RRB NTPC (Graduate) CBT-I Official Paper (Held On: 17 Mar, 2026 Shift 2) (Previous Year Paper)

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

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Q1. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

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

18, 73

23, 93

(a) 26, 105
(b) 25, 105
(c) 26, 104
(d) 25, 104

Q2. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

STQ 54 NOL 61 IJG 68 DEB 75 ?

(a) YAV 82
(b) YYV 81
(c) YDJ 81
(d) YZW 82

Q3. The Harappan civilisation primarily sourced its copper from which region?

(a) Karnataka
(b) Madhya Pradesh
(c) Rajasthan
(d) Tamil Nadu

Q4. In a certain code language, ‘repair the mobile’ is coded as ‘gf ed ls’ and ‘mobile is lost’ is coded as ‘sq gf tf’. How is ‘mobile’ coded in that language?

(a) sq
(b) ed
(c) gf
(d) ls

Q5. Seven boxes, A, B, C, D, E, F and G, are kept one over the other but not necessarily in the same order. Only two boxes are kept between D and B. Only E is kept above G. No box is kept below B. A is kept at some place below C but at some place above F. How many boxes are kept between B and G?

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

Q6. There are 30 members in group A, 72 members in group B and 75 members in group C. All the members of these groups went to a restaurant. The average amounts spent on each member of groups A, B and C are Rs. 434, Rs. 324 and Rs. 280, respectively. The overall average amount (in Rs.) spent per member is:

(a) 321
(b) 326
(c) 324
(d) 323

Q7. The power to issue writs for the enforcement of Fundamental Rights is vested in_____.

(a) Supreme Court and High Courts
(b) Lok Adalat and High Courts
(c) District Court and High Courts
(d) Session court and High Courts

Q8. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which is the letter-cluster that DOES NOT belong to that group?

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

(a) ZDB
(b) SWU
(c) CHE
(d) MQO

Q9. Which country led the Talisman Sabre, 2025, military exercise in which India participated?

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

Q10. Which states suffered 30-70% below-normal rainfall in August 2025, contributing to crop stress and water shortages?

(a) Ladakh, Arunachal Pradesh, Bihar, UP, Punjab, and the Northeast
(b) Kerala, Tamil Nadu, Karnataka, Maharashtra, Goa, and Gujarat
(c) Rajasthan, Haryana, Sikkim, Assam, Manipur, and Tripura
(d) Odisha, Madhya Pradesh, Chhattisgarh, Telangana, and Andhra Pradesh

Q11. In a certain code language,

A + B means ‘A is the mother of B’
A – B means ‘A is the brother of B’
A x B means ‘A is the wife of B’
A % B means ‘A is the father of B’
A # B means ‘A is the daughter of B’
Based on the above, how is T related to G if ‘G # N # V + K # T’?

(a) Daughter’s daughter
(b) Sister’s daughter
(c) Mother’s sister
(d) Mother’s father

Q12. Solve the following system of equations:

3x - 4y = 6z - 16
• 4x + y + z = - 5
x = 3y + 2(z - 1)

(a) x = 2, y = - 2, z = 5
(b) x = 3, y = - 2, z = 5
(c) x = 3, y = - 2, z = 2
(d) x = 2, y = - 3, z = 5

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Q13. Article 25 of the Indian Constitution primarily guarantees which of the following rights?

(a) Freedom of religion
(b) Cultural and educational rights
(c) Right to constitutional remedies
(d) Right to equality before law

Q14. Which of the following statements is INCORRECT regarding the Atmiya Sabha?

(a) The Atmiya Sabha was established in 1824
(b) The Atmiya Sabha laid the foundation for the Brahmo Samaj
(c) The Atmiya Sabha was founded by Raja Ram Mohan Roy
(d) The Atmiya Sabha was established at Calcutta

Q15. The Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched in which year?

(a) 2018
(b) 2020
(c) 2022
(d) 2016

Q16. In December 2025, the PNGRB tariff revamp was expected to cut city gas distribution (CGD) transport costs by how much (in Rs.) annually?

(a) 1,000 crore
(b) 750 crore
(c) 500 crore
(d) 2,000 crore

Q17. A shopkeeper fixes the marked price of an item 150% above its cost price. What percentage of discount on marked price should be allowed to gain 130%?

