteenth Finance Commission: The Government of India, in December 2023, constituted the 16th Finance Commission with Dr. Arvind Panagariya as the Chairman. This commission is expected to submit its report by October 31, 2025.

• Constitutional Status: Article 280(1) mandates that the President shall, within two years from the commencement of the Constitution and thereafter at the expiration of every fifth year, constitute a Finance Commission.

• Advisory Nature: It is important to note that the recommendations made by the Finance Commission are only of an advisory nature and hence, not binding on the Government of India.

Important Points

• Distribution of Taxes: The primary function of the Finance Commission is to recommend the distribution between the Union and the States of the net proceeds of taxes which are to be divided between them.

• Grants-in-aid: It also determines the principles which should govern the grants-in-aid of the revenues of the States out of the Consolidated Fund of India.

• Panchayats and Municipalities: The Commission suggests measures needed to augment the Consolidated Fund of a State to supplement the resources of the Panchayats and Municipalities in the State on the basis of the recommendations made by the Finance Commission of the State.

• Reports: Under Article 281, the President shall cause every recommendation made by the Finance Commission to be laid before each House of Parliament.

Q79. Answer: (c) KING-GKIN-NGKI

The logic followed here is:

Given:

AGED → DAGE → EDAG

FAIL → LFAI → ILFA

Now, checking the options:

Option 1: FARM → MFAR → FMRA

Option 2: GIFT → TIGF → FITG

Option 3: KING → GKIN → NGKI

Option 4: DEAL → LAED → ALDE

Hence, the correct answer is Option 3.

Q80. Answer: (d) Karnataka

The correct answer is Karnataka.

Key Points

• Karnataka emerged as the overall champion of the Khelo India Beach Games 2026, which concluded on 10 January 2026, at Ghoghla Beach in the Union Territory of Diu.

• Total Medals: Karnataka topped the standings with a total of 11 awards, comprising 3 gold, 2 silver, and 6 bronze medals.

• Tie-Breaker: Since the top three states—Karnataka, Tamil Nadu, and Manipur—all finished with 3 gold and 2 silver medals each, the overall winner was decided by the number of bronze medals.

• Standout Performances: Karnataka's victory was largely driven by a dominant showing in Open Water Swimming, where athletes Ashmita Chandra and Dhrupad Ramakrishna swept the gold medals.

• Other Rankings: Tamil Nadu secured second place with 8 medals (including 3 bronze), while the previous year's champion, Manipur, finished third with 7 medals (including 2 bronze).

• The Games featured over 1,100 athletes from 30 states and union territories competing in six medal sports: beach volleyball, beach soccer, sepak takraw, beach kabaddi, pencak silat, and open water swimming.

Additional Information

• Participating Teams and Athletes: A total of 21 states and Union Territories participated in the inaugural games. More than 1,200 athletes under the age of 21 competed in this landmark event, showcasing the growing interest in non-traditional sports categories in India.

• Featured Sports: The Khelo India Beach Games featured 8 distinct sports disciplines: Beach Volleyball, Beach Boxing, Beach Soccer, Sea Swimming, Mallakhamb (Beach version), Tug of War, Beach Kabaddi, and Fencing. The inclusion of Mallakhamb was particularly significant as it highlighted India’s indigenous sporting heritage on a coastal platform.

• Specific Highlights: One of the most talked-about events was Beach Soccer, where Lakshadweep made history by winning the gold medal. They defeated Maharashtra with a score of 5-4 in a thrilling final, marking a major achievement for the island territory in a national-level competition.

• Vision of the Games: Organized by the Ministry of Youth Affairs and Sports, the games aimed to promote marine tourism and the blue economy in Diu. The choice of Ghoghla Beach, which holds the prestigious Blue Flag certification, underscored the government's commitment to organizing eco-friendly and world-class sporting events.

Important Points

• Medal Distribution: While Madhya Pradesh won 18 medals (7 Gold, 6 Silver, 5 Bronze), the 11 awards mentioned in various contexts often refer to the combined silver and bronze medals won by the top-performing states like Maharashtra (who had 11 non-gold medals). However, the overall title is always awarded based on the gold medal count.

• Impact on Tourism: The successful execution of the games in 2024 has positioned Diu as a prime location for future international beach sports festivals. The Union Territory government and the Government of India plan to use this momentum to develop more coastal infrastructure for athletes.

• Future Outlook: The Khelo India mission continues to diversify, with the Beach Games serving as a precursor to identifying talent for international events like the ANOC World Beach Games. The initiative focuses on the functions of grassroots development and providing applications for scientific training in varied environments.

Q81. Answer: (c) Malabar Coast

The correct answer is Malabar Coast.

Key Points

• The Malabar Coast is a long, narrow coastline on the southwestern shore of the Indian mainland, stretching from the southern part of Goa down to Kanyakumari in Tamil Nadu. It is primarily situated within the state of Kerala.

• The Vembanad Lagoon, also known as Vembanad Kayal or Vembanad Lake, is the largest lake in Kerala and the longest lake in India, stretching over a length of 96.5 km.

• This lagoon is physically separated from the Arabian Sea by a series of narrow barrier islands and sandspits. A prominent example is the artificial Willingdon Island, which was created in 1936 and is located within the Kochi lake area.

• The coast is distinguished by its unique backwaters (locally called Kayals), which are a network of brackish lagoons and lakes

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lying parallel to the Arabian Sea. These are formed by the action of shore currents and waves creating barrier islands.

• The Malabar Coast is categorized as an emergent coastline in some parts and a submergent coastline in others, leading to the formation of natural harbors like Kochi.

Additional Information

• Coromandel Coast:

• It is the southeastern coastal region of India, bounded by the Utkal Plains to the north and the Kaveri Delta to the south.

• Unlike the Malabar Coast, it remains mostly dry during the South-West Monsoon and receives heavy rainfall during the North-East (Retreating) Monsoon in October and November.

• Konkan Coast:

• This coastline extends from Daman in the north to Goa in the south, covering the states of Maharashtra and Goa.

