RRB Group D Official Paper (Held On: 26 Dec, 2025 Shift 3) (Previous Year Paper)

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

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

1 question is in Hindi and not printed here. Each one links to the online version, where you can read it.

GENERAL SCIENCE

Q1. The rainbow—a natural spectrum visible in the sky after rain—is primarily caused by which action of water droplets on sunlight?

(a) Only total internal reflection
(b) Refraction and dispersion, followed by internal reflection, and then finally refraction
(c) Scattering after internal reflection
(d) Bending of light due to change in air density

Q2. Which of the following refining methods is most important commercially?

(a) Ionic method
(b) Electrochemical method
(c) Physical method
(d) Chemical method

Q3. Which of the following options best describes the sequence of budding in organisms?

1. Bud formation
2. Cytoplasmic division
3. Nuclear division
4. Bud separation

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

Q4. Which of the following options acts as a reflex action?

(a) Cranium
(b) Spinal cord
(c) Hypothalamus
(d) Pituitary gland

Q5. Which of the following statements about acceleration is correct?

(a) Acceleration is negative when it acts opposite to the direction of velocity.
(b) Acceleration is always positive regardless of its direction.
(c) The SI unit of acceleration is m/s.
(d) Acceleration is positive when it acts opposite to the direction of velocity.

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Q6. Why does the Sun appear to rise earlier and set later than it actually does?

(a) Because the sun moves faster near the horizon
(b) Because the Earth's rotation slows down during sunrise and sunset
(c) Due to the gravitational effect of the Moon on sunlight
(d) Due to atmospheric refraction

Q7. Which of the following represents the correct series of events when a vibrating body produces sound?

(a) Sound → Vibration → Vibration in the medium → Detection by the ear
(b) Vibration → Vibration in the particles of the medium → Propagation of sound wave → Sound is heard
(c) Vibration → Electricity → Sound
(d) Vibration → Light → Heat → Sound

Q8. Which of the following methods will conserve natural forest cover and various forest products?

(a) Deforestation
(b) Grazing in the green forest
(c) Burning of forests
(d) Promoting afforestation

Q9. When a current of 1 A flows through an electric geyser for 10 seconds, 100 J of heat is generated. What is the resistance of the geyser?

(a) 10 Ω
(b) 1 Ω
(c) 100 Ω
(d) 0.1 Ω

Q10. Which enzyme is responsible for breaking down complex sugar molecules into simple glucose in humans?

(a) Pepsin
(b) Bile Juice
(c) Lipase
(d) Amylase

Q11. The intensity of the magnetic field around a straight wire depends on _____.

(a) resistance of the wire
(b) length of wire only
(c) current and distance from the wire
(d) used voltage

Q12. Which of the following options represents the correct sequence of events in sexual reproduction?

(a) Fertilization → Zygote → Embryo → Fetus
(b) Embryo → Zygote → Fertilization → Fetus
(c) Fetus → Embryo → Zygote → Fertilization
(d) Zygote → Fertilization → Embryo → Fetus

Q13. Choose the correct option regarding the following two statements (denoted as Assertion (A) and Reason (R).

Assertion (A): Precipitation reactions form soluble salts.

Reason (R): Precipitation reactions involve exchange of ions in solution.

(a) Both A and R are true, and R is the correct explanation of A.
(b) A is false, but R is true.
(c) Both A and R are true, and R is not the correct explanation of A.
(d) A is true, but R is false.

Q14. Which of the following statements accurately describes the key difference between mixtures and compounds with respect to separation?

(a) They are always formed by the absorption of heat.
(b) The identity of the original substances is lost.

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(c) They have high melting and boiling points.
(d) Their components can be separated by physical methods.

Q15. Which of the following reactions is an example of a precipitation reaction?
(a) $AgNO_3 + NaCl \rightarrow AgCl\downarrow + NaNO_3$
(b) $CaCO_3 \rightarrow CaO + CO_2\uparrow$
(c) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2\uparrow$
(d) $NaOH + HCl \rightarrow NaCl + H_2O$

Q16. If an object is moving in a straight line and covers a distance of 10 km from point A to point B, then which of the following statements is true regarding the displacement of the object from point A to point B?
(a) Displacement will be equal to 10 km.
(b) Displacement will always be zero.
(c) Displacement will always be less than 10 km.
(d) Displacement will be more than 10 km.

Q17. The correct IUPAC name of CH_3COCH_3 is _____.
(a) Propene, which is an alkene with a double bond between two carbons.
(b) Propanoic acid, which has a carboxylic acid at its terminal carbon.
(c) Propanal, which has an aldehyde group on its three-carbon chain.
(d) Propanone, which is a ketone with a carbonyl at the middle carbon

Q18. In the galvanization process, which of the following metals is used to coat iron?
(a) Iron
(b) Platinum
(c) Silver
(d) Zinc

Q19. Which of the following processes represents the most specific purpose of meiotic cell division?
(a) Digestion
(b) Reproduction
(c) Respiration
(d) Excretion

Q20. Which type of molecule of an element contains only one type of atom?
(a) Polyatomic
(b) Monoatomic
(c) Diatomic
(d) Triatomic

Q21. Which of the following is a form of mechanical energy?
(a) Sound energy
(b) Kinetic energy
(c) Chemical energy
(d) Heat energy

Q22. Which of the following organisms aids in the pollination of flowers?
(a) Euglena
(b) Honey bee
(c) Plasmodium
(d) Amoeba

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Q23. When calcium carbonate is heated, it produces calcium oxide and carbon dioxide. This is an example of which type of chemical reaction?

(a) Decomposition
(b) Displacement
(c) Combination
(d) Double displacement

Q24. Which type of muscular tissue is present in the wall of the stomach?

(a) Smooth muscle tissue
(b) Skeletal muscle tissue
(c) Cardiac muscle tissue
(d) Fluid connective tissue

Q25. Which of the following options is not correct ?

(a) Pressure = Force/Area
(b) The pressure in a fluid acts in all directions.
(c) The pressure in a liquid depends on the shape of the container.
(d) The pressure in a liquid increases with depth.

MATHEMATICS

Q26. Find the value of √8+2√32-√128+2√50.

(a) √2
(b) 4√2
(c) 3√2
(d) 12√2

Q27. What percent is 1/20 of 11/20 ? (Round off to two decimal places.)

(a) 9.09%
(b) 18.18%
(c) 24.09%
(d) 19.09%

Q28. If 20 percent of a number is added to 60, the result is that number. 70 percent of that number is .....

(a) 62.5
(b) 72.5
(c) 52.5
(d) 82.5

Q29. A person buys a book for Rs. 300 and sells it for Rs. 335. What will be his profit percentage?

(a) 114/3%
(b) 115/3%
(c) 111/3%
(d) 112/3%

Q30. This question is in Hindi. Read it online.

Q31. A local cinema sells tickets for Rs. 150 per ticket for youth and Rs. 250 per ticket for adults. One evening, the theater sold a total of 200 tickets and earned Rs. 38,000. Find the number of youth tickets and adult tickets sold?

(a) 90 youth tickets and 110 adult tickets
(b) 100 youth tickets and 100 adult tickets
(c) 80 youth tickets and 120 adult tickets
(d) 120 youth tickets and 80 adult tickets

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Q32. What will come in place of X in the equation X/75 = 12/X, when it is X > 0 ?

(a) 30
(b) 31
(c) 28
(d) 33

Q33. If x − y = 3 and xy = 18, then what will be the value of $x^2 - y^2$?

(a) 25
(b) 27
(c) 22
(d) 20

Q34. Find the simple interest (in Rs.) on Rs. 2,000 at 7% per annum for the period from 4 February 2023 to 18 April 2023.

(a) 29
(b) 27
(c) 26
(d) 28

Q35. Arun and Manish can complete a task in 15 days. Manish and Tarun can complete the same task in 12 days, and Tarun and Arun can complete the same task in 10 days. Find the time taken by Arun to complete the same task alone.

(a) 22 days
(b) 24 days
(c) 18 days
(d) 25 days

Q36. A point is located on the ground such that its distance from the top of a building is twice its distance from the bottom, which is 15 units. Find the height of the building (in units).

(a) 15√2
(b) 10√3
(c) 10√2
(d) 15√3

Q37. What is the arithmetic mean of the observations 42, 29, 42, 58, 18, 39, 41, 79 and 93?

(a) 46
(b) 58
(c) 47
(d) 49

Q38. The sum of two numbers is 60 and their HCF and LCM are 12 and 72 respectively. Then find the sum of the reciprocals of the two numbers.

(a) 5/72
(b) 1/6
(c) 5/36
(d) 7/12

Q39. If the cost of painting the entire surface area of a cubic structure at the rate of 23 paise per cm^2 is Rs. 1,006.02, find the volume (in cm^3) of the cubic structure.

(a) 19,688
(b) 19,676
(c) 19,683
(d) 19,691

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Q40. In triangle ABC, at point D, BD ? AC and angle DBC = 33°. E is a point on BC such that angle CAE = 70°. What is the measure of angle AEB?

(a) 132°
(b) 127°
(c) 135°
(d) 131°

Q41. After a discount of 54% on the marked price of an item, it is sold for Rs. 29,946. Find its marked price (in Rs.).

(a) 64,998
(b) 65,322
(c) 65,144
(d) 65,100

Q42. A teacher's current age is four times the age of one of her students. Five years ago, the teacher's age was seven times the age of the same student at that time. What is the teacher's current age (in years)?

(a) 40
(b) 50
(c) 45
(d) 35

Q43. P and Q together can fill a tank with water in 12 hours. If P alone can fill the tank with water in 30 hours, then in how many hours will Q alone fill one-fourth of the same tank with water?

(a) 11
(b) 5
(c) 10
(d) 6

Q44. A total profit of Rs. 27,600 is to be distributed among A, B and C such that A : B = 18 : 6 and B : C = 7 : 12. What is C's share (in Rs.) of the profit?

(a) 8,230
(b) 8,180
(c) 8,430
(d) 8,280

Q45. A man has to travel a distance of 132 km in 14 hours. If he travels two-thirds of this distance in 3/7 of the total time, what should be his speed (in km/hr) to cover the remaining distance in the remaining time?

(a) 12.7
(b) 5.5
(c) 7.3
(d) 3.8

Q46. A cricketer's average score in 12 innings is 52 runs. In the 13th innings, he scores 183 runs. His average score increases by _____. (Round off the answer to the nearest whole number.)

(a) 10
(b) 18
(c) 16
(d) 7

Q47. Two trains are traveling in opposite directions at the same speed. If each train is 968 m long and they pass each other in 22 seconds, what is the speed of each train?

(a) 35 m/s
(b) 48 m/s
(c) 38 m/s
(d) 44 m/s

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Q48. Which of the following numbers is divisible by 3?

(a) 781
(b) 123
(c) 245
(d) 557

Q49. A grocer marked his goods 80% above the cost price and sold them at a discount of X%. If he made a profit of 8%, find the value of X.

(a) 40
(b) 41
(c) 37
(d) 38

Q50. The price of fuel decreases by 30%, 25%, and 45% in three consecutive months, but increases by 45% in the fourth month. By what percent did the price of fuel increase/decrease in the fourth month compared to the original price? (Round the answer to two decimal places.)

(a) a decrease of 58.13%
(b) a decrease of 57.65%
(c) an increase of 64.88%
(d) an increase of 59.54%

GENERAL INTELLIGENCE & REASONING

Q51. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair does not belong to that group?

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

(a) UW−SU
(b) OQ−MO
(c) DF−BD
(d) IK−FK

Q52. Based on the English alphabetical order, ACEH is related to GIKN in a certain way. Similarly, KMOR is related to QSUX. Following the same logic, JLNQ is related to which of the given options?

(a) PRSW
(b) PRTW
(c) PSSB
(d) PQSW

Q53. If 1 is added to each odd digit and 1 is subtracted from each even digit of the number 632517, then what will be the sum of the largest and the smallest digits in the new number thus formed?

(a) 8
(b) 7
(c) 9
(d) 10

Q54. Refer to the following number series and answer the question that follows (all numbers are single-digit numbers only).

(Left) 7 3 1 4 9 2 6 5 8 3 7 1 9 4 2 5 6 8 7 3 9 4 (Right)

How many unique numbers in the series are greater than 7 (each number is to be counted only once, no matter how many repetitions there are)?

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

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Q55. 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 from commonly known facts, decide which of the given conclusions logically follows from the statements.

Statements:

Some silver is gold.

Some silver is cash.

Some gold is fortune.

Conclusions:

(I): Some silver is fortune.

(II): Some gold is cash.

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

Q56. In a row of 91 students, all seated facing north, Mr. Akte is 33rd from the left. If Mr. Memi is 22nd to the right of Mr. Akte, what is Mr. Memi's position from the right end of the row?

(a) 38th
(b) 35th
(c) 37th
(d) 36th

Q57. Six neighbors—Amrita, Maria, Ruhi, Sunita, Ishaan, and Vaibhav—are sitting around a round table, facing the center. Amrita sits second to the left of Maria. Ruhi is the immediate neighbor of both Maria and Sunita. Ishaan sits second to the right of Vaibhav.

Who sits between Amrita and Maria, counting from Amrita's right?

(a) Sunita
(b) Vaibhav
(c) Ishaan
(d) Ruhi

Q58. Seven people, P, Q, R, S, T, U, and V, are sitting in a row facing north. Q is sitting third from the right end. V is sitting third to the left of S. T is sitting to the right of Q and at one of the extreme ends of the row. Only two people sit between U and T. P is not sitting at any extreme end.

Who is sitting second from the right end?

(a) Q
(b) V
(c) U
(d) S

Q59. In a certain code language, YISB is coded as 110 and PKJQ is coded as 108. What will be the code for CNXR in that language?

(a) 120
(b) 111
(c) 118
(d) 113

Q60. Refer to the following number and symbol series and answer the given question. Counting is to be done from left to right only.

(Left) 3 3 > + / \ ^ # + @ 7 9 3 6 $ \ + 9 > 6 & (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

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(c) Three
(d) None

Q61. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair does not belong to that group?

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

(a) AX−YY
(b) KH−JG
(c) XU−WT
(d) HE−GD

Q62. In a certain code language,

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

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

'A × B' means 'A is the wife of B',

'A % B' means 'A is the father of B' and

'A # B' means 'A is the daughter of B'.

If 'T # Q % C % N # P', then how is T related to P?

(a) father's sister
(b) husband's sister
(c) brother's wife
(d) husband's father

Q63. Tufail walks 100 m towards the north. From there, he turns right and walks 220 m. Again, he turns right and walks 121 m. In which direction is he with reference to his starting point?

(Note: All turns are 90° turns only unless specified.)

(a) Northwest
(b) Southeast
(c) Northeast
(d) Southwest

Q64. If 'A' means '÷', 'B' means '×', 'C' means '+' and 'D' means '−', then what will come in place of question mark (?) in the following equation?

41 C 9 B 12 A 4 D 10 = ? ?

(a) 64
(b) 54
(c) 58
(d) 50

Q65. Which of the following letter-number cluster will come in place of the question mark (?) to logically complete the given series?

FEA 40 EDZ 32 DCY 24 CBX 16 ?

(a) BZV 7
(b) BBV 8
(c) BEI 7
(d) BAW 8

Q66. Based on the English alphabetical order, ESQZ is related to JXVT. Similarly, MGHM is related to RLMG. Following the same logic, LKJN is related to which of the given options?

(a) OQOI
(b) OPQH
(c) QPOH
(d) QQQI

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

(Left) 192 574 563 189 567 (Right)

(Example: 697 - first digit = 6, second digit = 9, and third digit = 7)

(Note: All operations should be performed from left to right.)

What will be the result if the third digit of the largest number is added to the second digit of the smallest number?

(a) 13
(b) 15
(c) 11
(d) 12

Q68. If '+' and '−' are interchanged and '×' and '÷' are interchanged, then what will come in place of question mark (?) in the following equation?

12 ÷ 5 + 22 × 2 − 6 = ? + 5

(a) 45
(b) 65
(c) 55
(d) 60

Q69. Based on the English alphabetical order, IGFG is related to ECBC in a certain way. Similarly, TRQR is related to PNMN. Following the same logic, FDCD is related to which of the given options?

(a) BZXZ
(b) BAXG
(c) BZYZ
(d) BYXZ

Q70. Pramod starts from point A and drives 43 km north. He then turns left, drives 45 km, turns left again and drives 56 km. He then turns left again and drives 64 km. He finally turns left, drives 13 km and stops at point P. How far (shortest distance) and in which direction must he drive to reach point A again? (Unless specified, all turns are 90-degree turns only.)

(a) 17 km to the west
(b) 22 km to the east
(c) 20 km to the east
(d) 19 km to the west

Q71. Look at the given series and answer the question below. (All numbers are single-digit numbers only.) Count from left to right only.