(a) 10%
(b) 8%
(c) 5%
(d) 7%

Q18. Anirudh travels 48 km at 12 km/h, 52 km at 13 km/h, and 120 km at 15 km/h. What is his average speed (in km/h)?

(a) 15
(b) 13.75
(c) 14.5
(d) 12.5

Q19. What should come in place of '?' in the given series?

98 100 103 108 115 ?

(a) 125
(b) 126
(c) 127
(d) 128

Q20. Select the INCORRECT combination of the books and their respective authors.

(a) Gita Govinda – Jayadeva Goswami
(b) Baburnama – Babur
(c) Tughlaq Nama – Abul Fazal
(d) Prithiviraj Raso – Chand Bardai

Q21. Ishan has Rs. 1407 with him. He divides this amount between his two sons, Krish and Veer, and asks them to invest their respective shares at a compound interest rate of 10% per annum, compounded annually. It is observed that Krish's investment amounts to the same value after 13 years as Veer's investment does after 14 years. How much (in Rs.) did Ishan give to Veer?

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(a) 520
(b) 670
(c) 737
(d) 837

Q22. Which of the given letter-number clusters will replace the question mark (?) in the following series to make it logically complete?

UBE 14 IPS 28 WDG 42 KRU 56 ?

(a) YFI 70
(b) XEG 72
(c) SDH 72
(d) VIF 70

Q23. At what rate (in percentage, rounded off to two decimal place) per year will a sum of money double itself in 15 years on simple interest?

(a) 4.67
(b) 13.34
(c) 6.67
(d) 8.67

Q24. The sum of the squares of two consecutive odd natural numbers is 5002. The sum of the numbers is:

(a) 100
(b) 110
(c) 96
(d) 112

Q25. Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

8 – 64 – 84 – 252; 12 – 144 – 164 – 492

(a) 4 – 16 – 46 – 153
(b) 9 – 81 – 121 – 423
(c) 5 – 25 – 45 – 135
(d) 14 – 256 – 456 – 969

Q26. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 8134576, which of the following digits will be second from the left in the new number thus formed?

(a) 2
(b) 8
(c) 6
(d) 4

Q27. What is the primary material used in the 8th-century CE Kailasanatha Temple at Kanchipuram?

(a) Granite
(b) Brick
(c) Sandstone
(d) Marble

Q28. Who among the following is famous for composing kritis known for their contemplative nature and emphasis on capturing the essence of the raga through a slow, richly ornamented style?

(a) Thyagaraja Iyengar
(b) Kumarswami Kutti

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(c) Mutthuswami Dikshitar
(d) Ramanuja Srinivasani

Q29. On the Eve of the 79th Independence Day in 2025, the Indian government unveiled which AI-powered tool to automatically generate structured minutes of meetings (MoMs) from Gram Sabha or other Panchayat meetings' audio/video recordings?
(a) SabhaSadan
(b) SabhaSaar
(c) GramVivaran
(d) GramSattva

Q30. A, B and C together can complete a certain work in 54 days. B and C together can complete the same work in 56 days. B is 75% more efficient than A. A, B and C work together for 52 days. B alone will complete the remaining work in:
(a) 27 days
(b) 32 days
(c) 34 days
(d) 30 days

Q31. Water flows out through a circular pipe, whose internal diameter is 2 cm, at the rate of 5 metres per second into a cylindrical tank, the radius of whose base is 100 cm. By how much will the level of water rise in 13 minutes?
(a) 40 cm
(b) 31 cm
(c) 30 cm
(d) 39 cm

Q32. If 15 men working 6 hours a day can complete a work in 20 days, how many days will 18 men working 5 hours a day take to complete the same work?
(a) 24
(b) 18
(c) 15
(d) 20

Q33. 108 is related to 12 following a certain logic. Following the same logic, 234 is related to 26. To which of the following is 198 related, following the same logic?
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/ subtracting /multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
(a) 22
(b) 18
(c) 34
(d) 28

Q34. What is the volume (in cm^3) of a hemispherical cauldron with diameter 14 cm? (correct up to two decimal places)
(Use $\pi = 22/7$)
(a) 718.67
(b) 681.33
(c) 781.33
(d) 618.67

Q35. If x and y are two values such that their difference $(x - y)$ is 5 and product (xy) is 21, then the value of $x^2 + y^2 + xy$ is:
(a) 88
(b) 440
(c) 130
(d) 180

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Q36. Major storage media, such as CDs and DVDs, use optical technology, while HDDs rely on _____ technology to store bits.