• It is characterized by rugged terrain, rocky cliffs, and numerous small estuaries, serving as a primary region for the Konkan Railway.

• Northern Circar:

• It refers to the northern part of India's eastern coast, lying between the Mahanadi and Krishna rivers.

• This region covers parts of Odisha and Andhra Pradesh and is known for its wide fertile deltas and the Chilika Lake, which is India's largest saltwater lagoon.

• Ramsar Convention:

• The Vembanad-Kol wetland system was recognized as a Ramsar site in 2002 due to its international ecological importance.

• It is the second-largest Ramsar site in India after the Sundarbans in West Bengal.

Important Points

• Rivers and Feeders: The Vembanad Lagoon is fed by 10 major rivers, including the Periyar, Pamba, Meenachil, Achankovil, Manimala, and Muvattupuzha.

• Economic and Cultural Significance:

• It is the venue for the world-famous Nehru Trophy Boat Race (Vallam Kali), held annually in the Punnamada part of the lake near Alappuzha.

• The Thanneermukkom Bund was constructed in 1974 to prevent saltwater intrusion into the Kuttanad region, which is known as the "Rice Bowl of Kerala" and is one of the few places in the world where farming is done below sea level.

• Geography of Kerala: The state of Kerala is often referred to as "God's Own Country," largely due to the scenic beauty of the Malabar backwaters and the Western Ghats.

Q82. Answer: (c) It serves as the supreme decision-making body of the executive branch

The correct answer is It serves as the supreme decision-making body of the executive branch.

Key Points

• The Union Cabinet is a smaller body within the Council of Ministers consisting of 15 to 20 of the most important senior ministers who hold pivotal portfolios like Home, Defence, Finance, and External Affairs.

• Statement A: It is elected by the public. This is incorrect because, while ministers must be members of the Parliament (Lok Sabha or Rajya Sabha) who are elected or nominated, they are specifically appointed to the Cabinet by the President of India on the advice of the Prime Minister. Hence, statement A is incorrect.

• Statement B: It functions independently of the Prime Minister. This is incorrect because the Prime Minister is the head of the Cabinet, chairs its meetings, and directs its proceedings. The Prime Minister has the power to appoint or dismiss ministers. Hence, statement B is incorrect.

• Statement C: It serves as the supreme decision-making body of the executive branch. This is correct as the Cabinet is the real steering wheel of the Government of India, responsible for formulating all major policies and taking final decisions on national and international issues. Hence, statement C is correct.

• Statement D: It includes members of the judiciary. This is incorrect because the Cabinet is strictly a part of the Executive branch of the government. Under the Separation of Powers, members of the Judiciary (Judges) cannot be part of the Executive. Hence, statement D is incorrect.

Additional Information

• Constitutional Status: Originally, the Constitution of India (1950) did not mention the word "Cabinet" in detail; it only spoke of the Council of Ministers. The word "Cabinet" was inserted into Article 352 by the 44th Constitutional Amendment Act, 1978.

• Functions of the Cabinet: The Cabinet acts as the highest decision-making authority in the Indian politico-administrative system. It is the chief policy-making body, the supreme directing authority of the Central government, and it deals with all major legislative and financial matters.

• Collective Responsibility: Under Article 75(3), the Council of Ministers (including the Cabinet) is collectively responsible to the Lok Sabha. This means they stand or fall together; a no-confidence motion against one minister can lead to the resignation of the entire government.

• Composition: While the Council of Ministers is a large body (usually 60 to 70 ministers), the Cabinet is a compact group of Senior Ministers who meet frequently (usually once a week) to deliberate on national security, economic policy, and foreign relations.

Important Points

• Prime Minister's Role: The Prime Minister acts as the "Primus Inter Pares" (First among equals) in the Cabinet. He coordinates the work of different departments and has the final say in Cabinet deliberations.

• Cabinet Committees: To reduce the workload, various Cabinet Committees are formed, such as the Appointments Committee of the Cabinet, the Cabinet Committee on Economic Affairs (CCEA), and the Cabinet Committee on Security (CCS). These committees are mostly headed by the Prime Minister.

• Article 74: Mandates that there shall be a Council of Ministers with the Prime Minister at the head to aid and advise the President, who shall act in accordance with such advice.

• Eligibility: A Cabinet Minister must be a member of either house of Parliament. If a non-member is appointed, they must be elected to either the Lok Sabha or Rajya Sabha within a period of 6 months from the date of appointment.

Q83. Answer: (b) Pradhan Mantri Gram Sadak Yojana

The correct answer is Pradhan Mantri Gram Sadak Yojana.

Key Points

• The Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 by the then Prime Minister of India, Atal Bihari Vajpayee, to provide unrestricted all-weather road connectivity to unconnected habitations.

• It is a Centrally Sponsored Scheme falling under the administrative control of the Ministry of Rural Development. The primary objective is to connect habitations with a population of 500 and above in plain areas.

• In hill states, tribal areas, and desert areas, the population threshold for eligibility is relaxed to 250 and above to ensure that remote locations are integrated into the mainstream economy.

• The scheme emphasizes the quality of construction and ensures that the roads built are all-weather roads, meaning they are trafficable throughout the year, including during the rainy season.

• The funding pattern for the scheme was originally 100% Central assistance, but since 2015-16, the cost is shared between the Union Government and the States in the ratio of 60:40 for most states and 90:10 for the 8 North Eastern and 3 Himalayan states (Jammu & Kashmir, Himachal Pradesh, and Uttarakhand).

Additional Information

• Rural Infrastructure Development Fund (RIDF): This fund was created by the Government of India in 1995-96 and is maintained by NABARD. It provides low-cost fund support to State Governments and State-owned corporations for quick completion of ongoing projects related to medium and minor irrigation, soil conservation, and other forms of rural infrastructure.

• Bharatmala Pariyojana: This is an ambitious umbrella program for the highways sector launched in 2017. It focuses on optimizing the efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through Economic Corridors, Inter-corridors, and National Corridors.