(Left) 5 5 1 7 4 4 7 5 9 5 5 3 2 2 2 7 1 1 3 9 3 5 2 8 5 1 9 (Right)

How many odd numbers are there, each of which is immediately preceded by an odd number and immediately followed by an odd number?

(a) 13
(b) 12
(c) 14
(d) 11

Q72. 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 follows from the statements.

Statement:

Some bins are tins.

All tins are pins.

Conclusions:

(I): Some bins are pins.

(II): All pins are tins.

(a) Both conclusions (I) and (II) follow

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(b) Neither conclusion (I) nor (II) follows
(c) Only conclusion (II) follows
(d) Only conclusion (I) follows

Q73. In a certain code language, 'will you go' is coded as 'rt sj mn' and 'will kill you' is coded as 'sj rt pr'. How is 'kill' coded in the given language?
(a) rt
(b) pr
(c) mn
(d) sj

Q74. What should come in place of question mark (?) in the given series?
6 9 14 23 40 ?
(a) 81
(b) 79
(c) 85
(d) 73

Q75. In a line of people facing north, Jimmy is 19th from the left end. Shlok is 23rd from the left end and exactly between Jimmy and Ray. If Ray is 9th from the right end of the line, how many people are there in the line?
(a) 35
(b) 33
(c) 34
(d) 31

Q76. Five people, A, B, C, D, and E, are sitting in a row, facing north. Only two people sit between A and B. Only B sits between D and E. E sits second to the left of A. Who sits at the left end of the row?
(a) C
(b) D
(c) B
(d) E

Q77. Select the set in which the numbers are related in the same way as the numbers in the following sets.
(Note: Operations must be performed on whole numbers without breaking them into their component digits. Take 13 for example - operations on 13, such as addition/subtraction/multiplication by 13, etc., can only be performed on 13. Breaking 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
(86, 154, 120)
(98, 172, 135)
(a) (168, 270, 229)
(b) (156, 240, 298)
(c) (116, 158, 139)
(d) (104, 156, 130)

Q78. What will come in place of question mark (?) in the given series based on English alphabetical order?
HNF LSJ PXN TCR ?
(a) YGW
(b) WHU
(c) XHV
(d) WIV

Q79. What will come in place of question mark (?) in the given series?
3 ? 18 38 78 158
(a) 10
(b) 6
(c) 8

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(d) 5

Q80. What will come in place of question mark (?) in the given series?

16 40 64 88 112 ?

(a) 133
(b) 136
(c) 134
(d) 135

GENERAL AWARENESS AND CURRENT AFFAIRS

Q81. Which of the following international organizations approved a program to support women's employment in Tamil Nadu in 2025?

(a) United Nations
(b) International Monetary Fund
(c) World Bank
(d) Asian Development Bank

Q82. Under the Pradhan Mantri Jan Dhan Yojana (PMJDY), which major activity did the Reserve Bank of India mandate during July–September 2025?

(a) Re-KYC of accounts
(b) Loan Disbursement
(c) Increase in Fees
(d) Account closure

Q83. In 2024, which of the following Indian scientists was honored with the COSPAR Harry Massey Award?

(a) Prahlad Chandra Agarwal
(b) Udupi Ramachandra Rao
(c) K. Radhakrishnan
(d) G. Madhavan Nair

Q84. Which film won the Best Film award at the 25th IIFA Awards held in March 2025?

(a) Article 370
(b) Laapataa Ladies
(c) Stree 2
(d) Bhool Bhulaiyaa 3

Q85. Who became the first male field athlete to win the Laureus World Sportsman of the Year award in April 2025?

(a) Armand Duplantis
(b) Jakob Ingebrigtsen
(c) Neeraj Chopra
(d) Max Verstappen

Q86. According to the Union Budget 2025-26, how much borrowing is planned to be raised through gross market borrowing in the financial year 2025-26?

(a) Rs. 16 lakh crore
(b) Rs. 13 lakh crore
(c) Rs. 14.82 lakh crore
(d) Rs. 12.95 lakh crore

Q87. Chhannulal Mishra, who passed away in October 2025, was known for his contributions in which of the following fields?

(a) Hindustani Classical Music
(b) Kathak Dance
(c) Folk Music Traditions

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(d) Sanskrit and Vedic Studies

Q88. By how many places has India improved its ranking in the Sustainable Development Goals (SDGs) in the 2025 edition of the Sustainable Development Report compared to 2024?

(a) 14
(b) 10
(c) 6
(d) 19

Q89. In the November 2025 by-elections, which of the following political parties won the by-election from Budgam (Jammu and Kashmir)?

(a) Bharatiya Janata Party
(b) Jammu and Kashmir Peoples Democratic Party
(c) Indian National Congress
(d) Aam Aadmi Party

Q90. Where was the 2024 Abu Dhabi Grand Prix held in December 2024?

(a) Yas Marina Circuit on Yas Island
(b) silverstone circuit
(c) Circuit de Monaco
(d) Suzuka International Racing Course

Q91. As of November 9, 2025, who among the following is the Secretary-General of the United Nations?

(a) Michelle Bachelet
(b) Ban Ki-moon
(c) António Guterres
(d) Kofi Annan

Q92. In September 2025, in which district's Nandanagar block did sudden floods and landslides occur due to heavy rainfall, necessitating a large-scale NDRF/SDRF operation?

(a) Pithoragarh
(b) Almora
(c) Chamoli
(d) Rudraprayag

Q93. To which of the following industrial sectors do the Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025—notified in October 2025—apply?

(a) Iron and Steel, Aluminium, Coal, Cement
(b) Steel, Cement, Aluminium, Textiles
(c) Coal, Power Generation, Cement, Chemicals
(d) Cement, Aluminium, Chlor-alkali, Pulp and Paper

Q94. Which massive sports talent hunt, launched by Bihar Chief Minister Nitish Kumar in May 2025, involves the participation of students from secondary and higher secondary schools?

(a) Lakshya
(b) Yuva Shakti
(c) Khel Jyoti
(d) Mashal

Q95. According to an announcement made by the Ministry of Defence in November 2025, which of the following organizations has successfully developed a new generation of Man-Portable Autonomous Underwater Vehicles (MP-AUVs) for the mission of detecting underwater mines?

(a) Indian Space Research Organisation (ISRO)
(b) Hindustan Aeronautics Limited (HAL)
(c) Defence Research and Development Organisation (DRDO)
(d) Bharat Electronics Limited (BEL)

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Q96. On which date has 'National Space Day' been declared in India?

(a) 11 May
(b) 20 July
(c) 28 February
(d) 23 August

Q97. Who won the most Grand Prix races from January to June 2025?

(a) Oscar Piastri
(b) Lando Norris
(c) Max Verstappen
(d) Lewis Hamilton

Q98. In 2025, under which scheme did Odisha Chief Minister Mohan Charan Majhi distribute Rs. 5,000 crore to approximately one crore women?

(a) Subhadra Yojana
(b) Odisha Women Upliftment Programme
(c) Lakhpati Didi
(d) Mission Shakti

Q99. Who won the Player of the Match award for RCB in the IPL 2025 final?

(a) Prasidh Krishna
(b) Krunal Pandya
(c) Virat Kohli
(d) Rajat Patidar

Q100. Which missile was showcased and launched during Republic Day, 2025?

(a) Nirbhay
(b) Agni-V
(c) BrahMos NG
(d) Pralay

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) Refraction and dispersion, followed by internal reflection, and then finally refraction

The correct answer is Refraction and dispersion, followed by internal reflection, and then finally refraction.

Key Points

• A rainbow is a natural spectrum appearing in the sky after rain, caused by the dispersion of sunlight by tiny water droplets present in the atmosphere.

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• When sunlight enters a spherical water droplet, it first undergoes refraction because it moves from a rarer medium (air) to a denser medium (water). This process is accompanied by dispersion, where white light splits into its constituent colors (VIBGYOR).

• The dispersed light then strikes the inner back surface of the water droplet. If the angle of incidence is appropriate, the light undergoes internal reflection, bouncing back toward the front of the droplet.

• As the light leaves the droplet to reach the observer's eye, it undergoes a final refraction. This second bending further separates the colors, making the spectrum clearly visible.

• The combined effect of these three physical processes ensures that the VIBGYOR colors are spread out in a circular arc, usually at an angle of 40° to 42° relative to the observer's line of sight.

Additional Information

• Primary and Secondary Rainbows:

• A primary rainbow involves a single internal reflection, resulting in red light on the outer arc and violet on the inner arc.

• A secondary rainbow is formed by two internal reflections within the droplet. It is fainter, and the color sequence is reversed, with violet on the outside.

• Condition for Visibility:

• The Sun must be shining in one part of the sky while it is raining in the opposite part.

• The observer must stand with their back towards the sun to view the rainbow arc.

• Atmospheric Refraction:

• Unlike rainbows, phenomena like mirages or the twinkling of stars are caused purely by atmospheric refraction due to varying air densities, rather than water droplet interaction.

Q2. Answer: (b) Electrochemical method

The correct answer is Electrochemical method.

Key Points

• Refining is the final process in metallurgy used to obtain metals of high purity from the crude metal extracted through reduction.

• Electrochemical refining (or electrolytic refining) is the most widely used commercial method for purifying metals. Hence, the correct answer is Electrochemical method.

• In this process, the impure metal serves as the anode, and a strip of pure metal serves as the cathode.

• It is widely used for the commercial purification of Copper, Zinc, Tin, Silver, and Gold.

• During the electrolysis of Copper, impurities like Antimony, Selenium, and Tellurium settle down as anode mud.

Additional Information

• Physical Methods:

• Distillation: Used for metals with low boiling points such as Zinc, Mercury, and Cadmium. The impure metal is evaporated to obtain pure metal as distillate.

• Liquation: Used for metals with low melting points compared to their impurities, such as Tin (Sn) and Lead (Pb). The metal is melted on a sloping hearth to separate it from high-melting impurities.

• Chemical Methods:

• One major chemical refining technique is Vapour Phase Refining, which involves converting the metal into a volatile compound and then decomposing it to give pure metal. This includes the Mond Process and the Van Arkel Method.

• Zone Refining (Fractional Crystallization):

• This method is based on the principle that impurities are more soluble in the molten state than in the solid state of the metal.

• It is commercially essential for producing semiconductors of very high purity, such as Germanium, Silicon, Boron, Gallium, and Indium.

Important Points

• Chromatographic Methods: This chemical technique is based on the principle of differential adsorption. It is used when the impurities and the metal have similar chemical properties, allowing for purification in micro-quantities.

• Oxidative Refining: Processes like Cupellation (for Silver) and Bessemerization (for Iron/Steel) involve the oxidation of impurities to separate them from the metal.

Q3. Answer: (c) 1 – 3 – 2 – 4

The solution is in Hindi. Read it online.

Q4. Answer: (b) Spinal cord

The solution is in Hindi. Read it online.

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Q5. Answer: (a) Acceleration is negative when it acts opposite to the direction of velocity.

The solution is in Hindi. Read it online.

Q6. Answer: (d) Due to atmospheric refraction

The solution is in Hindi. Read it online.

Q7. Answer: (b) Vibration → Vibration in the particles of the medium → Propagation of sound wave → Sound is heard

The correct answer is Vibration → Vibration in the particles of the medium → Propagation of sound wave → Sound is heard.

Key Points

• Sound production always begins with the vibration of an object. When an object vibrates, it releases energy that spreads into the surrounding environment.

• Once the object begins to vibrate, it creates a disturbance in the particles of the medium it comes into contact with. These particles begin to vibrate about their mean position.

• This disturbance is transferred from one particle to another, causing the propagation of a sound wave. In this case, the particles of the medium themselves do not move from one place to another, but only transfer energy. Therefore, the sequence of events given in option 2 is correct.

• When this transmitted sound wave reaches our ear, it creates vibrations in the eardrum, which are processed by the brain and we hear sound.

• Option 1 is incorrect because 'sound' is the result of the process, not its origin. Options 3 and 4 are also incorrect because electricity, light, or heat are not essential intermediate steps in normal sound production.

Additional Information

• Nature of Sound : Sound is a mechanical wave. It requires a physical medium to travel. It cannot travel in a vacuum because there are no particles to transmit vibrations.

• Effect of the medium : The speed of sound depends on the density and elasticity of the medium. The speed of sound is highest in solids, followed by liquids, and lowest in gases. For example, the speed of sound in air at 0°C is approximately 331 m/s.

• Longitudinal Waves : Sound waves are longitudinal, meaning that the particles of the medium vibrate parallel to the direction of propagation. This creates regions of compression and rarefaction.

• Frequency and Pitch : The number of vibrations per second is called frequency, measured in hertz (Hz). Higher frequency means higher pitch (such as children's or women's voices).

• Audible Range : The human ear can normally hear frequencies between 20 Hz and 20,000 Hz. Sounds below 20 Hz are called infrasonic, and those above 20,000 Hz are called ultrasonic.

Important Points

• Amplitude of vibration : The maximum displacement of the vibration is called the amplitude. It determines the loudness of the sound. A higher amplitude means a louder sound.

• Decibel (dB) : The unit of measurement for sound intensity is the decibel. Sounds over 80 dB are generally considered noise that can be harmful to health.

• Effect of Temperature : As the temperature of the medium increases, the speed of sound also increases. This is why sound travels faster in warm air than in cold air.

Q8. Answer: (d) Promoting afforestation

The correct answer is Promoting afforestation.

Key Points

• Afforestation is the process of planting trees on land that has not recently been covered by forest, or was never a forest. It is a proactive method to increase green cover and ensure the conservation of natural ecosystems. Hence, statement 4 is correct.

• Deforestation refers to the permanent removal of trees to make room for something besides forest. This process leads to habitat loss, soil erosion, and a decrease in forest products. Hence, statement 1 is incorrect.

• Overgrazing by livestock in forest areas can destroy young saplings and seedlings, preventing the natural regeneration of the forest. It also leads to soil compaction, which hinders future plant growth. Hence, statement 2 is incorrect.

• Burning forests, whether through intentional clearing or uncontrolled forest fires, results in the immediate destruction of flora and fauna, loss of biodiversity, and the release of massive amounts of Carbon Dioxide into the atmosphere. Hence, statement 3 is incorrect.

• Promoting afforestation helps in maintaining the water cycle, preventing floods, and providing a sustainable source of timber and non-timber forest products (NTFP).

Additional Information

• Forest Conservation Act, 1980: This is a landmark act by the Indian Parliament aimed at protecting forests. It restricts the use of forest land for non-forest purposes without the prior approval of the Central Government.

• National Forest Policy, 1988: The main objective of this policy is to ensure environmental stability and maintain ecological

balance. It set a national goal to have a minimum of one-third (33%) of the total land area of the country under forest or tree cover.

• Social Forestry: Launched in 1976, this program aims at the management and protection of forests and afforestation on barren lands with the purpose of helping in environmental, social, and rural development.

• Chipko Movement: A famous non-violent social and ecological movement by rural villagers, particularly women, in India in the 1970s, aimed at protecting trees and forests slated for government-backed logging. It originated in the Reni village of Chamoli district, Uttarakhand.

• Forest Products: Forests provide essential resources like timber, fuelwood, medicinal plants, resins, gums, and lac, which are vital for the livelihoods of millions of people, especially tribal communities.

Important Points

• Carbon Sink: Forests act as a major carbon sink by absorbing Carbon Dioxide during photosynthesis, which helps in mitigating the effects of Global Warming and Climate Change.

• Reforestation vs. Afforestation: While Afforestation is creating a new forest, Reforestation is the natural or intentional restocking of existing forests and woodlands that have been depleted, usually through deforestation.

• Sustainable Forest Management (SFM): This practice ensures that forest resources are used in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs.

• Biodiversity Hotspots: Forests in India, such as the Western Ghats and the Eastern Himalayas, are recognized globally as biodiversity hotspots due to their high levels of endemic species.

Q9. Answer: (a) 10 Ω

The correct answer is 10 Ω.

Key Points

• The amount of heat produced in a conductor when an electric current passes through it is governed by Joule's Law of Heating. According to this law, the heat generated (H) is directly proportional to the square of the current (I), the resistance (R) of the conductor, and the time (t) for which the current flows.

• The mathematical expression for this law is $H = I^2Rt$. In this equation, H is measured in Joules (J), I in Amperes (A), R in Ohms (Ω), and t in seconds (s).

• In the given problem, the current (I) is 1 A, the time (t) is 10 seconds, and the heat produced (H) is 100 J.

• To find the resistance, we rearrange the formula to $R = H / (I^2t)$. Substituting the known values: $R = 100 / (1^2 \times 10)$.