(a) solid-state memory
(b) magnetic field
(c) semiconductor chip
(d) liquid crystal

Q37. Which of the following industrial financing institutions in India was formed in 1990?

(a) Small Industries Development Bank of India (SIDBI)
(b) Industrial Finance Corporation of India (IFCI)
(c) Industrial Development Bank of India (IDBI)
(d) Industrial Credit and Investment Corporation of India (ICICI)

Q38. Which of the following is NOT correctly matched with respect to the Directive Principles of State Policy?

(a) Article 40 - Organisation of village panchayats
(b) Article 43A - Participation of workers in management of industries
(c) Article 41 - Provision for just and humane conditions of work and maternity relief
(d) Article 39A - Equal justice and free legal aid

Q39. Match the following Folk Songs with their Origin States.

Folk Song Origin State
1. Panihari a. West Bengal
2. Khongjom Parba b. Rajasthan
3. Wanawan c. Jammu and Kashmir
4. Baul d. Manipur

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

Q40. Find the mean deviation from the mean for the following data set.

58, 65, 42, 66, 49, 59, 44, 45, 62, 60

(a) 7.7
(b) 8
(c) 7.4
(d) 7

Q41. Why do large cities tend to have a higher proportion of tertiary activities in India?

(a) Due to agglomeration and services demand
(b) Because of fertile land
(c) Because of mining operations
(d) Due to lack of primary resources

Q42. AB is a chord of a circle with its center at P. C is a point between A and B on the minor are AB. The tangents to the circle at points A and B intersect at an external point M. If angle ACB = 124º, then find the measure of angle AMB.

(a) 63°
(b) 58º
(c) 72°
(d) 68°

Q43. Seven boxes A, C, G, H, J, N and R are kept one over the other but not necessarily in the same order.

Only three boxes are kept above N. Only one box is kept between H and N. Only three boxes are kept between H and A. A is kept at some place above N. R is kept immediately below A. C is kept at one of the places above G. J is not kept immediately above or below H.

How many boxes are kept above H?

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

Q44. How do you search for files with partial names in Windows 11?

(a) dollar $
(b) asterisk *
(c) at the rate @
(d) ampersand &

Q45. On 27 August 2025, which index reported that global consumer confidence remained unchanged for the second consecutive month, remaining stable at -0.1 points?

(a) J.P.Morgan Global PMI Composite Index
(b) UNDP Human Development Index Score
(c) World Bank Global Findex Database
(d) Ipsos Global Consumer Confidence Index

Q46. 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 is the one that does not belong to that group?

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

(a) CG-FJ
(b) YC-BE
(c) AE-DH
(d) WA-ZD

Q47. Refer to the following letter, symbol series and answer the question. Counting to be done from left to right only

(Left) B T # A M @ * * # € © * C H # N £ H Q £ T O (Right)

How many such letters are there each of which is immediately preceded by a letter and also immediately followed by a symbol?6948

(a) 3
(b) 5
(c) 4
(d) 6

Q48. In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Q. Five parcels – Alpha, Bravo, Cargo, Delta, and Echo – have different weights.

Which parcel is the lightest?

(I) Bravo is heavier than Alpha but lighter than Cargo.

(II) Delta is heavier than Bravo but lighter than Echo.

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

Q49. Refer to the following number, symbol series and answer the question. Counting to be done from left to right only. All numbers are single digit numbers only.