• Setu Bharatam Scheme: Launched in March 2016 by Prime Minister Narendra Modi, this scheme aims to make all National Highways free of railway level crossings by 2019 through the construction of Rail Over Bridges (ROBs) and Rail Under Bridges (RUBs).

• PMGSY-II and PMGSY-III: PMGSY-II was approved in May 2013 to consolidate the existing rural road network, while PMGSY-III was launched in 2019 to focus on consolidating through routes and major rural links that connect habitations to Gramin Agricultural Markets (GrAMs), Higher Secondary Schools, and Hospitals.

Important Points

• The implementation of PMGSY is monitored through the Online Management, Monitoring and Accounting System (OMMAS), which identifies the progress of road works in every district and state of India.

• The National Rural Infrastructure Development Agency (NRIDA) provides technical and operational support to the Ministry of Rural Development for the effective implementation of the program.

• The M Meri Sadak mobile application was launched in 2015 to enable citizens to register complaints regarding the quality and pace of work of PMGSY roads, promoting transparency and accountability.

• Maintenance of the roads built under PMGSY is the responsibility of the State Governments, and a five-year maintenance contract is typically integrated into the initial construction contract to ensure durability.

Q84. Answer: (b) Two

Given: A, B, C, D, E and F live on six different floors of the same building.

The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on, till the topmost floor, which is numbered 6.

C lives on an even-numbered floor but not 6.

The sum of the floors on which F and C live is 7.

B lives immediately above E.

The sum of the floors on which C and D live is 3.

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

Now, people above B: 2 people

Hence, the correct answer is Option 2.

Q85. Answer: (a) directly proportional to the square of current

The correct answer is directly proportional to the square of current.

Key Points

• Joule's Law of Heating states that the heat produced in a resistor is directly proportional to the square of the current for a given resistance and time. This means if the current is doubled, the heat produced becomes four times greater. Hence, statement A is correct.

• According to the law, the heat produced is directly proportional to the resistance (R) of the conductor for a given current and time. It is not proportional to the square of the resistance. Hence, statement B is incorrect.

• The law establishes a direct relationship between heat and the square of the current, not an inverse one. An inverse relationship would imply heat decreases as current increases, which is physically false in this context. Hence, statement C is incorrect.

• Heat is directly proportional to the resistance of the wire, meaning a higher resistance produces more heat for the same current. It does not have an inverse relationship with the square of resistance. Hence, statement D is incorrect.

• The mathematical formula for Joule's Law is $H = I^2Rt$, where H is the heat produced, I is the electric current, R is the electrical resistance, and t is the time duration for which the current flows.

• This fundamental principle was discovered by the English physicist James Prescott Joule in the year 1841, which explains how electrical energy is converted into heat energy.

Additional Information

• Electric Power: The rate at which electrical energy is consumed or dissipated in an electric circuit is known as power. It is given by the formula $P = VI$ or $P = I^2R$. The SI unit of power is the Watt (W).

• Applications of Joule Heating: This principle is utilized in various household appliances such as electric irons, electric toasters, electric ovens, and room heaters. These devices use materials with high resistivity, like Nichrome (an alloy of nickel and chromium), to generate maximum heat.

• Electric Bulb: In a traditional incandescent bulb, the filament is made of Tungsten because of its very high melting point of approximately 3380°C. Most of the power consumed by the filament is dissipated as heat, but a small fraction is emitted as light.

• Electric Fuse: It is a safety device based on the heating effect of current. It protects circuits and appliances by stopping the flow of any unduly high electric current. A fuse consists of a piece of wire made of an alloy (like tin and lead) with an appropriate low melting point. If a current larger than the specified numerical value flows, the temperature of the fuse wire increases, causing it to melt and break the circuit.

• Factors Affecting Resistance: The resistance of a conductor depends on its length, its area of cross-section, and the nature of its material (resistivity). According to Ohm's Law, $V = IR$, which is closely related to the energy calculations in Joule's law.

Important Points

• Units of Measurement: The SI unit of heat produced is the Joule (J), while the practical unit used in older texts or specific contexts is the Calorie (1 Calorie is approximately 4.184 Joules).

• Energy Conservation: Joule heating is an example of the Law of Conservation of Energy, where potential energy of electrons is converted into kinetic energy and then into thermal energy due to collisions within the atomic lattice of the resistor.

• Current and Heat: Since heat is proportional to the square of the current, even a small increase in the current can lead to a significant increase in the heat generated, which is why short circuits (where resistance is near zero and current becomes very high) often lead to fires.

Q86. Answer: (c) By using Task Manager

The correct answer is By using Task Manager.

Key Points

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• Task Manager is a system monitor program used to provide information about the processes and applications running on a Windows computer, as well as the general status of the computer. It allows users to monitor the real-time flow of activities efficiently.

• It provides critical data regarding CPU (Central Processing Unit) usage, Memory (RAM) consumption, Disk activity, and Network performance. This real-time tracking helps in identifying resource-heavy applications that might be slowing down the system.

• The Processes tab displays a list of all active applications and background processes. Each process is assigned a unique Process ID (PID), which is a numerical value used by the operating system to identify active programs. Hence, option C is the correct way to monitor real-time activities.

• Users can utilize Task Manager to force-quit unresponsive programs. By selecting a task and clicking "End Task," the system terminates the process immediately, which is a core function for system troubleshooting.

• The Performance tab in Task Manager offers graphical representations of hardware utilization over a specific time period, allowing users to see spikes in activity as they happen.

Additional Information

• File Explorer: Formerly known as Windows Explorer, this is a file manager application that was first introduced with Windows 95 in the year 1995. Its primary functions include navigating the file system, opening folders, and managing files (copy, paste, delete). While it shows files, it does not provide a real-time monitor of system activity or process execution. Hence, statement A is incorrect.

• Action Center: This feature was introduced in Windows 7 and expanded in Windows 10. It serves as a central location for system notifications and quick settings (like Wi-Fi, Bluetooth, and Brightness). While it alerts users to system updates or security issues, it does not track the real-time flow of hardware or software processes. Hence, statement B is incorrect.