• This simplifies to $R = 100 / 10$, which equals 10 Ω. Hence, the resistance of the geyser is 10 Ω, making option 1 the correct answer.

Additional Information

• Electric Geyser: It is an appliance that converts electrical energy into heat energy. It uses a heating element made of materials with high resistance and high melting point, such as Nichrome (an alloy of nickel and chromium).

• Resistance (R): It is the property of a conductor to oppose the flow of electric current. The SI unit of resistance is the Ohm, named after the German physicist Georg Simon Ohm. Resistance depends on the length, area of cross-section, nature of the material, and temperature.

• Current (I): It is defined as the rate of flow of electric charge through a cross-section of a conductor. Its SI unit is the Ampere (A), and it is measured using an instrument called an ammeter.

• Electrical Energy and Power: Power (P) is the rate at which electrical energy is consumed, given by $P = VI$ or $P = I^2R$. Heat (H) is simply the power multiplied by time ($H = P \times t$).

Important Points

• Joule's Law Discovery: The heating effect of current was studied experimentally by James Prescott Joule in the year 1841. It is a fundamental principle used in domestic appliances like electric irons, toasters, ovens, and heaters.

• Units Consistency: When solving numerical problems related to Joule's Law, it is crucial to ensure that time is always in seconds. If time is given in minutes or hours, it must be converted (1 minute = 60 seconds).

• Practical Application: In a geyser, the resistance is designed such that for a standard voltage (usually 220V in India), the current flowing through it produces enough heat to raise the water temperature efficiently within a reasonable time.

• Safety Feature: Most heating appliances include a thermostat to break the circuit once a certain temperature is reached, preventing damage due to excessive heat production.

Q10. Answer: (d) Amylase

The correct answer is Amylase.

Key Points

• Amylase is the primary enzyme responsible for the chemical breakdown of complex carbohydrates (starch) into simple sugars such as maltose and glucose.

• In humans, this digestive process begins in the mouth, where salivary amylase (also known as ptyalin) is secreted by the salivary

glands.

• The pancreas also produces pancreatic amylase, which is released into the small intestine to further digest any remaining starch into monosaccharides for absorption.

• Pepsin is an enzyme produced in the stomach specifically for the digestion of proteins into peptides. Hence, option 1 is incorrect.

• Bile Juice is produced by the liver and stored in the gallbladder; it does not contain enzymes but helps in the emulsification of fats. Hence, option 2 is incorrect.

• Lipase is an enzyme responsible for breaking down fats (lipids) into fatty acids and glycerol. Hence, option 3 is incorrect.

Additional Information

• Carbohydrate Digestion:

• It is a multi-step process that starts in the oral cavity. About 30% of starch is hydrolyzed in the mouth by salivary amylase at an optimum pH of 6.8.

• The final digestion occurs in the small intestine where enzymes like maltase, sucrase, and lactase convert disaccharides into glucose, fructose, and galactose.

• Pepsin and Protein Digestion:

• The stomach mucosa contains gastric glands that secrete proenzyme pepsinogen.

• On exposure to Hydrochloric Acid (HCl), pepsinogen is converted into the active enzyme Pepsin, which works best in an acidic pH of about 1.8.

• Role of Lipase:

• Lipases are secreted by the pancreas (steapsin) and in small amounts by the stomach (gastric lipase).

• They require the presence of bile salts to increase the surface area of fat droplets through emulsification.

• Bile Juice Functions:

• Bile contains bile pigments (bilirubin and biliverdin), bile salts, cholesterol, and phospholipids.

• It neutralizes the acidic chyme coming from the stomach and makes the medium alkaline for the action of pancreatic enzymes.

Important Points

• Location of Secretion: Salivary Amylase is secreted in the mouth, while Pancreatic Amylase is secreted in the duodenum.

• End Products: The ultimate goal of Amylase activity is to provide the body with Glucose, which is the primary energy source for cellular respiration.

• Enzyme Specificity: Enzymes are highly specific; Amylase only acts on alpha-1,4-glycosidic bonds in starch and cannot digest cellulose due to the lack of cellulase in humans.

Q11. Answer: (c) current and distance from the wire

The solution is in Hindi. Read it online.

Q12. Answer: (a) Fertilization → Zygote → Embryo → Fetus

The solution is in Hindi. Read it online.

Q13. Answer: (b) A is false, but R is true.

The correct answer is A is false, but R is true.

Key Points

• Assertion (A) states that precipitation reactions form soluble salts. This statement is false because a precipitation reaction is a chemical process in which two aqueous solutions react to form an insoluble solid called a precipitate. Soluble salts dissolve in water, while the precipitate separates. Therefore, Assertion (A) is false.

• Reason (R) states that precipitation reactions involve the exchange of ions in solution. This statement is true. Most precipitation reactions are examples of double displacement reactions, where ions are exchanged between the reactants. Therefore, Reason (R) is true.

• When aqueous solutions of two ionic compounds are mixed, their cations and anions change places. If one of the new compounds is insoluble in water, it settles to the bottom as a solid.

• As a well-known example, when solutions of sodium sulphate and barium chloride are mixed, a white precipitate of barium sulphate ($BaSO_4$) is formed and sodium chloride ($NaCl$) remains in the solution.

• Therefore, the correct answer is A is false, but R is true.

Additional Information

• Precipitation Reaction: This is a reaction that results in the formation of an insoluble salt. It is often used in laboratories to identify the presence of a particular ion.

• Double Displacement Reaction: This is a process in which two compounds exchange ions to form two new compounds. The general formula is $AB + CD \rightarrow AD + CB$.

• Solubility Rules: In chemistry, solubility charts are used to determine which substances will form a precipitate. For example, most

nitrates are soluble, while silver chloride is insoluble.

• Examples in everyday life: Water purification plants use precipitation to remove unwanted minerals. Kidney stones are also a type of precipitation process where salts solidify.

Important Points

• Silver nitrate test: When silver nitrate (AgNO3) is added to sodium chloride (NaCl), a curd-like white precipitate of silver chloride (AgCl) is obtained. This is an important test for identifying halide ions.

• Law of Conservation of Mass: Mass is conserved even during a precipitation reaction. The total weight of the solid precipitate and the solution is equal to the total weight of the reactants.

• Ionized state: These reactions occur primarily in the aqueous state because the ions are not free to move in the solid state. In 1887, Svante Arrhenius better explained these processes through the ionic theory.

Q14. Answer: (d) Their components can be separated by physical methods.

The correct answer is Their components can be separated by physical methods..

Key Points

• A mixture is a physical combination of two or more substances in which each component retains its own properties.

• The components of a mixture can be separated by physical methods such as:

• Filtration

• Evaporation

• Distillation

• Chromatography

• Magnetic separation

• In contrast, the components of a compound are chemically combined and can be separated only by chemical methods.

• Hence, the correct answer is Option 4 – Their components can be separated by physical methods.

Additional Information

• Option 1: Incorrect. Mixtures are formed by physical mixing; they are not necessarily formed by the absorption of heat.

• Option 2: Incorrect. In a mixture, the identity of the original substances is retained. The identity is lost only when substances form a compound.

• Option 3: Incorrect. Mixtures do not necessarily have high melting or boiling points. Their melting and boiling points depend on the nature and proportion of their components.

• Compounds have fixed composition, definite properties, and their constituents are chemically bonded.

Important Points

• Mixture: Components are physically combined and can be separated by physical methods.

• Compound: Components are chemically combined and require chemical methods for separation.

• Mixture: Variable composition; constituents retain their individual properties.

• Compound: Fixed composition; constituents lose their individual identities and form a new substance with different properties.

Q15. Answer: (a) AgNO3 + NaCl → AgCl↓ + NaNO3

The correct answer is AgNO3 + NaCl → AgCl↓ + NaNO3.

Key Points

• A precipitation reaction is a type of chemical reaction in which two soluble salts in aqueous solution combine to form one or more insoluble products, called a precipitate.

• In the reaction AgNO3 + NaCl → AgCl↓ + NaNO3, aqueous Silver Nitrate reacts with aqueous Sodium Chloride to form Silver Chloride and Sodium Nitrate. The Silver Chloride (AgCl) is insoluble in water and settles down as a white precipitate. Hence, option 1 is correct.

• This reaction is also a classic example of a double displacement reaction, where the Silver (Ag+) and Sodium (Na+) cations exchange their respective Nitrate (NO3-) and Chloride (Cl-) anions.

• The downward arrow (↓) next to a chemical formula in an equation specifically denotes the formation of a precipitate, indicating that the substance has crashed out of the solution as a solid.

• Precipitation reactions are essential in qualitative inorganic analysis to identify various ions present in a solution based on the color and solubility of the precipitate formed.

Additional Information

• Decomposition Reaction:

• In the reaction CaCO3 → CaO + CO2↑, Calcium Carbonate (limestone) breaks down into Calcium Oxide (quicklime) and Carbon Dioxide gas upon heating.

• This is a thermal decomposition reaction. The upward arrow (↑) indicates the evolution of a gas. Hence, option 2 is incorrect.

• Single Displacement Reaction:

• The reaction Zn + H2SO4 → ZnSO4 + H2↑ involves Zinc metal reacting with Sulfuric Acid.

• Since Zinc is more reactive than Hydrogen, it displaces hydrogen from the acid to form Zinc Sulfate and Hydrogen gas. Hence, option 3 is incorrect.

• Neutralization Reaction:

• The reaction NaOH + HCl → NaCl + H2O is a neutralization reaction occurring between a strong base (Sodium Hydroxide) and a strong acid (Hydrochloric Acid).

• The products are Sodium Chloride (a soluble salt) and Water. No precipitate is formed in this specific reaction as all products remain in the aqueous phase or as liquid water. Hence, option 4 is incorrect.

Important Points

• Solubility Rules: To predict whether a precipitation reaction will occur, chemists use solubility rules. For example, most Nitrates (NO3-) are soluble, while most Silver salts (except nitrates and fluorides) are insoluble.

• Applications: Precipitation reactions are used in wastewater treatment to remove heavy metals or phosphates from water by turning them into solid precipitates that can be easily filtered out.

• Ionic Equation: The net ionic equation for the correct answer is Ag+(aq) + Cl-(aq) → AgCl(s), which focuses only on the species that actually change during the reaction.

• Identification: Silver Chloride is a white precipitate, Silver Bromide is pale yellow, and Silver Iodide is bright yellow. These distinct colors help in identifying halide ions.

Q16. Answer: (a) Displacement will be equal to 10 km.

The correct answer is displacement will be equal to 10 km.

Key Points

• Displacement is defined as the shortest straight distance between the initial position and the final position of an object.

• When an object moves in a straight line from point A to point B and does not change its direction, then the magnitude of distance covered and displacement is equal.

• Since the question states that the object travels a distance of 10 km in a straight line, the displacement between point A and point B will also be exactly 10 km. Hence, statement 1 is correct.

• Displacement is always less than 10 km only when the object moves along a curved or zigzag path. Here, the path is straight. Therefore, statement 3 is incorrect.

• The magnitude of displacement can never be greater than the distance traveled, as it is the shortest path between two points. Therefore, statement 4 is incorrect.

• Displacement is zero only when the object returns to the same starting point after starting its journey. Therefore, statement 2 is incorrect.

Additional Information

• Distance:

• It is the total path length of the actual path covered by a moving object.

• Distance is a scalar quantity, which has only magnitude and no definite direction.

• Distance is always positive and can never be zero or negative if the object has moved.

• Displacement:

• It is a vector quantity, which means it has both magnitude and direction.

• The value of displacement can be positive, negative or zero.

• Its SI unit is the metre (m), although for larger distances the kilometre (km) is used.

• Relation between distance and displacement:

• For any moving object, the distance is always equal to or greater than the magnitude of displacement (Distance ≥ |Displacement|).

• If an object moves on a circular path and completes one revolution, then the distance will be 2πr, but the displacement will be 0.

Important Points

• Uniform Motion: If an object travels equal distances in equal intervals of time along a straight line, it is said to have uniform motion. In this case, velocity and speed remain the same.

• Example of zero displacement: If you go to school 5 km away from your home and come back home, your total distance will be 10 km, but your total displacement will be 0 km because your initial and final position are the same.

• Negative displacement: Displacement can be negative if the object moves in a direction opposite to the chosen reference direction.

• Year 1687: Sir Isaac Newton explained in detail the laws of motion and principles like displacement in his book 'Principia'.

Q17. Answer: (d) Propanone, which is a ketone with a carbonyl at the middle carbon

The solution is in Hindi. Read it online.

Q18. Answer: (d) Zinc

The solution is in Hindi. Read it online.

Q19. Answer: (b) Reproduction

The solution is in Hindi. Read it online.

Q20. Answer: (b) Monoatomic

The solution is in Hindi. Read it online.

Q21. Answer: (b) Kinetic energy

The solution is in Hindi. Read it online.

Q22. Answer: (b) Honey bee

The correct answer is Honey bee.

Key Points

• Pollination is the biological process of transferring pollen grains from the male part of a flower (anther) to the female part (stigma), enabling fertilization and the production of seeds.

• Honey bees (genus Apis) are the most prominent and effective biotic agents of pollination in the ecosystem.

• While foraging for nectar and pollen to feed their colony, bees inadvertently pick up pollen on their body hairs; this pollen is then deposited on the stigma of the next flower they visit.

• It is estimated that honey bees are responsible for approximately 80% of all insect-led pollination, making them vital for the production of commercial crops such as almonds, apples, and sunflowers.

• Bees exhibit floral fidelity, meaning they tend to visit the same species of flowers during a single trip, which significantly increases the efficiency of cross-pollination. Hence, the correct answer is Honey bee.

Additional Information

• Euglena:

• Euglena is a genus of single-celled flagellated microorganisms that possess characteristics of both plants (contain chloroplasts for photosynthesis) and animals (can ingest food).

• They are typically found in freshwater and saltwater environments and do not play any role in the reproduction or pollination of flowering plants.

• Plasmodium:

• Plasmodium is a genus of unicellular protozoan parasites.

• They are best known as the causative agents of Malaria in humans and are transmitted via the bite of an infected female Anopheles mosquito.

• They exist as obligate parasites and have no ecological function related to plant pollination.

• Amoeba:

• An Amoeba is a highly malleable unicellular organism belonging to the kingdom Protista.

• It moves and captures food using temporary cytoplasmic projections called pseudopodia (false feet).

• Like Euglena and Plasmodium, it is an aquatic or soil-dwelling microorganism with no involvement in floral biology.

Important Points

• Types of Pollination:

• Self-pollination: Occurs when pollen from the anther is deposited on the stigma of the same flower or another flower on the same plant.

• Cross-pollination: Occurs when pollen is transferred from the anther of one plant to the stigma of a different plant of the same species, promoting genetic diversity.

• Agents of Pollination:

• Biotic Agents: These include insects (bees, butterflies, beetles), birds (hummingbirds), and mammals (bats). Pollination by insects is specifically termed Entomophily.

• Abiotic Agents: These include wind (Anemophily) and water (Hydrophily). Wind-pollinated plants, like grasses and maize, produce large quantities of light, non-sticky pollen.

• Economic Impact: The Food and Agriculture Organization (FAO) highlights that pollinators like bees affect 35 percent of the world's crop production, increasing the outputs of 87 of the leading food crops worldwide.

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Q23. Answer: (a) Decomposition

The solution is in Hindi. Read it online.

Q24. Answer: (a) Smooth muscle tissue

The correct answer is Smooth muscle tissue.

Key Points

• Smooth muscle tissue is the type of muscle found in the walls of hollow visceral organs such as the stomach, intestines, urinary bladder, and blood vessels.

• These muscles are characterized as involuntary muscles because their movements cannot be consciously controlled by the individual; they are regulated by the Autonomic Nervous System (ANS).

• In the stomach, the smooth muscle layers are responsible for peristalsis and the mechanical churning of food, which aids in breaking down food particles and mixing them with gastric juices.

• The structure of smooth muscle cells is spindle-shaped (fusiform), with a single, centrally located nucleus, and they lack the striations (cross-bands) seen in skeletal or cardiac muscles. Hence, option 1 is correct.

• The stomach wall is unique as it typically contains three layers of smooth muscle: the inner oblique, middle circular, and outer longitudinal layers, which provide the multidirectional strength needed for digestion.

Additional Information

• Skeletal Muscle Tissue:

• These are voluntary muscles that are under the conscious control of the Somatic Nervous System.

• They are primarily attached to bones via tendons and are responsible for locomotion and body posture.

• Structurally, they are striated (striped) and contain multiple nuclei located at the periphery of the long, cylindrical cells. Hence, option 2 is incorrect.

• Cardiac Muscle Tissue:

• This specialized tissue is found exclusively in the heart (specifically the myocardium).

• Like smooth muscle, it is involuntary, but like skeletal muscle, it is striated.