(Left) £ 9 2 9 £ # 4 9 8 2 9 © © 7 @ 6 8 € 7 € € # (Right)

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

(a) 3

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

Q50. What is the primary destructive force of tropical storms occurring in coastal regions?
(a) Continuous rainfall
(b) Storm surge
(c) High temperature
(d) Low atmospheric pressure

Q51. If sin A = √3over7 and A is an acute angle, then find the value of √23 secA cosec A.
(a) 14√46/3
(b) 7√3/4
(c) 49√6/6
(d) 14√3/45

Q52. Which of the following is the largest solar park in India as of 2025?
(a) Bhadla Solar Park
(b) Rewa Solar Park
(c) Pavagada Solar Park
(d) Kurnool Ultra Mega Solar Park

Q53. Which of the following technological advances enabled the cultivation of heavier, wetter soils in the early Iron Age?
(a) Iron ploughshares and axes
(b) Copper sickles and knives
(c) Stone microliths and scrapers
(d) Bronze chisels and spades

Q54. What is the purpose of the Punnett square in genetics?
(a) Determining the phenotype of an individual
(b) Identifying the location of a gene on a chromosome
(c) Predicting the outcomes of genetic crosses
(d) Analysing DNA replication

Q55. Which of the following statements with respect to operation twist is/are correct?

1. Operation Twist is a monetary policy of the central banks used to bring down interest rates and control investments in a country.

2. Under this operation, the RBI twisted the yield of government securities to bring liquidity into the markets.

3. This is done by simultaneously buying and selling government securities—both short-term and long-term—through Open Market Operations (OMOs).

Select the correct answer using the codes given below.

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

Q56. Bell A rings every 18 minutes, bell B rings every 24 minutes and bell C rings every 30 minutes. They all ring together for the first time at 6:30 AM. Find the time at which the bells ring together for the third time.
(a) 9:30 PM
(b) 3:30 PM
(c) 12:30 PM
(d) 6:30 PM

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Q57. A shopkeeper professes to sell his goods at a 55% loss but uses a false balance and gains 75%. The actual weight (rounded off to one decimal place) he uses for 1 kg is:

(a) 258.4 gm
(b) 260.7 gm
(c) 257.1 gm
(d) 253.1 gm

Q58. Which action attracts disqualification of an independent MP under the Anti-Defection Law introduced by the 52nd Constitutional Amendment Act, 1985?

(a) Supporting a coalition government
(b) Remaining neutral during debates
(c) Joining any political party after their election
(d) Voting differently from party whip

Q59. What should come in place of '?' in the given series?

55 53 50 45 38 ?

(a) 29
(b) 27
(c) 33
(d) 31

Q60. Simplify cbrt0.216 + cbrt0.001 - cbrt0.008.

(a) 0.2
(b) 0.5
(c) 0.6
(d) 0.4

Q61. Why was the Ghadar Party's revolutionary attempt during World War I largely unsuccessful?

(a) Lack of support from international allies
(b) Strong opposition from the Indian National Congress
(c) Interception by British intelligence and internal betrayal
(d) Public apathy towards armed revolution

Q62. Boyle's law describes the relationship between _____.

(a) Pressure And Temperature
(b) Energy And Volume
(c) Volume And Temperature
(d) Volume And Pressure

Q63. Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of ::?

: CGW :: LDM : %

(a) = AET, % = MFO
(b) = ADS, % = NEO
(c) = BET, % = MFP
(d) = BDT, % = MEP

Q64. Three friends X, Y and Z started a business by investing a sum of money in the ratio of 5 : 3 : 7. After 6 months, X withdraws half of his capital. If the sum invested by Z is Rs. 14,000, then out of a total annual profit of Rs. 55,000, what is the difference between X's and Y's profit?

(a) Rs. 4465
(b) Rs. 3440
(c) Rs. 3000
(d) Rs. 1910

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Q65. In an election between two candidates, a candidate got 38% of the total votes and lost the election by 28,800 votes. What is the total number of voters?

(a) 124,000
(b) 120,000
(c) 122,000
(d) 122,800

Q66. Refer to the following letter, symbol series and answer the question. Counting to be done from left to right only.

(Left) K C © C V € @ € # U © & Y £ © I $ N W # & Q (Right)

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

(a) 4
(b) 3
(c) 5
(d) 6

Q67. Find the mean of the given data (correct to two places of decimal).