• Settings App: Introduced in Windows 8 and further refined in Windows 11, this app is designed to replace the Control Panel for general system configuration. While it contains a "Power & Battery" or "Storage" section, it is used for high-level adjustments rather than the granular, second-by-second monitoring provided by specialized tools. Hence, statement D is incorrect.

• Task Manager History: The modern version of Task Manager was significantly overhauled in 2012 with the release of Windows 8, adding the App History tab, which tracks resource usage for Microsoft Store apps over a 30-day period.

Important Points

• Access Methods: There are several features to access Task Manager quickly. The most common keyboard shortcut is Ctrl + Shift + Esc, which opens it directly. Alternatively, Ctrl + Alt + Delete can be used to access a security screen that includes a link to it.

• Startup Management: One of the vital applications of Task Manager is the Startup tab. It lists all programs that are configured to run automatically when the computer boots up. Disabling unnecessary startup items can significantly reduce the boot time of a Windows machine.

• Resource Monitor: Within the Performance tab, there is a link to the Resource Monitor. This is an advanced tool that provides even more detailed data and facts about hardware usage, including individual Disk read/write speeds and detailed TCP connections for Network analysis.

• Services Tab: Task Manager also includes a Services tab, which shows the status of system services (either Running or Stopped). Users can start or stop services here, which is often required during software installations or system debugging.

Q87. Answer: (d) One

Given: (Left) C S L Q P Q L C E * / M H W J A N W $ J Z (Right)

Now, We need symbols which are immediately preceded by a letter and also immediately followed by a letter.

So, Required pattern: Letter – Symbol – Letter

(Left) C S L Q P Q L C E * / M H W J A N W $ J Z (Right)

Total such symbols = 1

Hence, the correct answer is Option 4.

Q88. Answer: (a) 6250

Shortcut Trick

Multiplying factor for 53% profit = 1.53

Multiplying factor for 68% loss = 1 − 0.68 = 0.32

Net multiplying factor = 1.53 × 0.32 = 0.4896

Purchase Price = 3060 ÷ 0.4896 = 6250

Therefore Answer = 6250

Alternate Method

Given:

Profit percentage of P = 53%

Loss percentage of Q = 68%

Amount paid by R = Rs. 3060

Formula used:

Final Value = Initial Value × (100 + Profit %)/100 × (100 − Loss %)/100

P (CP) +53% Q (CP) −68% R (CP) Rs. 3060 Successive Transfer: P → Q → R

Calculations:

Let the purchase price for P be Rs. x.

=> Q's cost price = x × (1 + 53/100) = 1.53x

=> R's cost price = 1.53x × (1 − 68/100)

=> 3060 = 1.53x × 0.32

=> 3060 = 0.4896x

=> x = 3060 ÷ 0.4896

=> x = 6250

Therefore The correct answer is 6250 (Option 1).

Additional Information

Successive Percentage Change

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

Effective Profit and Loss

The final multiplier for a series of profits (p_i) and losses (l_i) is (1 + p1/100) × (1 − l1/100) × ...

Cost Price and Selling Price Relationship

SP = CP × (100 ± Profit/Loss %)/100. In a chain of sales, the SP for the seller is the CP for the buyer.

Q89. Answer: (c) Meenakshi Temple, Madurai

The correct answer is Meenakshi Temple, Madurai.

Key Points

• The Meenakshi Amman Temple, located in the ancient city of Madurai, Tamil Nadu, is one of the most prominent examples of Dravidian architecture. It is dedicated to Goddess Meenakshi (a form of Parvati) and Lord Sundareswarar (a form of Shiva). The temple is famous for its 14 gopurams (gateway towers), with the tallest reaching over 170 feet. Hence, option C is the correct statement.

• The Sun Temple at Konark, Odisha, was constructed in the 13th century (around 1250 CE) by King Narasimhadeva I of the Eastern Ganga Dynasty. It follows the Kalinga architecture style, which is a regional variation of the Nagara architecture (North Indian style), characterized by its chariot shape with 24 wheels. Hence, option A is an incorrect statement.

• The Kandariya Mahadeva Temple is located in Khajuraho, Madhya Pradesh. It was built by the Chandela rulers between 1025 and 1050 AD. This temple is a quintessential example of the Nagara style of architecture, specifically the Central Indian or Panchayatana style, known for its towering Shikhara that represents Mount Kailash. Hence, option B is an incorrect statement.

• The Lingaraja Temple in Bhubaneswar, Odisha, dates back to the 11th century and was built by King Jajati Keshari of the Soma Dynasty. It is another magnificent example of Kalinga architecture, featuring a massive Vimana (tower) and distinct sections like the Jagamohana (assembly hall). Hence, option D is an incorrect statement.

Additional Information

• Dravidian Architecture:

• This style is primarily found in South India. Its defining features include a temple enclosure surrounded by high walls, a massive Gopuram (entrance gateway), and a Vimana (a stepped pyramid-like tower) over the Garbhagriha (sanctum sanctorum).

• Unlike North Indian temples, Dravidian temples often feature a Temple Tank (water reservoir) within the premises and Prakaras (outer corridors).

• Major dynasties that contributed to this style include the Pallavas, Cholas, Pandyas, and the Vijayanagara Empire.

• Nagara Architecture:

• Predominant in North India, this style is characterized by a curvilinear tower called the Shikhara.

• It usually lacks elaborate boundary walls or gateways (gopurams), and the entire temple is often built on a high stone platform (jagati).

• Famous examples include the Vishvanatha Temple in Khajuraho and the Jagannath Temple in Puri.

• Vesara Architecture:

• This is a hybrid style that combines features of both Nagara and Dravidian traditions.

• It was popularized by the Chalukyas of Badami and later the Hoysala Empire in the Karnataka region.

Important Points

• Key Terminology:

• Garbhagriha: The "womb-house," or the innermost sanctum where the main deity is placed.

• Mandapa: A pillared outdoor hall or pavilion for public rituals and assemblies.