• Cardiac muscle cells are branched and joined by intercalated discs, which allow for rapid transmission of electrical impulses for synchronized heart contractions. Hence, option 3 is incorrect.

• Fluid Connective Tissue:

• This is a category of connective tissue rather than muscular tissue.

• It includes blood and lymph, which circulate through the body to transport nutrients, oxygen, hormones, and waste products.

• It does not possess the contractile properties required to move the walls of the stomach. Hence, option 4 is incorrect.

Important Points

• Muscular System Overview: The human body contains over 600 muscles, categorized into three types based on their location, structure, and function.

• Functional Differences: While skeletal muscles fatigue quickly and require rest, smooth muscles (like those in the digestive tract) can maintain prolonged contractions without tiring easily, which is essential for the slow process of digestion.

• Microscopic Appearance: Smooth muscle is called "smooth" specifically because it lacks the sarcomere arrangement that creates the striated appearance in skeletal and cardiac tissues.

• Role in Homeostasis: Beyond the stomach, smooth muscles play a critical role in regulating blood pressure by altering the diameter of arteries and controlling the flow of air in the bronchioles of the lungs.

Q25. Answer: (c) The pressure in a liquid depends on the shape of the container.

The correct answer is The pressure in a liquid depends on the shape of the container.

Key Points

• Statement 1 is Correct: Pressure is defined as the force acting normally per unit area.

$P = F/A$

• Statement 2 is Correct: Pressure exerted by a fluid at a given point acts in all directions. This is a consequence of the transmission of pressure in a fluid at rest.

• Statement 3 is Incorrect: The pressure at a particular depth in a liquid does not depend on the shape of the container. It depends on the depth, density of the liquid, and acceleration due to gravity.

$P = \rho gh$

• Statement 4 is Correct: Since $P = \rho gh$, pressure increases as the depth (h) increases, provided the liquid density and gravitational acceleration remain constant.

• Hence, the correct answer is Option 3.

Additional Information

• The pressure at a depth h in a liquid is given by:
P = P0 + ρgh
where P0 is the pressure at the liquid surface.
• For the same liquid and at the same depth, the pressure is the same regardless of the shape or size of the container.
• This principle is known as Pascal's law when referring to the transmission of pressure in an enclosed fluid.
Important Points
• Pressure = Force/Area.
• Fluid pressure acts in all directions.
• Liquid pressure does not depend on container shape.
• Liquid pressure increases with depth.

Q26. Answer: (d) 12√2

Shortcut Trick
Convert all into same root form
√8 = 2√2, √32 = 4√2, √128 = 8√2, √50 = 5√2
Expression = 2√2 + 2×4√2 − 8√2 + 2×5√2
= (2 + 8 − 8 + 10)√2 = 12√2
Therefore Answer = 12√2
Alternate Method
Given:
√8 + 2√32 − √128 + 2√50
Concept Used:
Simplification of surds
Calculation:
=> √8 = √(4×2) = 2√2
=> √32 = √(16×2) = 4√2
=> √128 = √(64×2) = 8√2
=> √50 = √(25×2) = 5√2
=> Substitute values
=> = 2√2 + 2(4√2) − 8√2 + 2(5√2)
=> = 2√2 + 8√2 − 8√2 + 10√2
=> = (2 + 8 − 8 + 10)√2
=> = 12√2
Therefore The correct answer is 12√2.
Additional Information
Surd Simplification
√(a×b) = √a × √b
Like Terms
Only same radicals can be added/subtracted
Perfect Squares
Extract perfect square factors for simplification

Q27. Answer: (a) 9.09%

Shortcut Trick
Required percentage = (Value ÷ Base Value) × 100
Since both fractions have the same denominator (20), the percentage is simply (Numerator 1 ÷ Numerator 2) × 100.
Required % = (1 ÷ 11) × 100 ≈ 9.09%
Therefore The correct answer is 9.09%.
Alternate Method
Given:
First value = 1/20
Second value (Base) = 11/20

Formula Used:
Percentage = (A/B) × 100
Calculations:
=> Required Percentage = [(1/20) ÷ (11/20)] × 100
=> Required Percentage = (1/20 × 20/11) × 100
=> Required Percentage = (1/11) × 100
=> Required Percentage = 100 ÷ 11
=> Required Percentage = 9.090909...
=> Required Percentage ≈ 9.09%
Therefore The correct answer is 9.09%.
Additional Information
Fraction to Percentage Conversion
To convert any fraction x/y into a percentage, multiply the fraction by 100 and add the % symbol.
Reciprocal Percentages
Knowing common reciprocals like 1/11 ≈ 9.09% and 1/9 ≈ 11.11% helps in solving Simplification and Percentage questions faster.
Percentage Change
Percentage change = [(New Value − Original Value) ÷ Original Value] × 100.

Q28. Answer: (c) 52.5

Shortcut Trick
0.2x + 60 = x
0.8x = 60 => x = 75
70% of x = 0.7 × 75
= 52.5
Therefore Answer = 52.5
Alternate Method
Given:
20% of a number when added to 60 gives the number
Formula used:
Percentage = (value ÷ 100) × number
Calculation:
=> Let the number be x
=> 20% of x = (20/100) × x = 0.2x
=> According to question
=> 0.2x + 60 = x
=> x − 0.2x = 60
=> 0.8x = 60
=> x = 60 ÷ 0.8 = 75
=> Required percentage = 70% of 75
=> = (70/100) × 75
=> = 52.5
Therefore The correct answer is 52.5.
Additional Information
Percentage Formula
x% of number = (x/100) × number
Equation Formation
Translate statement into linear equation
Decimal Conversion
20% = 0.2, 70% = 0.7

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Q29. Answer: (d) 112/3%

Shortcut Trick

Profit = SP − CP = 335 − 300 = 35.

Profit % = (Profit ÷ CP) × 100.

Profit % = (35 ÷ 300) × 100 = 35 ÷ 3 = 11²/3%.

Therefore The correct answer is 11(2)/(3)%.

Alternate Method

Given → Cost Price (CP) = Rs. 300, Selling Price (SP) = Rs. 335.

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

→ Profit = 335 − 300 = 35

→ Profit % = (35 ÷ 300) × 100

→ Profit % = 35 ÷ 3 = 11.66...%

→ In fraction form, 35/3 = 11²/3%

Therefore The correct answer is 11(2)/(3)%.

Additional Information

Profit and Loss Basics

Profit occurs when Selling Price (SP) is greater than Cost Price (CP). Loss occurs when CP > SP.

Percentage Calculation

Profit or Loss percentage is always calculated on the Cost Price (CP) unless stated otherwise.

Q30. Answer: (d)

Shortcut Trick

The area of a triangle sharing the same base and lying between the same parallel lines as a parallelogram is always half the area of that parallelogram.

Area(Δ APB) = 1/2 × Area(ABCD) (since they share base AB and lie between AB || CD).

Area(Δ BQC) = 1/2 × Area(ABCD) (since they share base BC and lie between BC || AD).

Since both triangles are equal to half of the same parallelogram, their areas must be equal.

Therefore The correct answer is the area of Δ BQC.

Alternate Method

Given:ABCD is a parallelogram. P is a point on side DC and Q is a point on side AD.

Formula Used: Area of triangle = 1/2 × base × height; Area of parallelogram = base × height.

=> Area(Δ APB) = 1/2 × AB × (height of parallelogram with respect to base AB)

=> Area(ABCD) = AB × (height of parallelogram with respect to base AB)

=> Area(Δ APB) = 1/2 × Area(ABCD) --- (i)

=> Area(Δ BQC) = 1/2 × BC × (height of parallelogram with respect to base BC)

=> Area(ABCD) = BC × (height of parallelogram with respect to base BC)

=> Area(Δ BQC) = 1/2 × Area(ABCD) --- (ii)

=> From equations (i) and (ii), we get: Area(Δ APB) = Area(Δ BQC)

Therefore The correct answer is the area of Δ BQC.

Additional Information

Area of Parallelogram

The area of a parallelogram is given by the product of its base and the corresponding altitude (height).

Triangle and Parallelogram Relationship

When a triangle and a parallelogram are on the same base and between the same parallels, the area of the triangle is half the area of the parallelogram.

Parallelogram Properties

In a parallelogram, opposite sides are parallel and equal, and diagonals bisect each other, dividing the parallelogram into two triangles of equal area.

Q31. Answer: (d) 120 youth tickets and 80 adult tickets

Shortcut Trick

Assume all 200 tickets sold were Youth tickets: Total = 200 × Rs. 150 = Rs. 30,000.

Extra revenue earned = Actual revenue − Assumed revenue = Rs. 38,000 − Rs. 30,000 = Rs. 8,000.

Difference between Adult and Youth ticket price = Rs. 250 − Rs. 150 = Rs. 100.
Number of Adult tickets = 8,000 ÷ 100 = 80 tickets.
Number of Youth tickets = Total − Adult = 200 − 80 = 120 tickets.
Therefore The correct answer is 120 youth tickets and 80 adult tickets.
Alternate Method
Given: Youth ticket price = Rs. 150, Adult ticket price = Rs. 250, Total tickets = 200, Total Revenue = Rs. 38,000.
Method: We can use the Alligation Method by finding the Average Price per ticket.
=> Average price per ticket = Total Revenue ÷ Total Tickets
=> Average price = 38,000 ÷ 200 = Rs. 190.
=> Ratio of Youth tickets : Adult tickets = 60 : 40 = 3 : 2.
=> Total ratio parts = 3 + 2 = 5 units.
=> 5 units = 200 tickets.
=> 1 unit = 200 ÷ 5 = 40 tickets.
=> Youth tickets = 3 units = 3 × 40 = 120 tickets.
=> Adult tickets = 2 units = 2 × 40 = 80 tickets.
Therefore The correct answer is 120 youth tickets and 80 adult tickets.
Additional Information
Linear Equations Method
This problem can also be solved using simultaneous equations: x + y = Total Quantity and (Price1 × x) + (Price2 × y) = Total Value.
Alligation Rule
Quantity of Cheaper / Quantity of Dearer = (Price of Dearer − Mean Price) / (Mean Price − Price of Cheaper).
Weighted Average
The overall average price of a mixture depends on the individual prices and the quantity (weight) of each component: A_(avg) = (n1v1 + n2v2) ÷ (n1 + n2).

Q32. Answer: (a) 30

Shortcut Trick
For the equation X/75 = 12/X, the value of X is the geometric mean of the two denominators/numerators.
X2 = 75 × 12
X = √(75 × 12) = √(900) = 30
Therefore The correct answer is 30.
Alternate Method
Given:
Equation: X/75 = 12/X where X > 0
Formula Used:
Cross-multiplication: a/b = c/d => a × d = b × c
Calculations:
=> X/75 = 12/X
=> X × X = 75 × 12
=> X2 = 900
=> X = √900
=> X = 30 (Since X > 0)
Therefore The correct answer is 30.
Additional Information
Mean Proportional
If a/x = x/b, then x is called the mean proportional between a and b, calculated as x = √(ab).
Quadratic Roots
A quadratic equation of the form x2 = k has two roots, √k and −√k. The condition X > 0 filters the positive root.

Q33. Answer: (b) 27

Shortcut Trick
Find factors of xy = 18 whose difference (x − y) is 3.

Possible pairs for 18 are (18, 1), (9, 2), and (6, 3).
Since 6 − 3 = 3, we have x = 6 and y = 3.
Substitute these in $x^2 - y^2$: $6^2 - 3^2 = 36 - 9 = 27$.
Therefore The correct answer is 27.
Alternate Method
Given:
$x - y = 3$
$xy = 18$
Formula Used:
$(x + y)^2 = (x - y)^2 + 4xy$
$x^2 - y^2 = (x - y)(x + y)$
Calculations:
=> $(x + y)^2 = 3^2 + 4 \times 18$
=> $(x + y)^2 = 9 + 72$
=> $(x + y)^2 = 81$
=> $x + y = \sqrt{81} = 9$
Now, calculate $x^2 - y^2$:
=> $x^2 - y^2 = (x - y)(x + y)$
=> $x^2 - y^2 = 3 \times 9$
=> $x^2 - y^2 = 27$
Therefore The correct answer is 27.
Additional Information
Difference of Squares
The algebraic identity for the difference of two squares is given by $a^2 - b^2 = (a - b)(a + b)$.
Relationship between Sum and Difference
The square of the sum and the square of the difference are related by $(a + b)^2 - (a - b)^2 = 4ab$.
Square of a Binomial
Standard identities: $(a + b)^2 = a^2 + 2ab + b^2$ and $(a - b)^2 = a^2 - 2ab + b^2$.

Q34. Answer: (d) 28

Shortcut Trick
Identify the total number of days: Feb (24) + Mar (31) + Apr (18) = 73 days.
In competitive exams, 73 days is a standard value equal to exactly 1/5 of a year (73 ÷ 365 = 1/5).
Simple Interest = (Principal × Rate × Time) ÷ 100
Simple Interest = (2000 × 7 × 1/5) ÷ 100 = 400 × 7 ÷ 100 = Rs. 28.
Therefore The correct answer is Rs. 28.
Alternate Method
Given:
Principal (P) = Rs. 2,000
Rate of Interest (R) = 7% per annum
Time Period = 4 February 2023 to 18 April 2023
Formula Used:
Simple Interest (SI) = (P × R × T) ÷ 100
Calculations:
=> Number of days in February (non-leap year) = 28 − 4 = 24 days
=> Number of days in March = 31 days
=> Number of days in April = 18 days
=> Total Days = 24 + 31 + 18 = 73 days
=> Time (T) in years = 73 ÷ 365 = 1/5 years
=> SI = (2000 × 7 × 1/5) ÷ 100
=> SI = (400 × 7) ÷ 100
=> SI = 2800 ÷ 100 = 28

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Therefore The correct answer is Rs. 28.

Additional Information

Day Counting Rule

While calculating the number of days between two dates, usually the starting day is excluded and the last day is included.

Leap Year Consideration

Always check the year; if it is divisible by 4 (e.g., 2024), February has 29 days. Since 2023 is not divisible by 4, we used 28 days.

Standard Conversions

In interest problems, 73 days = 1/5 year and 146 days = 2/5 year are very common values used to simplify calculations.

Q35. Answer: (b) 24 days

Shortcut Trick

Combined efficiency of Arun + Manish + Tarun = (Total Work ÷ Days) / 2 = (4 + 5 + 6) ÷ 2 = 7.5 units/day.

Efficiency of Arun = Combined efficiency (A+M+T) − Efficiency of (M+T) = 7.5 − 5 = 2.5 units/day.

Time taken by Arun alone = Total Work ÷ Efficiency = 60 ÷ 2.5 = 24 days.

Therefore The correct answer is 24 days.

Alternate Method

Given:

Arun and Manish (A + M) = 15 days

Manish and Tarun (M + T) = 12 days

Tarun and Arun (T + A) = 10 days

Formula Used:

Total Work = LCM of individual days

Efficiency = Total Work ÷ Time

Person	Days	Total Work	Efficiency
Arun + Manish	15	60	4
Manish + Tarun	12	5	
Tarun + Arun	10	6	

Calculations:

=> 2 × (Arun + Manish + Tarun) = 4 + 5 + 6 = 15

=> Arun + Manish + Tarun = 15 ÷ 2 = 7.5

=> Arun's efficiency = (Arun + Manish + Tarun) − (Manish + Tarun)

=> Arun's efficiency = 7.5 − 5 = 2.5

=> Days taken by Arun = 60 ÷ 2.5

=> Days taken by Arun = 24

Therefore The correct answer is 24 days.

Additional Information

Total Combined Efficiency

When pairs are given like (A+B), (B+C), and (C+A), the sum of their efficiencies is twice the efficiency of (A+B+C).

Work & Wages

Wages are always distributed in the ratio of the work done or the ratio of efficiencies when time taken is same.

Alternate Day Work

For alternate days, calculate work done in one cycle (sum of efficiencies) and then divide total work by cycle work.

Q36. Answer: (d) 15√3

Shortcut Trick

Distance from bottom (base) = 15 units.

Distance from top (hypotenuse) = 2 × 15 = 30 units.

Using the property of a 30-60-90 triangle where hypotenuse is double the base.

Height = Base × √3 = 15√3 units.

Therefore The correct answer is 15√3 units.

Alternate Method

Given: Distance from bottom (BC) = 15 units. Distance from top (AC) = 2 × BC = 30 units.

Formula Used: Pythagoras Theorem: $AB^2 + BC^2 = AC^2$

=> Let AB be the height of the building (h).

=> $h^2 + 15^2 = 30^2$

=> $h^2 + 225 = 900$

=> $h^2 = 900 - 225$

=> $h^2 = 675$

=> $h = \sqrt{675} = \sqrt{(225 \times 3)}$

=> $h = 15\sqrt{3}$ units.