Class interval	0-8	8-16	16-24	24-32	32-40	40-48
Frequency	2	4	7	5	3	6

(a) 21.56
(b) 24.38
(c) 26.22
(d) 29.29

Q68. Select the triad which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

DASH-ASHD-SHDA

GAME-AMEG-MEGA

(a) BALD-ALDB-LDBA
(b) IRON-RONI-ONRI
(c) JAIL-LJAI-ILJA
(d) FADE-EDAF-DAEF

Q69. Raising an object from the ground results in the storage of which type of energy?

(a) Potential energy
(b) Heat energy
(c) Electrical energy
(d) Kinetic energy

Q70. A, B, C, D, E, F and G sit around a circular table, facing the centre. F sits third to the left of C. G sits second to the left of B. C is an immediate neighbour of both A and G. D sits to the immediate right of G. How many people sit between B and C when counted from the right of C?

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

Q71. What is the maximum value that must be assigned to A so that the 8-digit number 718A5104 is divisible by 4?

(a) 5
(b) 6
(c) 4
(d) 9

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Q72. A recipe calls for 3 parts of sugar for every 4 parts of flour. If a baker uses 12 cups of sugar, how many cups of flour does he need to use to maintain the same ratio?

(a) 16
(b) 15
(c) 18
(d) 14

Q73. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

All sand is stone. All sand is cement. Some cements are mud.

Conclusions:

(I) Some muds are sand.(II) Some cements are stone.

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

Q74. Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?

: KUC :: VFN : %

(a) = DNV % = CMU
(b) = DNV % = CMP
(c) = DUV % = CMU
(d) = DNV % = CNU

Q75. Majnu Shah is associated with which of the following rebellions?

(a) Kol Rebellion
(b) Fakir–Sannyasi Rebellion
(c) Santhal Rebellion
(d) Indigo Revolt

Q76. Which cell organelle is responsible for maintaining cell shape and providing structural support?

(a) Nucleus
(b) Golgi apparatus
(c) Cytoskeleton
(d) Peroxisome

Q77. The concept of sustainable development became popular after which report (1987)?

(a) Brundtland Report
(b) Rio Report
(c) Earth Report
(d) Kyoto Report

Q78. The average of six consecutive even numbers is 175. What is the smallest of these numbers?

(a) 172
(b) 168
(c) 166
(d) 170

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Q79. Raghav earns a monthly salary of Rs. 24,000. He spends Rs. 7,500 on house rent and Rs. 3,500 on food and utility bills every month. The remaining amount is his monthly savings. In the month of his birthday, he spends his entire monthly saving on celebrations. Find Raghav's total savings in a year (in Rs.).

(a) 1,45,000
(b) 1,38,000
(c) 1,43,000
(d) 1,36,000

Q80. In which of the following Articles of the Constitution of India is it stated that Union Territories are to be administered by the President, who may appoint an administrator to oversee them?

(a) Article 241
(b) Article 240
(c) Article 242
(d) Article 239

Q81. If '+' means '−', '−' means '×', '×' means '÷', '÷' means '+', then what will come in place of the question mark (?) in the following equation?

316 − 2 ÷ 37 + 436 × 4 = ?

(a) 520
(b) 560
(c) 540
(d) 590

Q82. Who was awarded the Player of the Match in the ICC Women's ODI World Cup final in 2025?

(a) Smriti Mandhana
(b) Shafali Verma
(c) Harmanpreet Kaur
(d) Deepti Sharma

Q83. Which of the following individuals was awarded the Nobel Peace Prize 2025 for persistent efforts in promoting democratic rights in Venezuela and striving for a just and peaceful transition from dictatorship to democracy?

(a) Juan Guaidó
(b) Mary E. Brunkow
(c) Maria Corina Machado
(d) Delcy Rodríguez

Q84. A printer receives information from the computer and produces a hard copy on paper. This behavior makes the printer a/an/the:

(a) Network device
(b) Primary memory
(c) Input device
(d) Output device

Q85. A motorboat has a speed of 25 km/h in still water. It takes 4 hours to cover a distance of 80 km upstream. Find the total time required by the boat to travel the same distance upstream and then return downstream.