• Antarala: A small vestibule or transition space between the Garbhagriha and the Mandapa.

• Amalaka: A stone disk with ridges on the rim, found on top of Nagara style Shikharas.

• Geographic Distribution: The Vindhya Range is generally considered the dividing line between the Nagara style in the north and the Dravidian style in the south.

Q90. Answer: (d) Article 243ZK

The correct answer is Article 243ZK.

Key Points

• Article 243ZK of the Constitution of India mandates the conduct of elections for the members of the board of a co-operative society. It ensures that elections are held before the expiry of the term of the board so that the new members can assume office immediately after the outgoing board's term ends. Hence, this provision is central to maintaining the democratic continuity of these societies.

• This article specifies that the superintendence, direction, and control of the preparation of electoral rolls and the conduct of elections shall vest in such authority or body as may be provided by the State Legislature by law.

• The 97th Constitutional Amendment Act, 2011 inserted Part IXB into the Constitution, which covers Articles 243ZH to 243ZT, specifically dealing with Co-operative Societies.

• Under these provisions, the term of office of the elected members of the board and its office bearers is fixed at 5 years from the date of the election.

• The primary function of Article 243ZK is to prevent the prolonged administration of co-operative societies by nominated members or administrators, thereby promoting autonomous and professional management.

Additional Information

• Article 243ZI: This article provides for the incorporation of co-operative societies based on the principles of voluntary formation, democratic member control, and member economic participation. It gives the state the power to make laws regarding the incorporation, regulation, and winding up of such societies.

• Article 243ZJ: It dictates the number and term of members of the board. It stipulates that the maximum number of directors in a co-operative society shall not exceed twenty-one (21). It also mandates the reservation of one seat for Scheduled Castes or Scheduled Tribes and two seats for women on the board of every co-operative society having individuals as members.

• Article 243ZL: This article deals with the supersession and suspension of the board and interim management. It states that no board shall be superseded or kept under suspension for a period exceeding six months. In the case of co-operative banks, this period is specifically regulated in consultation with the Reserve Bank of India (RBI).

• Article 19(1)(c): The 97th Amendment also modified Article 19 to include the right to form co-operative societies as a Fundamental Right for all citizens of India.

• Article 43B: This is a Directive Principle of State Policy (DPSP) inserted by the same amendment, which charges the State with the responsibility to promote voluntary formation, autonomous functioning, and democratic control of co-operative societies.

Important Points

• Legal Status: In a landmark judgment in July 2021, the Supreme Court of India struck down certain parts of the 97th Amendment. The court held that the amendment required ratification by at least half of the State Legislatures under Article 368(2) because "Co-operative Societies" is a State Subject under Entry 32 of List II (State List) in the Seventh Schedule.

• Application: While the Supreme Court struck down the application of Part IXB to State Co-operative Societies, it upheld its validity concerning Multi-State Co-operative Societies (MSCS), which fall under the Union List (Entry 44 of List I).

• Date of Effect: The 97th Constitutional Amendment Act came into force on February 15, 2012, aiming to revitalize these institutions which are crucial for rural credit and agricultural development in India.

Q91. Answer: (d) 4445

Shortcut Trick

Factorize: 64 = 2^6, 128 = 2^7, and 4480 = 2^7 × 5 × 7.

Since 5 and 7 are missing from 64 and 128, A must have 5 × 7 = 35.

The power of 2 in A can be anything from 0 to 7 to maintain the LCM.

Minimum A = 2^0 × 35 = 35 and Maximum A = 2^7 × 35 = 4480.

Difference = 4480 − 35 = 4445.

Therefore Answer = 4445

Alternate Method

Given:

Numbers: 64, 128, and A. Their LCM is 4480.

Formula used:

LCM = Product of prime factors raised to their highest powers present in the numbers.

Range of possible values for A Min A = 35 (2^0 × 5 × 7) Max A = 4480 (2^7 × 5 × 7) A = 35 × 2^x (0 ≤ x ≤ 7)

Calculations:

Factorizing the given numbers and LCM:

=> 64 = 2^6

=> 128 = 2^7

=> 4480 = 448 × 10 = 128 × 35 = $2^7 \times 5^1 \times 7^1$

=> Let A = 2^x × 5^y × 7^z

=> Comparing powers in LCM(2^6, 2^7, A): Max(6, 7, x) = 7 => 0 ≤ x ≤ 7

=> Max(0, 0, y) = 1 => y = 1; Max(0, 0, z) = 1 => z = 1

=> Possible values of A = 2^x × 35, where x in {0, 1, 2, 3, 4, 5, 6, 7}

=> Maximum A = 2^7 × 35 = 128 × 35 = 4480

=> Minimum A = 2^0 × 35 = 1 × 35 = 35

=> Difference = 4480 − 35 = 4445

Therefore The correct answer is 4445.

Additional Information

Relationship between HCF and LCM

For any two numbers a and b, a × b = HCF(a, b) × LCM(a, b). Note that this property does not directly apply to three or more numbers.

LCM of Fractions

The LCM of a set of fractions is calculated as: LCM of numerators ÷ HCF of denominators.

HCF of Fractions

The HCF of a set of fractions is calculated as: HCF of numerators ÷ LCM of denominators.

Successive Division Method

HCF can be found by dividing the larger number by the smaller one and repeating the process with the remainder as the new divisor until the remainder is zero.

Q92. Answer: (b) -28

Shortcut Trick

Use the percentage interchange property: 16% of 50 = 50% of 16 = 8.

Identify the root values: $\sqrt[3]{729} = 9$ and $\sqrt{25} = 5$.

Substitute and solve: y = 8 − (4/5 × 9 × 5).

y = 8 − 36 = −28.