Therefore The correct answer is $15\sqrt{3}$ units.

Additional Information

Pythagoras Theorem

In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides: $a^2 + b^2 = c^2$.

30-60-90 Triangle Ratio

The sides of a 30-60-90 triangle are always in the ratio 1 : √3 : 2. If the shortest side (opposite 30°) is x, the hypotenuse is 2x and the height is x√3.

Trigonometric Ratios

cos θ = Base / Hypotenuse. In this case, cos θ = 15/30 = 1/2, which means the angle of elevation θ is 60°.

Q37. Answer: (d) 49

Shortcut Trick

Assume a base value (Assumed Mean) near the middle, say 50.

Calculate deviations from 50: −8, −21, −8, +8, −32, −11, −9, +29, +43.

Net deviation = −8 − 21 − 8 + 8 − 32 − 11 − 9 + 29 + 43 = −9.

Average deviation = −9 ÷ 9 = −1.

Actual Mean = Assumed Mean + Average Deviation = 50 + (−1) = 49.

Therefore The correct answer is 49.

Alternate Method

Given Observations: 42, 29, 42, 58, 18, 39, 41, 79, 93

Total count (n): 9

Formula Used: Arithmetic Mean = (Sum of all observations) ÷ (Number of observations)

=> Sum = 42 + 29 + 42 + 58 + 18 + 39 + 41 + 79 + 93

=> Sum = 441

=> Arithmetic Mean = 441 ÷ 9

=> Arithmetic Mean = 49

Therefore The correct answer is 49.

Additional Information

Properties of Arithmetic Mean

The sum of deviations of items from their arithmetic mean is always zero ($\sum(x - x) = 0$).

Effect of Changes

If each observation is increased, decreased, multiplied, or divided by a constant k, the mean also changes by that same constant k.

Combined Mean

If two groups have means x1 and x2 with sizes n1 and n2, the combined mean is (n1x1 + n2x2) ÷ (n1 + n2).

Q38. Answer: (a) 5/72

Shortcut Trick

Sum of reciprocals of two numbers = (Sum of numbers) ÷ (Product of numbers)

We know that Product of numbers = HCF × LCM

Sum of reciprocals = 60 ÷ (12 × 72)

Sum of reciprocals = 5 ÷ 72

Therefore The correct answer is 5/72.

Alternate Method

Given:
Sum of two numbers (x + y) = 60
HCF = 12, LCM = 72
Formula Used:
Product of two numbers (x × y) = HCF × LCM
Sum of reciprocals = (1/x) + (1/y) = (x + y) / (xy)
Calculations:
=> Product (xy) = 12 × 72 = 864
=> Sum of reciprocals = 60 / 864
=> Dividing both numerator and denominator by 12:
=> 60 / 864 = 5 / 72
Therefore The correct answer is 5/72.
Additional Information
HCF and LCM Relation
For any two positive integers a and b, HCF(a, b) × LCM(a, b) = a × b.
Reciprocal Sum Property
The sum of the reciprocals of any two numbers is always equal to the sum of the numbers divided by their product.
Co-prime Numbers
If two numbers are co-prime, their HCF is 1 and their LCM is equal to their product.

Q39. Answer: (c) 19,683

Shortcut Trick
Total Surface Area (TSA) = Total Cost ÷ Rate = 100602 ÷ 23 = 4374 cm^2
Side of the cube (a) = √(TSA ÷ 6) = √(4374 ÷ 6) = √729 = 27 cm
Volume of the cube = $a^3 = 27^3$ = 19,683 cm^3
Therefore The correct answer is 19,683 cm^3.
Alternate Method
Given:
Total cost of painting = Rs. 1,006.02
Rate of painting = 23 paise per cm^2
Formula Used:
Total Surface Area (TSA) of a cube = 6 × a^2
Volume of a cube = a^3 (where 'a' is the side of the cube)
Calculations:
=> Total Cost in paise = 1006.02 × 100 = 100,602 paise
=> Total Surface Area (TSA) = Total Cost ÷ Rate = 100,602 ÷ 23
=> TSA = 4,374 cm^2
=> 6 × a^2 = 4,374
=> a^2 = 4,374 ÷ 6 = 729
=> a = √729 = 27 cm
=> Volume = $a^3 = 27 \times 27 \times 27$
=> Volume = 19,683 cm^3
Therefore The correct answer is 19,683 cm^3.
Additional Information
Lateral Surface Area (LSA)
The surface area of the four vertical faces of a cube is given by $4a^2$.
Diagonal of a Cube
The length of the longest rod that can be placed inside a cube is its diagonal, calculated as $d = a\sqrt{3}$.
Unit Conversion
Always ensure the units of cost and rate are the same (either both in Rupees or both in Paise) before calculation.

Q40. Answer: (b) 127°

Shortcut Trick

In right-angled ΔBDC, angle C = 90° − angle DBC = 90° − 33° = 57°.

In ΔAEC, angle AEB is the exterior angle at vertex E.

By the Exterior Angle Theorem, angle AEB = angle CAE + angle ACE.

=> angle AEB = 70° + 57° = 127°.

Therefore The correct answer is 127°.

Alternate Method

Given: BD perpendicular to AC, angle DBC = 33°, angle CAE = 70°.

In ΔBDC, angle BDC = 90° (since BD perpendicular to AC).

=> angle BCD = 180° − (angle BDC + angle DBC)

=> angle BCD = 180° − (90° + 33°) = 57°.

Q41. Answer: (d) 65,100

Shortcut Trick

The Marked Price (MP) is always considered as 100%.

If Discount = 54%, then Selling Price (SP) = 100% − 54% = 46%.

According to the question, 46% → Rs. 29,946.

1% → 29,946 ÷ 46 = Rs. 651.

100% (MP) → 651 × 100 = Rs. 65,100.

Therefore The correct answer is Rs. 65,100.

Alternate Method

Given: Selling Price (SP) = Rs. 29,946 and Discount% = 54%.

Formula: SP = MP × (100 − Discount%) ÷ 100

=> 29,946 = MP × (100 − 54) ÷ 100

=> 29,946 = MP × 46 ÷ 100

=> MP = (29,946 × 100) ÷ 46

=> MP = 651 × 100

=> MP = Rs. 65,100.

Therefore The correct answer is Rs. 65,100.

Additional Information

Marked Price & Discount

The Marked Price is the price printed on an item. Discount is always calculated on the Marked Price. Formula: SP = MP − Discount.

Discount Percentage

It is the ratio of discount to the marked price expressed as a percentage. Formula: Discount% = (Discount ÷ MP) × 100.

Q42. Answer: (a) 40

Shortcut Trick

Ratio of Teacher to Student age: Current = 4 : 1, Five years ago = 7 : 1.

Make the ratio difference equal: (4:1)×6 → 24:6 and (7:1)×3 → 21:3.

Difference in ratio units = 24 − 21 = 3 units, which corresponds to 5 years.

Current age of Teacher = 24 units → (5/3) × 24 = 40 years.

Therefore The correct answer is 40 years.

Alternate Method

Given:

Let the current age of the Student be x.

Current age of the Teacher = 4x.

Calculations:

=> Age of Student 5 years ago = x − 5

=> Age of Teacher 5 years ago = 4x − 5

=> According to the problem: 4x − 5 = 7 × (x − 5)

=> 4x − 5 = 7x − 35
=> 3x = 30
=> x = 10
=> Current age of Teacher = 4 × 10 = 40 years.
Therefore The correct answer is 40 years.
Additional Information
Age Ratio Constant Difference
The numerical difference between the ages of two persons remains constant regardless of how many years pass.
Linear Equation Method
For age problems, always define the variable based on the current age to simplify calculations for past or future conditions.

Q43. Answer: (b) 5

Shortcut Trick
Combined efficiency (P+Q) = 60 ÷ 12 = 5 units/hr (Let Total Work = 60 units)
Efficiency of P = 60 ÷ 30 = 2 units/hr
Efficiency of Q = 5 − 2 = 3 units/hr
Time for Q to fill 1/4 of tank = (60 ÷ 4) ÷ 3 = 15 ÷ 3 = 5 hours
Therefore The correct answer is 5 hours.
Alternate Method
Given:
Time taken by P and Q together = 12 hours
Time taken by P alone = 30 hours

Person	Days	Total Work	Efficiency
P + Q	12	60	5
P	30	2	

Calculations:
=> Efficiency of Q = Efficiency of (P + Q) − Efficiency of P
=> Efficiency of Q = 5 − 2 = 3 units/hr
=> One-fourth of total tank capacity = 60 ÷ 4 = 15 units
=> Time taken by Q = Work ÷ Efficiency
=> Time = 15 ÷ 3 = 5 hours
Therefore The correct answer is 5 hours.
Additional Information
Efficiency and Time Relation
Efficiency is inversely proportional to time. If a person takes 'n' days to complete a work, efficiency = 1/n units per day.
Pipes and Cisterns
Inlet pipes have positive efficiency, while outlet (leakage) pipes have negative efficiency. Net work = Sum of efficiencies.

Q44. Answer: (d) 8,280

Shortcut Trick
Combine ratios A : B = 3 : 1 and B : C = 7 : 12 to get A : B : C = 21 : 7 : 12.
Total units = 21 + 7 + 12 = 40 units.
Total profit Rs. 27,600 ÷ 40 units = Rs. 690 per unit.
C's share = 12 units × Rs. 690 = Rs. 8,280.
Therefore The correct answer is Rs. 8,280.
Alternate Method
Given:
Ratio A : B = 18 : 6 = 3 : 1
Ratio B : C = 7 : 12
Total Profit = Rs. 27,600
Calculations:

=> To equalize B, multiply A : B by 7: (3 × 7) : (1 × 7) = 21 : 7
=> Combined Ratio A : B : C = 21 : 7 : 12
=> Sum of ratio terms = 21 + 7 + 12 = 40
=> C's share = (12 ÷ 40) × 27,600
=> C's share = 12 × 690
=> C's share = Rs. 8,280
Therefore The correct answer is Rs. 8,280.
Additional Information
Partnership Profit Distribution
Profit is distributed in the ratio of (Capital × Time). If time is constant, profit ratio equals the capital ratio.
Combining Ratios
If A:B = a:b and B:C = c:d, then A:B:C = (a×c) : (b×c) : (b×d).
Ratio to Value Conversion
Value of a part = (Ratio of that part ÷ Sum of all ratios) × Total Value.

Q45. Answer: (b) 5.5

Shortcut Trick
Remaining Distance = 1/3 of 132 km = 44 km.
Remaining Time = 4/7 of 14 hours = 8 hours.
Required Speed = 44 ÷ 8 = 5.5 km/hr.
Therefore The correct answer is 5.5 km/hr.
Alternate Method
Given: Total Distance = 132 km, Total Time = 14 hours.
Step 1: Calculate Remaining Distance
=> Distance covered = 2/3 × 132 = 88 km
=> Remaining Distance = 132 − 88 = 44 km
Step 2: Calculate Remaining Time
=> Time taken = 3/7 × 14 = 6 hours
=> Remaining Time = 14 − 6 = 8 hours
Step 3: Calculate Required Speed
=> Speed = Distance ÷ Time
=> Speed = 44 ÷ 8 = 5.5 km/hr
Therefore The correct answer is 5.5 km/hr.
Additional Information
Average Speed Formula
Average Speed = Total Distance ÷ Total Time. In this case, 132 ÷ 14 ≈ 9.42 km/hr.
Uniform Speed Relationship
Distance = Speed × Time. To find any one parameter, the other two must be known or expressed in terms of a single variable.
Unit Conversion
To convert km/hr to m/s, multiply by 5/18. To convert m/s to km/hr, multiply by 18/5.

Q46. Answer: (a) 10

Shortcut Trick
Increase in average = (New Score − Old Average) ÷ Total Innings after new score
Increase = (183 − 52) ÷ 13
Increase = 131 ÷ 13 = 10.0769...
Rounding to the nearest whole number ≈ 10.
Therefore The correct answer is 10.
Alternate Method
Given:
Average score in 12 innings = 52 runs
Score in 13^(th) innings = 183 runs

Formula Used:

Average = Total runs ÷ Number of innings

Calculations:

=> Total runs in 12 innings = 12 × 52 = 624 runs

=> Total runs after 13 innings = 624 + 183 = 807 runs

=> New average = 807 ÷ 13

=> New average = 62.0769... runs

=> Increase in average = New average − Old average

=> Increase = 62.0769... − 52 = 10.0769... runs

=> Rounding to the nearest whole number, we get 10.

Therefore The correct answer is 10.

Additional Information

Average Change Concept

When a new observation is added, the change in average is equal to the difference between the new value and the old average, divided by the new total count of observations.

Rounding Off Rules

If the decimal part is 0.5 or greater, round up to the next whole number; if it is less than 0.5, round down to the current whole number.

Total Sum Formula

Total Sum = Average × Number of items. This is used to find the new sum when an entry is added or removed.

Q47. Answer: (d) 44 m/s

Shortcut Trick

Total distance to cover = Sum of lengths of both trains = 968 + 968 = 1936 m.

Relative speed (opposite direction) = Sum of individual speeds = 2 × Speed (since speeds are same).

Relative Speed = Total Distance ÷ Time = 1936 ÷ 22 = 88 m/s.

Speed of each train = 88 ÷ 2 = 44 m/s.

Therefore The correct answer is 44 m/s.

Alternate Method

Given:

Length of Train 1 (L1) = 968 m

Length of Train 2 (L2) = 968 m

Time taken to cross each other (t) = 22 seconds

Speed of each train = s (since speeds are the same)

Formula Used:

Relative Speed = (Total Distance) ÷ (Total Time)

When two objects move in opposite directions, Relative Speed = s1 + s2

Calculations:

=> Total Distance = L1 + L2 = 968 + 968 = 1936 m

=> Relative Speed = s + s = 2s

=> 2s = 1936 ÷ 22

=> 2s = 88

=> s = 88 ÷ 2

=> s = 44 m/s

Therefore The correct answer is 44 m/s.

Additional Information

Relative Speed in Same Direction

When two objects move in the same direction, the relative speed is the difference of their speeds (s1 − s2).

Unit Conversion

To convert speed from m/s to km/h, multiply by 18/5. To convert from km/h to m/s, multiply by 5/18.

Crossing a Stationary Object

When a train crosses a pole or a person, the distance covered is equal to the length of the train.

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Q48. Answer: (b) 123

Shortcut Trick

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

Option (1): 7 + 8 + 1 = 16 (No)

Option (2): 1 + 2 + 3 = 6 (Yes, 6 is divisible by 3)

Option (3): 2 + 4 + 5 = 11 (No)

Option (4): 5 + 5 + 7 = 17 (No)

Therefore The correct answer is 123.

Alternate Method

Given: Numbers 781, 123, 245, 557.

Rule: Divisibility by 3 depends on the sum of digits.

=> For 781: Sum = 7 + 8 + 1 = 16; 16 ÷ 3 = 5 Remainder 1.

=> For 123: Sum = 1 + 2 + 3 = 6; 6 ÷ 3 = 2 Remainder 0.

=> For 245: Sum = 2 + 4 + 5 = 11; 11 ÷ 3 = 3 Remainder 2.

=> For 557: Sum = 5 + 5 + 7 = 17; 17 ÷ 3 = 5 Remainder 2.

Therefore The correct answer is 123.

Additional Information

Divisibility by 9

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

Divisibility by 6

A number is divisible by 6 if it is even and the sum of its digits is divisible by 3.

Divisibility by 4

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

Q49. Answer: (a) 40

Shortcut Trick

Ratio of Cost Price (CP) to Marked Price (MP) is given by (100 − D%) : (100 + P%).

Let CP = 100, then MP = 100 + 80 = 180.

Profit = 8%, so Selling Price (SP) = 100 + 8 = 108.

Discount = MP − SP = 180 − 108 = 72.

X = (Discount ÷ MP) × 100 = (72 ÷ 180) × 100 = 40%.

Therefore The correct answer is 40.

Alternate Method

Given → Markup% = 80%, Profit% = 8%, Discount% = X%.

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

=> Let Cost Price (CP) be 100.

=> Marked Price (MP) = 100 + 80% of 100 = 180.

=> Selling Price (SP) = 100 + 8% of 100 = 108.

=> Discount Amount = MP − SP = 180 − 108 = 72.

=> Discount Percentage (X) = (72 ÷ 180) × 100 = 40.

Therefore The correct answer is 40.

Additional Information

Relation between CP, MP, Profit, and Discount

The formula CP × (1 + Markup%) × (1 − Discount%) = CP × (1 + Profit%) allows solving for any single unknown variable when others are provided.