(a) 6 hours 40 minutes
(b) 5 hours 30 minutes
(c) 5 hours 42 minutes
(d) 6 hours 20 minutes

Q86. Seven people F, G, H, I, V, W, and X are sitting around a circular table facing the centre of the table. G sits second to the left of X. V sits third to the left of G. Only two people sit between H and I when counted from the right of I. F is an immediate neighbour of H. Who sits fourth to the right of W?

(a) F
(b) V

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(c) H
(d) X

Q87. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statement.

Statements:

All liquid is water. All water is juice. Some juices are syrup.

Conclusions:

(I) All liquid is juice.(II) Some syrups are liquid.

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

Q88. In which city was the World Conference on Cultural Policies and Sustainable Development – MONDIACULT 2025 held?

(a) Barcelona, Spain
(b) Rome, Italy
(c) Madrid, Spain
(d) Paris, France

Q89. A shopkeeper purchased 42 dozens of articles at the rate of Rs. 630 per dozen. He sold each one of them at the rate of Rs. 63. What percentage profit did he make?

(a) 17%
(b) 20%
(c) 21%
(d) 23%

Q90. Wheat is mainly a crop of which season in India?

(a) Pre-monsoon
(b) Kharif
(c) Rabi
(d) Zaid

Q91. In a certain code language, ‘MILE’ is coded as ‘9574’ and ‘TIME’ is coded as ‘5429’. What is the code for ‘T’ in the given code language?

(a) 5
(b) 9
(c) 4
(d) 2

Q92. Which among the following information is NOT a ground for exemption from disclosure of information under RTI Act, 2005?

(a) Sovereignty and integrity of India
(b) Public Interest
(c) Cabinet papers including records of deliberation
(d) Breach of privilege of Parliament

Q93. Evaluate: (-9) - (-56) ÷ (-14) + (-2) × 8

(a) -32
(b) -29
(c) -31
(d) -28

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Q94. Hemant starts from Point A and drives 22 km towards East. He then takes a right turn, drives 17 km, turns right and drives 31 km. He then takes a right turn and drives 19 km. He takes a final right turn, drives 9 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90 degrees turns only unless specified)

(a) 3 km to the South
(b) 2 km to the North
(c) 2 km to the South
(d) 3 km to the North

Q95. Lg is the daughter of Dv. Jq is the daughter of Qb. Pd is the wife of Dv. Qb is the brother of Lg. How is Jq related to Dv?

(a) Daughter's daughter
(b) Son's daughter
(c) Son's wife
(d) Father's father

Q96. Seven boxes P, A, R, E, N, T and S are kept one over the other but not necessarily in the same order. Only two boxes are kept between A and S. Only E is kept below N. Only R is kept above A. T is not kept immediately above S. How many boxes are kept between P and E?

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

Q97. Two tangents AB and AC are drawn from an external point A to a circle with centre O. If AB = 30 cm and BC = 24 cm, then find the radius of the circle (in cm, rounded off to the nearest integer).

(a) 10
(b) 12
(c) 13
(d) 11

Q98. Two taps can fill a cistern in 4 hours and 37 hours respectively. A third tap can empty it in 37 hours. How long (in hours) will it take to fill one-fourth of the empty cistern, if all of them are opened together?

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

Q99. Which file type is most likely to be classified as a system file in Windows OS?

(a) .mp3
(b) .dll
(c) .docx
(d) .zip

Q100. Which of the following monsoon systems is also known as the retreating monsoon?

(a) Advancing Monsoon
(b) Western Disturbances
(c) Northeast Monsoon
(d) Southwest Monsoon

ANSWER KEY

1	a	2	d	3	c	4	c	5	a	6	c	7	a	8	c	9	c	10	a
11	d	12	a	13	a	14	a	15	b	16	a	17	b	18	b	19	b	20	c

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

SOLUTIONS

Q1. Answer: (a) 26, 105

The logic followed here is:

Logic: Number × 4 + 1

18 → 73

=> (18 × 4) + 1 = 72 + 1 = 73

23 → 93

=> (23 × 4) + 1 = 92 + 1 = 93

Now checking options:

Option 1: 26, 105

=> (26 × 4) + 1 = 104 + 1 = 105

Option 2: 25, 105

=> (25 × 4) + 1 = 100 + 1 = 101

Option 3: 26, 104

=> (26 × 4) + 1 = 105

Option 4: 25, 104

=> (25 × 4) + 1 = 101

Hence, the correct answer is Option 1.