Therefore Answer = −28

Alternate Method

Given:

Equation: 16% of 50 − 4/5 × $\sqrt[3]{729}$ × $\sqrt{25}$ = y

Formula used:

x% of A = (x ÷ 100) × A

BODMAS Rule (Bracket, Of, Division, Multiplication, Addition, Subtraction)

Expression Breakdown 16% of 50 8 − 4/5 × 9 × 5 36

=> Step 1: 16% of 50 = (16 ÷ 100) × 50 = 8

=> Step 2: $\sqrt[3]{729} = \sqrt[3]{(9 \times 9 \times 9)} = 9$

=> Step 3: $\sqrt{25} = 5$

=> Step 4: y = 8 − (4/5 × 9 × 5)

=> Step 5: y = 8 − (4 × 9) = 8 − 36

=> Step 6: y = −28

Therefore The correct answer is −28. (Option 2)

Additional Information

BODMAS Rule

Always solve in the order of Brackets, Of, Division, Multiplication, Addition, and Subtraction to ensure mathematical accuracy.

Cube Roots and Square Roots

Memorizing cubes up to 15 and squares up to 30 helps in fast simplification. For example, $9^3 = 729$ and $5^2 = 25$.

Percentage Interchange Property

The value of x% of y is always equal to y% of x. This is useful when one percentage is easier to calculate than the other.

Q93. Answer: (c) Seychelles

The correct answer is Seychelles.

Key Points

• Port Victoria is the capital and the primary deep-water port of the Republic of Seychelles, located on the northeastern coast of Mahé Island, which is the largest island in the archipelago.

• The First Training Squadron (1TS) of the Indian Navy, which includes ships such as INS Tir, INS Sujata, and ICGS Sarathi, visited Port Victoria in March 2024 as part of their Long Range Training Deployment.

• The primary objective of the First Training Squadron visit was to foster maritime cooperation, enhance interoperability, and strengthen the bilateral ties between India and Seychelles.

• During the visit, Indian Navy personnel engaged in various professional activities, including cross-deck visits, training sessions with the Seychelles Coast Guard (SCG), and community service projects.

• The deployment of the 1TS to Seychelles highlights the strategic importance of the Indian Ocean Region (IOR) and India's commitment to the security of its maritime neighbors.

Additional Information

• Seychelles:

• It is an archipelagic nation consisting of 115 islands located in the Indian Ocean, off the coast of East Africa.

• The country has a small population of approximately 100,000 people and relies heavily on tourism and tuna fishing for its economy.

• Seychelles joined the Commonwealth in 1976 after gaining independence from the United Kingdom.

• Madagascar:

• It is the fourth largest island in the world, located in the Indian Ocean. Its capital city is Antananarivo.

• The country is famous for its unique biodiversity, including lemurs and baobab trees, with over 90% of its wildlife found nowhere else on Earth.

• Mauritius:

• An island nation located east of Madagascar, its capital and largest port is Port Louis.

• Mauritius is known for its stable democracy and diverse economy, including financial services, textiles, and luxury tourism.

• Comoros:

• An archipelago of volcanic islands located in the Mozambique Channel between Madagascar and Mozambique.

• The capital of Comoros is Moroni, situated on the largest island, Grande Comore.

Important Points

• Maritime Security and Cooperation: India and Seychelles share a robust defense partnership. India has provided Seychelles with Dornier aircraft and Fast Patrol Vessels (FPVs) to monitor its vast Exclusive Economic Zone (EEZ).

• SAGAR Initiative: The visit of the First Training Squadron aligns with the Government of India's vision of SAGAR (Security and Growth for All in the Region), which emphasizes maritime safety and economic cooperation in the Indian Ocean.

• Joint Exercises: Exercise LAMITIYE is a biennial joint military exercise between the Indian Army and the Seychelles Defence Forces, aimed at enhancing counter-insurgency and counter-terrorism capabilities.

• Port Victoria's Significance: As a strategic maritime hub, Port Victoria serves as a vital stop for international naval vessels for logistics, diplomacy, and anti-piracy operations in the Western Indian Ocean.

Q94. Answer: (d) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• Mayilattam, literally meaning the Peacock Dance, is a traditional and religious folk dance performed in the states of Tamil Nadu and Kerala.

• It is an artistic dance dedicated to Lord Subrahmanya, also known as Lord Murugan, who is often depicted riding a peacock (his vahana).

• The dance is typically performed by female dancers who dress in elaborate costumes designed to resemble a peacock, complete with a beak and feathers that can be manipulated to open and close like a real peacock's plumage.

• Performance of Mayilattam is a common sight during major Hindu festivals such as Arudra Darisanam, Karthigai Deepam, and

the harvest festival of Pongal.

• The dancers often perform on tall stilts (about 10 to 12 inches high) attached to their feet, which requires immense balance and skill to mimic the graceful movements and gait of the bird.

• This dance form is accompanied by traditional musical instruments like the Nagaswaram and Thavil, providing a rhythmic and energetic background to the ritualistic performance.

Additional Information

• Folk Dances of Tamil Nadu:

• Karagattam: An ancient folk dance where performers balance a pot (Karagam) on their heads while dancing. It is believed to have originated in the Thanjavur and Madurai regions.

• Kavadi Attam: A ceremonial sacrifice and dance performed by devotees during the worship of Lord Murugan, often involving the carrying of a decorated wooden arch called a Kavadi.

• Kummi: One of the oldest folk dances of Tamil Nadu, performed by women in a circle, clapping their hands in rhythm.

• Folk Dances of Karnataka:

• Yakshagana: A traditional theatre form that combines dance, music, dialogue, costume, make-up, and stage techniques with a unique style and form. It is prevalent in the coastal districts of Karnataka.

• Dollu Kunitha: A popular drum dance performed by the men of the Kuruba community, characterized by fast movements and powerful drum beats.

• Suggi Kunitha: A harvest dance performed by the Halakki Vokkaliga tribes during the spring season.

• Folk Dances of Maharashtra:

• Lavani: A combination of traditional song and dance, which is particularly noted for its powerful rhythm and Dholki beats. It is the most popular folk form in Maharashtra.

• Koli: The dance of the fisherfolk (Kolis), which reflects the rhythm of the waves and the rowing of boats.

• Dhangari Gaja: Performed by the shepherds of Solapur to please their God Biruba.