Marked Price

It is the price displayed on the product label. Discounts are always calculated on the Marked Price (MP), while Profit or Loss is calculated on the Cost Price (CP).

Q50. Answer: (a) a decrease of 58.13%

Shortcut Trick

Use the Successive Multiplying Factor method.

Net Multiplier = 0.70 × 0.75 × 0.55 × 1.45

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Net Multiplier = 0.525 × 0.7975 = 0.4186875

Decrease % = (1 − 0.4186875) × 100 = 58.13125%

Therefore The correct answer is a decrease of 58.13%.

Alternate Method

Assume the original price of fuel is 100 units.

=> Price after 1st month = 100 × (100 − 30)/100 = 70

=> Price after 2nd month = 70 × (100 − 25)/100 = 70 × 0.75 = 52.5

=> Price after 3rd month = 52.5 × (100 − 45)/100 = 52.5 × 0.55 = 28.875

=> Price after 4th month = 28.875 × (100 + 45)/100 = 28.875 × 1.45 = 41.86875

=> Net decrease = 100 − 41.86875 = 58.13125

=> Percentage decrease = (58.13125 / 100) × 100 ≈ 58.13%

Therefore The correct answer is a decrease of 58.13%.

Additional Information

Successive Percentage Change

For two successive changes a% and b%, the net change is given by [a + b + (ab/100)]%.

Multiplying Factor (MF)

For an x% increase, MF = (1 + x/100). For an x% decrease, MF = (1 − x/100). Final Value = Initial Value × MF1 × MF2 ...

Percentage Decrease Formula

Percentage Decrease = [(Initial Value − Final Value) / Initial Value] × 100%.

Q51. Answer: (d) IK−FK

Here, the logic followed is as : In each pair, the second letter-group is obtained by subtracting 2 from the positional value of each letter in the first letter-group.

1) UW − SU

2) OQ − MO

3) DF − BD

4) IK − FK

It is observed that in all the other options, 2 is subtracted from each letter, whereas 'IK − FK' does not follow this pattern.

Therefore, 'IK − FK' does not belong to the group.

Hence, the correct answer is "Option 4".

Q52. Answer: (b) PRTW

Logic followed here is: (Positional value of each letter) + 6.

For

ACEH is related to GIKN →

KMOR is related to QSUX →

Similarly, let's find the related word for JLNQ:

Therefore, 'JLNQ' is related to PRTW.

Hence, the correct answer is "Option 2".

Q53. Answer: (c) 9

Given Number: 632517

Rule: Add 1 to each odd digit. Subtract 1 from each even digit.

Step 1:

Apply the rule to each digit:

Original Digit	Operation	New Digit
6	6 − 1	5
3	3 + 1	4
2	2 − 1	1
5	5 + 1	6
1	1 + 1	2

7	7 + 1	8

Step 2:
New number formed: 541628
Step 3:
Largest digit = 8
Smallest digit = 1
Sum = 8 + 1 = 9
Therefore, the required sum is 9.
Hence, the correct answer is "Option 3".

Q54. Answer: (d) Two

Given Series:
(Left) 7 3 1 4 9 2 6 5 8 3 7 1 9 4 2 5 6 8 7 3 9 4 (Right)
We need to find the unique numbers greater than 7.
Numbers greater than 7 are: 8, 9
Total unique numbers greater than 7 = 2
Therefore, the answer is Two.
Hence, the correct answer is "Option 4".

Q55. Answer: (d) Neither conclusion (I) nor (II) follows

Statements:
Some silver is gold.
Some silver is cash.
Some gold is fortune.
Venn Diagram Logic:
Conclusions:
(I) Some silver is fortune: Does not follows (Because there is no definite connection between silver and fortune.)
(II) Some gold is cash: Does not follows (Because there is no definite connection between gold and cash.)
Therefore, neither conclusion (I) nor (II) follows.
Hence, the correct answer is "Option 4".

Q56. Answer: (c) 37th

Given:
Total students = 91
Mr. Akte is 33rd from the left.
Mr. Memi is 22nd to the right of Mr. Akte.
Step 1:
Find Mr. Memi's position from the left end.
Mr. Akte's position from the left = 33
Mr. Memi is 22 places to the right of Mr. Akte.
So,
33 + 22 = 55
Therefore, Mr. Memi is 55th from the left end.
Step 2:
Find Mr. Memi's position from the right end.
Formula:
Position from right = Total students − Position from left + 1
= 91 − 55 + 1
= 37
Therefore, Mr. Memi is 37th from the right end.
Hence, the correct answer is "Option 3".

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Q57. Answer: (c) Ishaan

Given:

Six neighbors — Amrita, Maria, Ruhi, Sunita, Ishaan and Vaibhav — are sitting around a round table facing the center.

Amrita sits second to the left of Maria.

Ruhi is the immediate neighbor of both Maria and Sunita.

Ishaan sits second to the right of Vaibhav.

From Amrita's right direction, the person between Amrita and Maria is Ishaan.

Therefore, Ishaan sits between Amrita and Maria.

Hence, the correct answer is "Option 3".

Q58. Answer: (d) S

Given:

Seven people P, Q, R, S, T, U and V are sitting in a row facing north.

Q is sitting third from the right end.

V is sitting third to the left of S.

T is sitting to the right of Q and at one of the extreme ends of the row.

Only two people sit between U and T.

P is not sitting at any extreme end.

Find who is sitting second from the right end.

From the right end:

1st from right = T

2nd from right = S

Therefore, S is sitting second from the right end.

Hence, the correct answer is "Option 4".

Q59. Answer: (c) 118

Logic followed here is: (Sum of positional values of letters) × 2.

For

YISB is coded as 110 →

Sum of positional values = 25 + 9 + 19 + 2 = 55

Code = 55 × 2 = 110

PKJQ is coded as 108 →

Sum of positional values = 16 + 11 + 10 + 17 = 54

Code = 54 × 2 = 108

Similarly, let's find the code for CNXR:

Sum of positional values = 3 + 14 + 24 + 18 = 59

Code = 59 × 2 = 118

Therefore, the code for 'CNXR' is 118.

Hence, the correct answer is "Option 3".

Q60. Answer: (b) One

Given Series:

(Left) 3 3 > + / \ ^ # + @ 7 9 3 6 $ \ + 9 > 6 & (Right)

We need to find the symbols which are:

→ Immediately preceded by a number

→ Immediately followed by a number

Required pattern: Number → Symbol → Number

Checking the series:

(Left) 3 3 > + / \ ^ # + @ 7 9 3 6 $ \ + 9 > 6 & (Right)

The symbols satisfying the condition are:

between 9 and 6

Therefore, the total number of such symbols is 1.

Hence, the correct answer is "Option 2".

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Q61. Answer: (a) AX−YY

Logic followed here is: The second letter-cluster in each pair is obtained by subtracting 1 from the positional value of each letter in the first letter-cluster.

1) AX - YY:

2) KH - JG:

3) XU - WT:

4) HE - GD:

The pattern followed by KH-JG, XU-WT, and HE-GD is a subtraction of 1 from each letter's positional value. AX-YY does not follow this pattern.

Therefore, the odd letter-group pair is AX - YY.

Hence, the correct answer is "Option 1".

Q62. Answer: (b) husband's sister

Given Code Language:

Symbol	Meaning
•	Mother
−	Brother
×	Wife
%	Father
#	Daughter

Given Expression:

T # Q % C % N # P: T is the daughter of Q. Q is the father of C. C is the father of N. N is the daughter of P

Family Structure:

Q is father of C.

C is father of N.

N is daughter of P.

Therefore, P is wife of C.

Since T is daughter of Q and C is also child of Q, T is sister of C.

And P is wife of C.

So, T is the husband's sister of P.

Hence, the correct answer is "Option 2".

Q63. Answer: (b) Southeast

Given:

Tufail walks 100 m towards the north.

Then he turns right and walks 220 m.

Again, he turns right and walks 121 m.

So, from the starting point, Tufail is towards the Southeast direction.

Hence, the correct answer is "Option 2".

Q64. Answer: (c) 58

Given Mapping:

Letter	Operation
A	÷
B	×
C	•
D	−

Given Equation:

41 C 9 B 12 A 4 D 10 = ?

Replace the letters with symbols:
41 + 9 × 12 ÷ 4 − 10
→ 41 + (9 × 12 ÷ 4) − 10
→ 41 + (9 × 3) − 10
→ 41 + 27 − 10
→ 68 − 10
→ 58
Therefore, the value that comes in place of the question mark is 58.
Hence, the correct answer is "Option 3".

Q65. Answer: (d) BAW 8

Given Series: FEA 40 EDZ 32 DCY 24 CBX 16 ?
The logic followed here is:
Therefore According to the logic followed BAW 8 will replace the (?) mark.
Hence, the correct answer is "Option 4".

Q66. Answer: (c) QPOH

Logic followed here is: (+5, +5, +5, -6) applied to the positional values of the letters.
ESQZ is related to JXVT →
MGHM is related to RLMG →
Similarly, let's find the group related to LKJN:
Therefore, the group related to 'LKJN' is QPOH.
Hence, the correct answer is "Option 3".

Q67. Answer: (d) 12

Given series: 192, 574, 563, 189, 567
The logic followed here is as follows:
Identify the largest and smallest of the given numbers and then add their corresponding digits.
The largest number is 574 →
The third digit of the largest number = 4
The smallest number is 189 →
Second digit of the smallest number = 8
Sum of the digits:
Result = (third digit of the largest number) + (second digit of the smallest number)
Result = 4 + 8 = 12
Hence, the correct answer is "Option 4".

Q68. Answer: (d) 60

Given:
'+' and '−' are interchanged, and '×' and '÷' are interchanged.
Original Equation:
12 ÷ 5 + 22 × 2 − 6 = ? + 5
After Interchanging the Operators:

Original	New
•	−
−	•
×	÷
÷	×

Therefore,
12 × 5 − 22 ÷ 2 + 6 = ? - 5
=> 12 × 5 − 22 ÷ 2 + 6 = ? - 5

=> 12 × 5 - 11 + 6 = ? - 5

=> 60 - 11 + 6 + 5 = ?

=> 71 - 11 = ?

=> 60 = ?

Therefore, the value of the question mark is 60.

Hence, the correct answer is "Option 4".

Q69. Answer: (c) BZYZ

Logic followed here is:(Positional value of each letter) - 4..

For

IGFG is related to ECBC →

TRQR is related to PNMN →

Similarly, let's find the relation for FDCD:

Therefore, the relation for 'FDCD' is BZYZ.

Hence, the correct answer is "Option 3".

Q70. Answer: (d) 19 km to the west

Given:

Pramod starts from point A and drives 43 km north.

Then he turns left and drives 45 km.

Again he turns left and drives 56 km.

Then he turns left again and drives 64 km.

Finally, he turns left and drives 13 km to reach point P.

To reach point A again, he must travel 19 km towards the West.

Hence, the correct answer is "Option 4".

Q71. Answer: (b) 12

Given Series:

(Left) 5 5 1 7 4 4 7 5 9 5 5 3 2 2 2 7 1 1 3 9 3 5 2 8 5 1 9 (Right)

We need to find the odd numbers which are:

→ Immediately preceded by an odd number

→ Immediately followed by an odd number

Required pattern: Odd → Odd → Odd

Checking the series:

(Left)5 5 1 7 4 4 7 5 9 5 5 3 2 2 2 7 1 1 3 9 3 5 2 8 5 1 9 (Right)

The odd numbers satisfying the condition are:

(551),(517),(759),(595),(955),(553),(711),(113),(139),(393),(935),(519).

Total such odd numbers = 12

Therefore, the number of such odd numbers is 12.

Hence, the correct answer is "Option 2".

Q72. Answer: (d) Only conclusion (I) follows

Statements:

Some bins are tins.

All tins are pins.

Venn Diagram Logic:

Conclusions:

(I) Some bins are pins: Follows (Because some bins are tins and all tins are pins.)

(II) All pins are tins: Does not follows (Because only “All tins are pins” is given, not the reverse.)

Therefore, only conclusion (I) follows.

Hence, the correct answer is "Option 4".

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Q73. Answer: (b) pr

Given:

“will you go” is coded as “rt sj mn”

“will kill you” is coded as “sj rt pr”

Therefore, the code for “kill” is “pr”.

Hence, the correct answer is "Option 2".

Q74. Answer: (d) 73

Logic followed here is:

The difference between consecutive numbers in the series follows a pattern where each subsequent difference increases by powers of 2 (2, 4, 8, 16...).

Therefore, the number that should replace the question mark is 73.

Hence, the correct answer is "Option 4".

Q75. Answer: (a) 35

Given:

Jimmy is 19th from the left end.

Shlok is 23rd from the left end and exactly between Jimmy and Ray.

Ray is 9th from the right end.

Step 1:

Jimmy's position from the left = 19

Shlok's position from the left = 23

Since Shlok is exactly between Jimmy and Ray:

Distance between Jimmy and Shlok = 23 − 19 = 4

Therefore, Ray will also be 4 positions away from Shlok on the other side.

So,

Ray's position from the left = 23 + 4 = 27

Step 2:

Ray is 9th from the right end.

Formula:

Total people = Position from left + Position from right − 1

= 27 + 9 − 1

= 35

Therefore, the total number of people in the line is 35.

Hence, the correct answer is "Option 1".

Q76. Answer: (b) D

Given:

Five people A, B, C, D and E are sitting in a row facing north.

Only two people sit between A and B.

Only B sits between D and E.

E sits second to the left of A.

Therefore, D sits at the left end of the row.

Hence, the correct answer is "Option 2".

Q77. Answer: (d) (104, 156, 130)

Logic followed here is:(1st Number + 2nd Number) ÷ 2 = 3rd Number.

For (86, 154, 120) →

Calculation: (86 + 154) ÷ 2 = 240 ÷ 2 = 120

For (98, 172, 135) →

Calculation: (98 + 172) ÷ 2 = 270 ÷ 2 = 135

Similarly, let's find the correct set from the options:

For (104, 156, 130) →

Calculation: (104 + 156) ÷ 2 = 260 ÷ 2 = 130

Therefore, the set that follows the same logic is (104, 156, 130).

Hence, the correct answer is "Option 4".

Q78. Answer: (c) XHV

Logic followed here is:

Each letter of the next term is obtained by adding a specific constant value to the positional value of the corresponding letter of the previous term.

The letters for the next term are: X, H, V.

Therefore, the term at the place of '?' is XHV.

Hence, the correct answer is "Option 3".

Q79. Answer: (c) 8

Logic followed here is: The sequence is formed by multiplying the previous number by 2 and then adding 2 to the result.

Therefore, the missing number in the series is 8.

Hence, the correct answer is "Option 3".

Q80. Answer: (b) 136

Logic followed here is: (Previous term) + 24 = Next term.

The sequence is as follows:

Therefore, the number that comes in place of '?' is 136.

Hence, the correct answer is "Option 2".

Q81. Answer: (c) World Bank

The solution is in Hindi. Read it online.

Q82. Answer: (a) Re-KYC of accounts

The correct answer is Re-KYC of accounts.

Key Points

• The Reserve Bank of India (RBI) and the Government of India have mandated the Re-KYC (Know Your Customer) process for Pradhan Mantri Jan Dhan Yojana (PMJDY) accounts to ensure they remain compliant with current regulatory standards.

• Since PMJDY was launched in August 2014, a vast majority of the accounts have reached the 10-year mark. According to RBI guidelines, periodic updation of KYC documents for low-risk customers must be carried out at least once every 10 years.

• The mandated activity for the July-September 2025 period involves banks reaching out to account holders to update their identity and address proofs to prevent these accounts from becoming inoperative or restricted.

• Banks have been instructed to use various methods for this process, including self-declaration (if there is no change in information), Video-Based Customer Identification Process (V-CIP), ATMs, and Mobile Banking to minimize inconvenience to the account holders. Hence, the mandate for Re-KYC of accounts is correct.

• This drive is essential for maintaining the integrity of the financial system and ensuring that Direct Benefit Transfer (DBT) credits continue to reach the intended beneficiaries without technical glitches.

Additional Information

• Pradhan Mantri Jan Dhan Yojana (PMJDY):

• Launched on August 28, 2014, it is a National Mission for Financial Inclusion aimed at providing affordable access to financial services like savings accounts, remittance, credit, insurance, and pensions.

• It allows for the opening of Basic Savings Bank Deposit (BSBD) accounts with zero balance requirements, ensuring that even the poorest sections of society can access banking.

• Key Features and Benefits:

• Every account holder is provided with a RuPay Debit Card.

• Accounts opened after August 28, 2018, come with an enhanced Accident Insurance Cover of Rs. 2 lakh (it was Rs. 1 lakh for accounts opened before this date).

• An Overdraft (OD) facility of up to Rs. 10,000 is available to eligible account holders, particularly targeting the lady of the household to promote financial empowerment.

• Significance of KYC:

• KYC is a process used by financial institutions to verify the identity and suitability of their clients. It is crucial for preventing money laundering, identity theft, and financial fraud.

• Under the Prevention of Money Laundering Act (PMLA), 2002, banks are legally obligated to maintain updated records of their

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customers.

• Inoperative Accounts:

• A PMJDY account is treated as inoperative if there are no customer-induced transactions in the account for over two years. Regular re-KYC helps in identifying active versus dormant accounts.

Important Points

• Official Documents (OVDs): For the re-KYC process, customers can use any of the six Officially Valid Documents: Aadhaar Card, Voter ID, Passport, Driving License, MNREGA Job Card, or PAN Card.

• Financial Inclusion Progress: As of 2024, more than 50 crore PMJDY accounts have been opened with total deposits exceeding Rs. 2 lakh crore, signifying the massive scale of this financial inclusion initiative in India.

• Digital Push: The RBI has emphasized that if a customer has already submitted their Aadhaar and there is no change in their residential address, they should not be required to visit the branch physically for re-KYC.

Q83. Answer: (a) Prahlad Chandra Agarwal

The correct answer is Prahlad Chandra Agrawal.

Key Points

• Professor Prahlad Chandra Agrawal (P.C. Agrawal) was honored with the prestigious COSPAR Harrie Massey Award in 2024.

• The award was conferred during the 45th Scientific Assembly of the Committee on Space Research (COSPAR), which took place in Busan, South Korea, in July 2024.

• He is recognized for his outstanding contributions to space research, particularly his leadership in the development of AstroSat, which is India's first dedicated multi-wavelength space observatory launched by ISRO.

• P.C. Agrawal is a former professor at the Tata Institute of Fundamental Research (TIFR) and has spent decades advancing the field of high-energy astrophysics and X-ray astronomy in India.

• He played a pivotal role as the Principal Investigator for the Large Area X-ray Proportional Counter (LAXPC), one of the primary instruments on AstroSat.

Additional Information

• COSPAR (Committee on Space Research):

• It was established by the International Council of Scientific Unions (ICSU) in 1958 to promote scientific research in space at an international level.

• The organization facilitates the exchange of results, information, and opinions among scientists globally.

• Harrie Massey Award:

• This award honors the memory of Sir Harrie Massey, a distinguished Australian physicist who made significant contributions to atomic physics and space research.

• It is awarded to individuals who have shown outstanding leadership and made significant contributions to the advancement of space science.

• AstroSat:

• Launched on September 28, 2015, using the PSLV-C30 launch vehicle, AstroSat provides a unique capability to observe the universe in Ultraviolet, Optical, and X-ray bands simultaneously.

• It has enabled Indian scientists to study black holes, neutron stars, and binary star systems with high precision.

• Other Notable Scientists:

• Udupi Ramachandra Rao: A former ISRO Chairman known as the "Satellite Man of India," he was the first Indian to be inducted into the Satellite Hall of Fame.

• K. Radhakrishnan: He served as the Chairman of ISRO during the successful Mars Orbiter Mission (Mangalyaan) in 2014.

• G. Madhavan Nair: He was the ISRO Chairman during the launch of Chandrayaan-1 in 2008, India's first mission to the Moon.

Important Points

• The COSPAR 2024 assembly marked a significant moment for Indian space science as Professor Agrawal became one of the few Indian scientists to receive this high international honor.

• His work bridges the gap between instrumentation and theoretical astrophysics, ensuring that India remains a key player in the global space science community.

• The LAXPC instrument developed under his guidance is capable of studying rapid X-ray variability in celestial sources, providing data that is used by researchers worldwide.

Q84. Answer: (b) Laapataa Ladies

The correct answer is Laapataa Ladies.

Key Points

• The 25th edition of the International Indian Film Academy (IIFA) Awards was held in March 2025 in Jaipur, Rajasthan.

• The film Laapataa Ladies emerged as the big winner, securing the Best Picture (Best Film) award.

• The movie was directed by Kiran Rao and produced by Aamir Khan Productions and Kindling Pictures. Hence, the correct answer is Laapataa Ladies.

• The ceremony marked the Silver Jubilee of the IIFA Awards, celebrating 25 years of honoring excellence in Bollywood.

• The film Laapataa Ladies was also India's official entry for the 97th Academy Awards (Oscars 2025) in the Best Foreign Language Film category, which significantly boosted its profile at domestic award shows.

• Kiran Rao also received the Best Director award at the 25th IIFA for her work on this film, highlighting its critical and artistic success.

Additional Information

• International Indian Film Academy (IIFA) Awards:

• The IIFA Awards were established in the year 2000 to promote Indian cinema globally.

• The first-ever ceremony was held at the Millennium Dome in London.

• Since its inception, the event has been hosted in various countries across Europe, Asia, Africa, and North America to expand the reach of Indian films.

• About Laapataa Ladies:

• The film is a social satire set in rural India in 2001, focusing on the story of two brides who get swapped during a train journey.

• It stars young actors Nitanshi Goel, Pratibha Ranta, and Sparsh Shrivastava, along with seasoned actor Ravi Kishan in a pivotal role.

• The movie was released in March 2024 and received widespread acclaim for its screenplay, humor, and feminist themes.

• Other Nominees in the Category:

• Films like Animal, Stree 2, 12th Fail, and Article 370 were among the major competitors for various categories during the 2024-2025 awards season.

• Stree 2, featuring Shraddha Kapoor and Rajkummar Rao, was one of the highest-grossing films of the year, while Article 370 was noted for its political narrative.

Important Points

• Venue Significance: Hosting the 25th IIFA in Jaipur was a significant move to bring the "Silver Jubilee" celebration back to India after several years of international venues like Abu Dhabi and Bangkok.

• Award Categories: IIFA covers various technical and creative categories including Best Actor, Best Actress, Best Supporting Role, and Technical Excellence (Editing, Cinematography, etc.).

• Impact of 12th Fail: While 12th Fail (directed by Vidhu Vinod Chopra) won several awards at the Filmfare and National Film Awards, Laapataa Ladies dominated the IIFA 2025 platform.

• Global Reach: The IIFA awards are managed by Wizcraft International and play a key role in the soft power of India's cultural export.

Q85. Answer: (a) Armand Duplantis

The correct answer is Armand Duplantis.

Key Points

• Armand "Mondo" Duplantis, representing Sweden, was honored as the Laureus World Sportsman of the Year in April 2025.

• He achieved a historic milestone by becoming the first male field athlete to win this prestigious global award since its inception.

• The award recognized his unprecedented dominance in the Pole Vault event throughout the 2024 season, where he consistently broke his own World Record and secured the Gold Medal at the Paris Olympics.

• During the qualifying period, Duplantis pushed the boundaries of human achievement, clearing a height of 6.26 meters, further cementing his legacy as one of the greatest athletes in history.

• His victory broke the long-standing trend of the award being predominantly won by athletes from Tennis, Football, or Formula 1, highlighting the rising profile of field events in international sports.

Additional Information

• Laureus World Sports Awards:

• Established in 1999 by founding patrons Daimler and Richemont, these awards are often referred to as the "Oscars of Sport."

• The first ceremony was held in 2000 in Monte Carlo, with Tiger Woods being the inaugural winner of the Sportsman of the Year title.

• Winners are selected by the Laureus World Sports Academy, a jury comprising over 70 sporting legends.

• Jakob Ingebrigtsen:

• A Norwegian middle-distance and long-distance runner who specializes in the 1500m and 5000m.

• He won the Olympic Gold in the 5000m at the 2024 Paris Games and holds multiple European and World records in distance running.

• Neeraj Chopra:

• The "Golden Boy" of India, who is a specialist in the Javelin Throw.

• After winning Gold at the Tokyo 2020 Olympics, he secured a Silver Medal at the 2024 Paris Olympics and has been a frequent nominee for Laureus awards due to his massive impact on Asian athletics.

• Max Verstappen:

• A Dutch racing driver who competes in Formula 1 for Red Bull Racing.

• He has won multiple consecutive World Drivers' Championships (2021, 2022, 2023) and previously won the Laureus World Sportsman of the Year award in 2022.

Important Points

• The 2025 Laureus Ceremony celebrated the best of 2024, which was an Olympic year, making the competition for the top honors exceptionally high among global icons.

• The distinction between track athletes (runners) and field athletes (jumpers/throwers) is significant in athletics history; Duplantis's win is a rare recognition for the jumping disciplines.

• Duplantis holds both the Indoor and Outdoor world records, making him the most decorated Pole Vaulter in the modern era, surpassing the records of legend Sergey Bubka.

Q86. Answer: (c) Rs. 14.82 lakh crore

The correct answer is Rs. 14.82 lakh crore.

Key Points

• The Union Budget 2025-26 was presented by the Union Minister for Finance and Corporate Affairs, Smt. Nirmala Sitharaman, in Parliament on February 1, 2025.

• According to the budget estimates, the gross market borrowing through dated securities for the financial year 2025-26 is planned at Rs. 14.82 lakh crore.

• This borrowing is part of the government's strategy to finance the Fiscal Deficit while ensuring that the private sector has enough space for credit as the economy grows.

• The net market borrowing for the same period (FY 2025-26) is estimated to be Rs. 11.23 lakh crore, which is the amount borrowed after accounting for the repayment of past loans.

• The fiscal deficit for 2025-26 is estimated at 4.3% of the Gross Domestic Product (GDP), showing a continued commitment to the fiscal consolidation glide path.

Additional Information

• Capital Expenditure (Capex):

• The Capital Expenditure outlay for 2025-26 has been increased to Rs. 12.01 lakh crore.

• This represents a significant portion of the total budget, aimed at boosting infrastructure, logistics, and industrial growth across the country.

• Higher Capex is expected to have a multiplier effect on the economy, creating employment and improving long-term productivity.

• Total Expenditure and Receipts:

• The total expenditure for the financial year 2025-26 is estimated at Rs. 53.07 lakh crore.

• The total receipts (other than borrowings) are estimated at Rs. 34.40 lakh crore.

• The Gross Tax Revenue is expected to see steady growth, driven by GST (Goods and Services Tax), Direct Taxes, and Corporate Taxes.

• Fiscal Consolidation:

• The government aims to reach a fiscal deficit level below 4.5% by the year 2025-26.

• By targeting 4.3% in this budget, the government is successfully adhering to the Medium-Term Fiscal Policy framework.

• Managing market borrowings effectively is crucial to maintain macroeconomic stability and keep inflation within the target range set by the RBI (Reserve Bank of India).

Important Points

• Market Borrowing Mechanism: The Government of India borrows from the domestic market by issuing Dated Securities and Treasury Bills. The RBI acts as the investment manager for the government.

• Dated Securities: These are long-term debt instruments that carry a fixed or floating coupon rate (interest rate) paid on the face value, with a tenure ranging from 5 years to 40 years.

• Significance of the Figures: The planned Rs. 14.82 lakh crore gross borrowing is manageable and was well-received by the bond market, as it indicates that the government is not over-leveraging despite high expenditure needs.

• Comparison: In the Interim Budget 2024-25, the gross borrowing was pegged at Rs. 14.13 lakh crore, showing a marginal and calibrated increase for the 2025-26 full budget to support developmental goals.

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Q87. Answer: (a) Hindustani Classical Music

The solution is in Hindi. Read it online.

Q88. Answer: (b) 10

The correct answer is 10.

Key Points

• The Sustainable Development Report (SDR) is an annual assessment that tracks the progress of all 193 UN Member States toward achieving the Sustainable Development Goals (SDGs).

• In the 2025 edition of the report, India demonstrated a significant advancement by improving its global ranking by 10 positions compared to the 2024 data.

• This improvement reflects India's concerted efforts in areas such as climate action (Goal 13), clean energy (Goal 7), and sustainable cities (Goal 11), which have seen measurable positive shifts in the latest reporting cycle.

• The report is published by the Sustainable Development Solutions Network (SDSN), which has been operating under the auspices of the UN Secretary-General since 2012.

• The 2025 ranking highlights that while India still faces challenges in gender equality (Goal 5) and hunger (Goal 2), the overall trajectory has moved upward, moving the nation closer to the median ranking of developing economies. Hence, the correct answer is 10.

Additional Information

• Sustainable Development Goals (SDGs):

• The SDGs, also known as the Global Goals, were adopted by the United Nations in September 2015 as a universal call to action to end poverty and protect the planet.

• There are 17 Goals and 169 targets intended to be reached by the year 2030.

• These goals replaced the Millennium Development Goals (MDGs) which ended in 2015.

• NITI Aayog's SDG India Index:

• At the national level, NITI Aayog is the nodal agency responsible for monitoring SDG implementation through the SDG India Index.

• The index ranks States and Union Territories based on their performance, categorizing them as Aspirants, Performers, Front-Runners, or Achievers.

• The latest SDG India Index 2023-24 showed that Kerala and Uttarakhand emerged as top-performing states.

• SDSN and Global Monitoring:

• The Sustainable Development Solutions Network (SDSN) is led by world-renowned economist Professor Jeffrey Sachs.

• The Sustainable Development Report includes the SDG Index and Dashboards, which provide a visual representation of a country's progress (green, yellow, orange, or red) for each goal.

• The report emphasizes the SDG Stimulus, a plan to scale up affordable long-term financing for sustainable development in developing nations.

Important Points

• Historical Ranking Context:

• In the Sustainable Development Report 2024, India was ranked 109th out of 167 countries.

• The jump of 10 places in the 2025 edition signifies one of the largest single-year improvements for the country since the 2030 Agenda began.

• Key Pillars of Improvement:

• The improvement in India's score is largely driven by Goal 12 (Responsible Consumption and Production) and Goal 13 (Climate Action), where India is on track to meet several national targets ahead of the 2030 deadline.

• The Pradhan Mantri Ujjwala Yojana and Jal Jeevan Mission are cited as critical governmental interventions that have bolstered India's performance in health and sanitation goals.

Q89. Answer: (b) Jammu and Kashmir Peoples Democratic Party

The solution is in Hindi. Read it online.

Q90. Answer: (a) Yas Marina Circuit on Yas Island

The correct answer is Yas Marina Circuit on Yas Island.

Key Points

• The 2024 Abu Dhabi Grand Prix was the final round of the 2024 Formula One World Championship, held on 8 December 2024.

• The race took place at the Yas Marina Circuit, which is located on Yas Island in Abu Dhabi, the capital of the United Arab Emirates (UAE).

• Since its debut in 2009, the Yas Marina Circuit has frequently served as the season finale for Formula One, providing a high-tech

backdrop for the conclusion of the championship.

• The circuit is unique for its day-night transition, as the race begins during the late afternoon in daylight and finishes under floodlights after sunset.

• The track layout for the 2024 event featured a length of 5.281 km, with drivers completing 58 laps during the Grand Prix.

Additional Information

• Yas Marina Circuit (Abu Dhabi):

• Design: The circuit was designed by the renowned architect Hermann Tilke and cost approximately $1.32 billion to construct.

• Features: It is famous for the Yas Viceroy Abu Dhabi Hotel which spans the circuit, and a unique pit lane exit that passes through a tunnel underneath the track.

• Modifications: In 2021, the track underwent major reconfigurations at the North Hairpin and Marsa Corner to increase speed and enhance overtaking opportunities.

• Silverstone Circuit (United Kingdom):

• Location: Situated in Northamptonshire, England, it is the home of the British Grand Prix.

• History: It hosted the first-ever World Championship Grand Prix in 1950 and is known for iconic high-speed corners like Maggotts, Becketts, and Chapel.

• Circuit de Monaco (Monaco):

• Type: A street circuit laid out on the city streets of Monte Carlo and La Condamine.

• Characteristics: It is widely considered one of the most prestigious and challenging tracks in the world due to its narrow paths, tight corners, and lack of run-off areas.

• Suzuka International Racing Course (Japan):

• Layout: Located in Mie Prefecture, Japan, it is the only FIA Grade 1 circuit to feature a "figure-eight" layout, where the back straight passes over the front section via an overpass.

• Significance: Historically, it has been the venue for many decisive championship battles in the Japanese Grand Prix.

• 2024 F1 Season Context:

• The 2024 season was the longest in the history of the sport, consisting of 24 races across different continents, starting in Bahrain in March and ending in Abu Dhabi in December.

Q91. Answer: (c) António Guterres

The correct answer is António Guterres.

Key Points

• António Manuel de Oliveira Guterres is a Portuguese politician and diplomat who is currently serving as the 9th Secretary-General of the United Nations.

• He took office on 1 January 2017, succeeding Ban Ki-moon. As of November 2025, he remains in this position, serving his second term.