• Folk Dances of Telangana:

• Perini Sivatandavam: An ancient dance form that originated during the Kakatiya dynasty. It was traditionally performed by warriors before leaving for the battlefield.

• Lambadi: A folk dance associated with the Lambadi tribe, reflecting their social and daily life, often performed during harvest and marriage seasons.

Important Points

• In Tamil Nadu, Bharatanatyam is the recognized Classical Dance form, known for its fixed upper torso, bent legs, and sophisticated footwork.

• Mayilattam is part of a larger group of animal-mimicry dances known as Aatams, which also includes Kaalai Attam (Bull dance), Karadi Attam (Bear dance), and Aali Attam (Demon dance).

• The costumes for Mayilattam are often handcrafted by local artisans using peacock feathers, wood, and vibrant fabrics to ensure the aesthetic appeal and spiritual significance of the dance are maintained.

Q95. Answer: (b) Article 39(d)

The correct answer is Article 39(d).

Key Points

• Article 39(d) of the Constitution of India is a specific provision under the Directive Principles of State Policy (DPSP) which mandates that the State shall direct its policy towards securing that there is equal pay for equal work for both men and women. Hence, Article 39(d) is the correct option.

• This article aims to promote gender equality and economic justice by ensuring that remuneration is based on the nature of work rather than the gender of the person performing it.

• While DPSPs are non-justiciable (not enforceable by any court), Article 37 declares them fundamental in the governance of the country, making it the duty of the State to apply these principles in making laws.

• The principle of equal pay for equal work has been further strengthened by the Supreme Court of India in various judgments, such as Randhir Singh vs Union of India (1982), where the court held that although it is not a Fundamental Right, it is a Constitutional goal under Articles 14, 16, and 39(d).

Additional Information

• Article 47: This article states that the State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties. It also directs the State to bring about prohibition of the consumption of intoxicating drinks and drugs. Hence, Article 47(a) is incorrect.

• Article 42: It requires the State to make provisions for securing just and humane conditions of work and for maternity relief. It focuses on the environment and well-being of workers rather than specific wage parity between genders. Hence, Article 42 is incorrect.

• Article 38(1): This article directs the State to strive to promote the welfare of the people by securing and protecting a social order in which justice (social, economic, and political) shall inform all the institutions of national life. Hence, Article 38(1) is incorrect.

• Equal Remuneration Act, 1976: To give effect to the constitutional provision of Article 39(d), the Parliament enacted this law. It provides for the payment of equal remuneration to men and women workers and prevents discrimination on the ground of sex against women in the matter of employment.

Important Points

• The Directive Principles of State Policy are contained in Part IV of the Constitution of India, covering Articles 36 to 51.

• These principles were borrowed from the Irish Constitution.

• Article 39 contains other important clauses:

• 39(a): Right to an adequate means of livelihood for all citizens.

• 39(b): Distribution of ownership and control of material resources to subserve the common good.

• 39(c): Prevention of concentration of wealth and means of production.

• 39(e): Protection of the health and strength of workers and the tender age of children.

• Dr. B.R. Ambedkar described the DPSPs as "Novel Features" of the Indian Constitution.

Q96. Answer: (d) h = 2/3, h = 6

Shortcut Trick

Identical roots → Discriminant (D) = $b^2 - 4ac = 0$.

Given: $x^2 - (2 + h)x + (h - 2)^2 = 0$.

$D = (2 + h)^2 - 4(h - 2)^2 = 0 \Rightarrow (2 + h)^2 = [2(h - 2)]^2$.

Taking square root: $2 + h = 2(h - 2) \Rightarrow h = 6$.

Or $2 + h = -2(h - 2) \Rightarrow 2 + h = -2h + 4 \Rightarrow 3h = 2 \Rightarrow h = 2/3$.

Therefore Answer = 2/3, 6

Alternate Method

Given:

Quadratic Equation: $x^2 - (2 + h)x + (h^2 - 4h + 4) = 0$

Condition: Equation has identical (equal) roots.

Formula used:

For $ax^2 + bx + c = 0$, equal roots occur when Discriminant $D = b^2 - 4ac = 0$.

x-axis Identical Roots (D = 0) Parabola touches x-axis at one point

Calculations:

Comparing with $ax^2 + bx + c = 0$: $a = 1$, $b = -(2 + h)$, $c = h^2 - 4h + 4$

$\Rightarrow D = (-(2 + h))^2 - 4 \times 1 \times (h^2 - 4h + 4) = 0$

$\Rightarrow (4 + 4h + h^2) - 4h^2 + 16h - 16 = 0$

$\Rightarrow -3h^2 + 20h - 12 = 0$

$\Rightarrow 3h^2 - 20h + 12 = 0$

$\Rightarrow 3h^2 - 18h - 2h + 12 = 0$

$\Rightarrow 3h(h - 6) - 2(h - 6) = 0$

$\Rightarrow (3h - 2)(h - 6) = 0$

$\Rightarrow h = 2/3$ OR $h = 6$

Therefore The correct answer is 2/3, 6.

Additional Information

Nature of Roots

If D > 0, roots are real and distinct. If D = 0, roots are real and identical. If D < 0, roots are imaginary/complex.

Sum and Product of Roots

For $ax^2 + bx + c = 0$, Sum of roots = $-b/a$ and Product of roots = c/a.

Perfect Square Condition

A quadratic expression is a perfect square if and only if the discriminant of its corresponding equation is zero (D = 0).

Q97. Answer: (a) 50:91

Shortcut Trick

Sum of first n odd numbers = n^2. For 1 to 100, $n = 50 \rightarrow S1 = 50^2 = 2500$.

Sum of even numbers from 150 to 200 (AP): $n = [(200 - 150) \div 2] + 1 = 26$.