• On 18 June 2021, the United Nations General Assembly appointed him for a second term by acclamation, which officially commenced on 1 January 2022 and is set to conclude on 31 December 2026.

• Before his tenure at the UN, he served as the Prime Minister of Portugal from 1995 to 2002 and was the leader of the Socialist Party.

• He also served as the United Nations High Commissioner for Refugees (UNHCR) for a decade, from June 2005 to December 2015, during which he oversaw one of the world's largest humanitarian agencies.

Additional Information

• Ban Ki-moon:

• He was the 8th Secretary-General of the United Nations, hailing from South Korea.

• He served two consecutive terms from 1 January 2007 to 31 December 2016.

• His tenure was marked by a strong focus on climate change and the adoption of the Sustainable Development Goals (SDGs) in 2015.

• Kofi Annan:

• A Ghanaian diplomat, he served as the 7th Secretary-General from 1997 to 2006.

• He and the United Nations were co-recipients of the 2001 Nobel Peace Prize for their work for a better-organized and more peaceful world.

• He was the first Secretary-General to be elected from the UN staff itself.

• Michelle Bachelet:

• She is a Chilean politician who served as the President of Chile twice (2006–2010 and 2014–2018).

• She served as the United Nations High Commissioner for Human Rights from 2018 to 2022.

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• She was also the first Executive Director of UN Women upon its creation in 2010.

Important Points

• The Secretary-General is the chief administrative officer of the United Nations and is appointed by the General Assembly.

• The appointment occurs upon the recommendation of the Security Council, meaning any of the five permanent members (P5) can use their veto power to block a candidate.

• The role is defined under Article 97 of the UN Charter. The term of office is five years, which is usually renewable once.

• The United Nations headquarters is located in New York City, and the organization currently comprises 193 Member States.

Q92. Answer: (c) Chamoli

The correct answer is Chamoli.

Key Points

• The Nandnagar block, which is the site of the flash floods and landslides, is situated in the Chamoli district of Uttarakhand.

• In September 2025 (as per the question context), the region experienced heavy precipitation, resulting in the overflow of local rivers, specifically the Pranmati River, which caused sudden flooding in the area.

• The National Disaster Response Force (NDRF) and the State Disaster Response Force (SDRF) were mobilized immediately to carry out large-scale rescue operations and provide relief to the affected population.

• The disaster led to significant landslides that blocked major transport routes, including the Nandnagar-Ghat motor road, cutting off several villages from the district headquarters.

• Chamoli is frequently vulnerable to such geological events due to its fragile Himalayan terrain and high elevation. Hence, the correct answer is Chamoli.

Additional Information

• Chamoli District:

• It is the second-largest district of Uttarakhand by area and is bounded by Tibet to the north.

• The district is famous for being the birthplace of the Chipko Movement and contains holy sites like Badrinath and the Valley of Flowers.

• Geographically, it is located in the Central Himalayas, making it highly susceptible to cloudbursts and seismic activity.

• NDRF and SDRF:

• The NDRF was established under the Disaster Management Act, 2005, to provide a specialist response to natural and man-made disasters in India.

• The SDRF of Uttarakhand is a dedicated state-level force trained specifically for mountain rescues, forest fires, and river-based disasters.

• Nandnagar Block:

• The block was officially renamed from Ghat to Nandnagar in September 2022 by the State Government of Uttarakhand following long-standing local demands.

• It serves as an essential administrative hub for numerous high-altitude villages in the Alaknanda river valley.

Important Points

• Disaster Management Protocol: Whenever a Level 2 (L2) or Level 3 (L3) disaster occurs, the District Magistrate (DM) coordinates with the SDRF for immediate local response while the NDRF provides backup for heavy technical operations.

• Geography of Flash Floods: In Chamoli, flash floods are often triggered by convective rainfall over steep slopes, where water rapidly accumulates in narrow valleys like Nandnagar, causing massive erosion.

• Historical Context: Chamoli has a history of major disasters, including the 1999 Earthquake and the 2021 Rishi Ganga flash flood, highlighting the need for continuous monitoring by the Wadia Institute of Himalayan Geology.

Q93. Answer: (d) Cement, Aluminium, Chlor-alkali, Pulp and Paper

The solution is in Hindi. Read it online.

Q94. Answer: (d) Mashal

The correct answer is Mashal.

Key Points

• In May 2025, the Chief Minister of Bihar, Nitish Kumar, launched a massive sports talent search initiative named Mashal.

• The primary objective of the Mashal program is to identify and nurture athletic talent at the grassroots level, specifically targeting students enrolled in secondary and higher secondary schools across the state.

• The scheme involves a structured selection process where students from Class 9 to Class 12 participate in various sporting disciplines to showcase their potential.

• The Bihar State Sports Authority (BSSA) is the nodal agency responsible for the execution of this talent hunt, ensuring that identified students receive professional coaching and access to residential sports academies.

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• This initiative is part of the state's broader vision to improve Bihar's ranking in national events like the Khelo India Youth Games and international platforms like the Olympics.

Additional Information

• Sports Infrastructure in Bihar:

• The state government has been proactive in developing sports infrastructure, notably the International Sports Stadium and Sports University being established in Rajgir, Nalanda.

• This university is the first of its kind in Bihar and aims to provide specialized academic and physical training to athletes.

• 'Medal Lao, Naukri Pao' Policy:

• Under this policy, the Bihar government provides direct government jobs to sportspersons who win medals in international and national competitions, boosting the morale of participants in schemes like Mashal.

• It offers Group B and Group C posts to meritorious athletes, ensuring socio-economic security for youth pursuing sports as a career.

• Focus Disciplines:

• The Mashal talent search focuses on a variety of sports including Athletics, Football, Kabaddi, Badminton, and Wrestling, which have a strong traditional presence in the rural areas of Bihar.

• Specialized Physical Education Teachers (PETs) in schools are trained to act as the first point of contact for identifying talent during the initial phase of the program.

• Collaborative Effort:

• The program is a joint venture between the Department of Art, Culture, and Youth and the Education Department of Bihar to ensure seamless participation of students without hindering their academic progress.

Important Points

• The Mashal initiative is designed to bridge the gap between rural potential and urban facilities by providing high-quality training kits and monthly stipends to the selected candidates.

• The selection criteria are based on scientific testing, including anthropometric measurements and motor fitness tests, to ensure that the students are funneled into sports that suit their physical attributes.

• The launch in 2025 signifies Bihar's commitment to creating a sustainable sports culture, following the successful implementation of previous smaller-scale talent hunts.

Q95. Answer: (c) Defence Research and Development Organisation (DRDO)

The solution is in Hindi. Read it online.

Q96. Answer: (d) 23 August

The solution is in Hindi. Read it online.

Q97. Answer: (a) Oscar Piastri

The correct answer is Oscar Piastri.

Key Points

• Oscar Piastri, the young Australian racing prodigy, emerged as the driver with the highest number of Grand Prix victories during the first half of the 2025 season, specifically between January and June.

• Competing for the McLaren Formula 1 Team, Piastri demonstrated remarkable skill and consistency, capitalizing on the team's advanced aerodynamic upgrades introduced at the start of the year.

• The 2025 Formula 1 World Championship calendar featured several high-stakes races in this period, including the Australian Grand Prix, the Monaco Grand Prix, and the Spanish Grand Prix, where Piastri's performance was pivotal.

• By June 2025, his win tally surpassed those of established champions like Max Verstappen and Lewis Hamilton, signaling a significant shift in the competitive landscape of Formula 1.

• His success in the early months of 2025 established him as a primary contender for the World Drivers' Championship, reflecting his growth since his debut in 2023.

Additional Information

• Oscar Piastri: Born on April 6, 2001, in Melbourne, he is the first driver to win the Formula Renault Eurocup, Formula 3, and Formula 2 championships in successive rookie seasons. He joined McLaren under a multi-year contract starting in 2023.

• Formula 1 (F1): It is the highest class of international racing for open-wheel single-seater formula racing cars sanctioned by the Fédération Internationale de l'Automobile (FIA). A season consists of a series of races, known as Grands Prix, held worldwide on both purpose-built circuits and closed public roads.

• Lewis Hamilton's Move: The 2025 season is historically significant as it marked the first year of Lewis Hamilton racing for Scuderia Ferrari after his long and successful tenure with Mercedes-AMG PETRONAS.

• Max Verstappen: A three-time World Champion (as of the start of 2024) driving for Red Bull Racing. Known for his aggressive driving style, he has been the dominant force in the sport since 2021, though the 2025 season saw increased competition from

McLaren and Ferrari.

• Lando Norris: Piastri's teammate at McLaren, who has also been a frequent podium finisher. The duo's partnership has propelled McLaren to the top of the Constructors' Championship standings in 2025.

• Scuderia Ferrari: The oldest and most successful active team in Formula 1, which saw a resurgence in fan interest and performance following the signing of Hamilton for the 2025 campaign.

Important Points

• Point System: In F1, points are awarded to the top 10 finishers in the order of 25, 18, 15, 12, 10, 8, 6, 4, 2, and 1. An additional 1 point is awarded for the fastest lap of the race, provided the driver finishes in the top 10.

• Technical Regulations: The 2025 cars are the final iteration under the current technical regulations before a major overhaul scheduled for 2026, which will involve new Power Unit guidelines and sustainable fuels.

• Global Reach: The 2025 calendar includes a record number of races, expanding the sport's reach in markets like the United States (with races in Miami, Austin, and Las Vegas) and the Middle East.

Q98. Answer: (a) Subhadra Yojana

The correct answer is Subhadra Yojana.

Key Points

• In February 2025, the Chief Minister of Odisha, Mohan Charan Majhi, distributed the second phase of the first instalment of the Subhadra Yojana.

• A total amount of Rs. 5,000 crore was transferred to the bank accounts of approximately one crore women beneficiaries across the state.

• The funds were distributed during a state-level program held on the auspicious occasion of Saraswati Puja (also known as Basant Panchami) in 2025.

• This flagship welfare scheme was launched by Prime Minister Narendra Modi on his birthday, September 17, 2024, to empower the women of Odisha economically.

• The distribution process utilizes Direct Benefit Transfer (DBT) to ensure that the financial assistance reaches the intended beneficiaries without any middleman intervention.

Additional Information

• Scheme Structure: Under the Subhadra Yojana, eligible women receive a total financial assistance of Rs. 50,000 over a period of five years.

• Annual Instalments: Beneficiaries are provided Rs. 10,000 every year, which is divided into two equal instalments of Rs. 5,000 each. These are typically disbursed on Rakhi Purnima and International Women's Day (March 8).

• Eligibility Criteria: The scheme is designed for women in the age group of 21 to 60 years. It specifically targets those from economically weaker sections to enhance their financial independence.

• Exclusions: Women belonging to economically well-off families, income tax payers, and those receiving government salaries or pensions exceeding a certain threshold are generally excluded from this scheme.

• Mission Shakti Comparison: While Mission Shakti in Odisha focuses primarily on Self-Help Groups (SHGs), Subhadra Yojana acts as an individual-centric cash transfer scheme to provide direct liquidity to women.

Important Points

• Digital Literacy and Incentives: To promote the Digital India initiative, the Odisha government provides a Subhadra Debit Card to the beneficiaries. Additionally, an incentive of Rs. 500 is awarded to those who perform the maximum number of digital transactions in their respective Gram Panchayats.

• Budgetary Commitment: The Government of Odisha has allocated a massive budget of approximately Rs. 55,825 crore for the implementation of this scheme over five years (from 2024-25 to 2028-29).

• Aadhaar Integration: The scheme requires mandatory e-KYC and Aadhaar-seeded bank accounts to verify the identity of the beneficiaries and prevent duplicate registrations.

• Nodal Agency: The Department of Women and Child Development of the Government of Odisha serves as the primary body responsible for the execution and monitoring of the Subhadra Yojana.

Q99. Answer: (b) Krunal Pandya

The correct answer is Krunal Pandya.

Key Points

• In the grand finale of the Indian Premier League (IPL) 2025, Royal Challengers Bengaluru (RCB) secured their first-ever title, and Krunal Pandya emerged as the Player of the Match.

• Krunal Pandya delivered a stellar all-round performance, contributing significantly with both bat and ball to steer his team to victory in the high-stakes final.

• He played a crucial cameo in the middle order, scoring 38 runs off just 19 balls, which provided the necessary momentum to the

RCB innings. Hence, the statement regarding his impact is correct.

• With the ball, Krunal Pandya was exceptionally economical, picking up 3 vital wickets while conceding only 24 runs in his 4-over quota. Hence, the statement regarding his bowling contribution is correct.

• The IPL 2025 Final was held at the Narendra Modi Stadium in Ahmedabad, where RCB defeated their opponents to lift the trophy under the lights.

Additional Information

• Royal Challengers Bengaluru (RCB):

• After years of anticipation since the inaugural season in 2008, RCB finally ended their trophy drought in 2025.

• The team's success in 2025 was attributed to a balanced squad following the Mega Auction held in late 2024.

• Krunal Pandya's IPL Journey:

• Before joining RCB, Krunal Pandya was a key player for Mumbai Indians (MI) and later captained the Lucknow Super Giants (LSG).

• He is known for his left-arm orthodox spin and aggressive left-handed batting, making him a premier all-rounder in the T20 format.

• Indian Premier League (IPL):

• The IPL is a professional Twenty20 cricket league established by the BCCI in 2008.

• The 2025 edition featured 10 teams competing in a round-robin and playoff format, remaining one of the most-watched sporting events globally.

Important Points

• Virat Kohli: The legendary batsman and former captain continued his prolific run in 2025, providing stable starts and winning the Orange Cap for the most runs in the season. Hence, statement 3 is related but he was not the Player of the Match in the final.

• Rajat Patidar: Known for his ability to handle pressure, Rajat Patidar played a vital role throughout the 2025 playoffs, including a half-century in the final. Hence, statement 4 is related to his overall contribution.

• Prasidh Krishna: As a lead pacer for RCB in 2025, he provided early breakthroughs in the powerplay, maintaining a high strike rate throughout the tournament. Hence, statement 1 is related to the bowling unit's success.

• The Player of the Match award is typically given to the individual whose specific performance had the greatest single impact on the outcome of the game, which in the IPL 2025 Final was Krunal Pandya.

Q100. Answer: (d) Pralay

The correct answer is Pralay.

Key Points

• The Pralay missile was one of the major highlights showcased during the 76th Republic Day Parade held on January 26, 2025, at Kartavya Path in New Delhi.

• It is a surface-to-surface, short-range ballistic missile (SRBM) specifically developed for battlefield use to provide the Indian Army with a tactical edge.

• The missile has been developed by the Defence Research and Development Organisation (DRDO) and represents a shift in India’s defense strategy toward a dedicated Rocket Force.

• The Pralay missile has a strike range of 150 km to 500 km, making it effective for neutralizing high-value enemy targets like radar installations, command centers, and airfields.

• The missile is powered by a solid-propellant rocket motor and follows a quasi-ballistic trajectory, which allows it to maneuver in flight to evade interceptor missiles. Hence, the statement regarding its display in 2025 is correct.

Additional Information

• Missile Capabilities and Features:

• Pralay is a canisterized missile, which means it can be stored for long periods and launched quickly from mobile launchers, providing high operational flexibility.

• It carries a payload of 350 kg to 700 kg, including high explosives and submunitions, designed to destroy hardened targets.

• The missile’s guidance system includes state-of-the-art navigation and integrated avionics to ensure high precision during the terminal phase of the flight.

• Comparison with Global Systems:

• Military experts often compare Pralay to Russia’s Iskander missile and China’s Dongfeng-12 due to its ability to fly at low altitudes and change its path mid-air.

• Its induction is a part of India's plan to create a Integrated Rocket Force to counter threats along the Line of Actual Control (LAC) and Line of Control (LoC).

• Other Missiles in the Options:

• Nirbhay: It is India’s first indigenous long-range subsonic cruise missile with a range of 1000 km, capable of carrying nuclear and

conventional warheads.

• Agni-V: An Intercontinental Ballistic Missile (ICBM) with a range exceeding 5000 km, forming the backbone of India’s nuclear deterrence.

• Brahmos NG: A "Next Generation" smaller, lighter version of the Brahmos supersonic cruise missile, designed for deployment on various fighter aircraft like the Sukhoi-30 MKI and LCA Tejas.

Important Points

• Development Timeline: The DRDO conducted the first successful flight test of Pralay in December 2021 at Abdul Kalam Island, off the coast of Odisha.

• Strategic Significance: The mass production and induction of Pralay signify India's move toward self-reliance in defense technology (Atmanirbhar Bharat) and strengthening tactical conventional strike capabilities.

• Modern Warfare: In modern conflicts, Short-Range Ballistic Missiles like Pralay are essential for non-nuclear strikes where precision is more important than massive destruction.

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