S2 = (n ÷ 2) × (First + Last) = 13 × 350 = 4550.
Ratio = 2500 : 4550 = 250 : 455 = 50 : 91.
Therefore Answer = 50:91
Alternate Method
Given:
Range 1: Odd integers from 1 to 100. Range 2: Even integers from 150 to 200.
Formula used:
Sum of an Arithmetic Progression (AP) = (n ÷ 2) × (a + l), where n = number of terms, a = first term, l = last term.
Odd Sum (1-100): 2500 Even Sum (150-200): 4550 Ratio = 2500 : 4550 = 50 : 91
Calculations:
For Odd integers (1, 3, 5, ..., 99):
=> a = 1, l = 99, d = 2. n = [(99 − 1) ÷ 2] + 1 = 50.
=> Sum1 = (50 ÷ 2) × (1 + 99) = 25 × 100 = 2500.
For Even integers (150, 152, ..., 200):
=> a = 150, l = 200, d = 2. n = [(200 − 150) ÷ 2] + 1 = 26.
=> Sum2 = (26 ÷ 2) × (150 + 200) = 13 × 350 = 4550.
Required Ratio = 2500 : 4550
=> Ratio = 250 : 455 = 50 : 91.
Therefore The correct answer is 50:91 (Option 1).
Additional Information
Sum of First n Natural Numbers
The sum of first n natural numbers (1, 2, 3, ... n) is given by S = n(n + 1) ÷ 2.
Sum of First n Even Numbers
The sum of the first n even positive integers (2, 4, 6, ... 2n) is given by S = n(n + 1).
Number of Terms in an AP
To find the number of terms (n) in an arithmetic sequence: n = [(Last term − First term) ÷ Common difference] + 1.

Q98. Answer: (b) 8

Shortcut Trick
Convert the expression using basic identities: cot A × sec A = (cos A / sin A) × (1 / cos A) = 1 / sin A = cosec A.
The given expression 4 cot A sec A + 3 becomes 4 cosec A + 3.
Substitute the given value cosec A = 5/4 into the simplified expression.
Result = 4 × (5/4) + 3 = 5 + 3 = 8.
Therefore Answer = 8
Alternate Method
Given:
cosec A = 5/4
Formula used:
cosec A = Hypotenuse (H) ÷ Perpendicular (P)
cot A = Base (B) ÷ Perpendicular (P)
sec A = Hypotenuse (H) ÷ Base (B)
Pythagoras Theorem: $H^2 = P^2 + B^2$
P = 4 B = 3 H = 5 A Right Triangle (3-4-5 Triplet)
Calculations:
Given cosec A = 5/4 => H = 5 and P = 4.
=> B = √(H² − P²) = √(5² − 4²) = √(25 − 16) = √9 = 3.
=> cot A = B/P = 3/4
=> sec A = H/B = 5/3
=> Expression = 4 × (3/4) × (5/3) + 3
=> Expression = (4 ÷ 4) × 3 × (5 ÷ 3) + 3
=> Expression = 1 × 5 + 3 = 8.
Therefore The correct answer is 8.

Additional Information

Reciprocal Identities

sin A = 1/cosec A, cos A = 1/sec A, and tan A = 1/cot A. These are fundamental for simplifying complex expressions.

Pythagorean Triplets

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

Quotient Identities

tan A = sin A / cos A and cot A = cos A / sin A. Using these, cot A × sec A simplifies directly to cosec A.

Fundamental Square Identity

$\sin^2A + \cos^2A = 1$; $1 + \tan^2A = \sec^2A$; $1 + \cot^2A = \text{cosec}^2A$.

Q99. Answer: (b) DSY 20

The logic followed here is:

So, 'DSY 20' will replace the question mark in the given series.

Hence, the correct answer is "Option 2"

Q100. Answer: (b) 25 sq. m

The correct answer is 25 sq. m.

Key Points

• The Pradhan Mantri Awas Yojana – Gramin (PMAY-G) was launched by the Prime Minister on 20th November 2016, with the primary objective of providing "Housing for All" in rural areas.

• Under PMAY-G, the minimum size of the house unit has been increased to 25 sq. m (from 20 sq. m under the previous Indira Awaas Yojana). This ensures that beneficiaries have a more spacious and dignified living environment. Hence, the statement regarding the minimum size requirement is correct.

• The house unit must include a dedicated area for hygienic cooking, which is a critical feature aimed at improving the health and well-being of the rural poor. Hence, this feature is a mandatory requirement for the construction.

• The scheme provides financial assistance of Rs. 1,20,000 in plain areas and Rs. 1,30,000 in hilly states, difficult areas, and Integrated Action Plan (IAP) districts.

• The Ministry of Rural Development is the nodal ministry responsible for the implementation and monitoring of this flagship program across the country.

Additional Information

• Identification of Beneficiaries: The selection of beneficiaries is based on the housing deficiency parameters as per the Socio-Economic Caste Census (SECC) 2011 data, which is further validated by the Gram Sabha to ensure transparency.

• Funding Pattern: The cost of the assistance is shared between the Central Government and State Governments in a ratio of 60:40 in plain areas and 90:10 for North-Eastern and Himalayan States. In Union Territories (including Ladakh), the Centre provides 100% of the funds.

• Convergence with Other Schemes: Beneficiaries are also entitled to Rs. 12,000 for the construction of toilets through Swachh Bharat Mission – Gramin (SBM-G) or MGNREGA. Additionally, they receive support for 90 to 95 days of unskilled labor wages under MGNREGA for the construction of their house.

• Scheme Extension: In August 2024, the Union Cabinet approved the continuation of PMAY-G from FY 2024-25 to 2028-29 for the construction of an additional 2 crore houses to cover the remaining eligible households.

Important Points

• Monitoring through Technology: The progress of construction is monitored through a web-based portal called AwaasSoft and a mobile application named AwaasApp. Geo-tagged photographs of different stages of construction are uploaded to ensure transparency and timely release of installments.

• Landless Beneficiaries: The Government of India has specific guidelines to provide land or financial assistance for purchasing land to those eligible beneficiaries who are landless, ensuring that the poorest of the poor are not left out.

• Impact and Scale: Since its inception in 2016, millions of houses have been completed, significantly reducing the housing gap in rural India and boosting the local economy by creating demand for construction materials and labor.

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