Q2. Answer: (d) YZW 82

The logic followed here is:

So, 'YZW 82' will replace the question mark in the given series.

Hence, the correct answer is "Option 4".

Q3. Answer: (c) Rajasthan

The correct answer is Rajasthan.

Key Points

• The Harappan civilization, which flourished during the Bronze Age (approximately 3300 BCE to 1300 BCE), had a sophisticated network for sourcing raw materials. Copper was one of the most vital metals used for making tools, weapons, and ornaments.

• Archaeological evidence and chemical analysis of artifacts indicate that the primary indigenous source of copper for the Harappans was the Khetri region located in present-day Rajasthan. Hence, the option Rajasthan is correct.

• The Ganeshwar-Jodhpura culture, located in the Khetri area, was a non-Harappan contemporary culture that likely supplied copper items and raw ore to the Harappan settlements. This region is still one of India's largest copper-producing belts.

• In addition to domestic sources, Harappans also imported copper from Oman, a region on the southeastern tip of the Arabian Peninsula, known in ancient Mesopotamian texts as Magan. Both Harappan copper and Omani copper contain traces of nickel, suggesting a common origin.

• The procurement of copper was essential for the production of bronze, an alloy made by mixing copper with tin. This technological advancement allowed the Harappans to create durable implements for agriculture and urban construction.

Additional Information

• Karnataka (Gold Sourcing): While Rajasthan provided copper, the Harappans sourced gold primarily from South India, specifically the Kolar region in Karnataka. This indicates an extensive internal trade network spanning thousands of kilometers across the Indian subcontinent.

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• Tin Sourcing: To manufacture bronze, the Harappans required tin, which was a scarce commodity. It is believed that tin was imported from Afghanistan and Iran. The presence of Harappan trading outposts like Shortughai in Afghanistan supports this theory of long-distance resource procurement.

• Lapis Lazuli and Precious Stones: The Harappans were known for their bead-making industry. They sourced Lapis Lazuli (a blue stone) from Shortughai in Afghanistan, Carnelian from Lothal and Bharuch in Gujarat, and Steatite from South Rajasthan and North Gujarat.

• Shell and Marine Resources: Specialized centers like Nageshwar and Balakot were established near the coast to source shells for making bangles, ladles, and inlay work, showcasing their geographical specialization based on resource availability.

• Trade with Mesopotamia: Records from the Akkadian Empire (circa 2350 BCE) mention trade with a land called Meluhha, which historians identify as the Indus Valley Civilization. They traded copper, gold, ivory, and timbers for Mesopotamian textiles and oils.

Important Points

• Metallurgical Skills: The Harappans were experts in smelting and casting. They used lost-wax casting (Cire Perdue) to create intricate bronze statues, such as the famous Dancing Girl found at Mohenjo-daro.

• Distance and Logistics: The transport of heavy ores from Rajasthan to cities like Harappa and Mohenjo-daro (located in modern-day Pakistan) was likely facilitated by bullock carts and riverine routes along the Indus and its tributaries.

• Identification of Ores: Modern spectrographic analysis has confirmed that the chemical fingerprints of copper artifacts in Harappan sites align closely with the chalcopyrite ores found in the Aravalli Range of Rajasthan.

• Social Impact: The control over copper and bronze resources likely contributed to the social stratification of Harappan society, where a ruling elite or merchant class managed the monopoly of trade and production of prestige goods.

Q4. Answer: (c) gf

Given:

repair the mobile → gf ed ls

mobile is lost → sq gf tf

=> mobile is coded as gf

Hence, the correct answer is Option 3.

Q5. Answer: (a) 4

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

Only two boxes are kept between D and B.

Only E is kept above G.

No box is kept below B.

A is kept at some place below C but at some place above F.

Position	Box
7 (Top)	E
6	G
5	C
4	D
3	A
2	F
1 (Bottom)	B

Boxes between B and G → C, D, A, F → 4

Hence, the correct answer is Option 1.

Q6. Answer: (c) 324

Shortcut Trick

=> Assume base average = 324 (middle value)

=> Deviation: A = +110, B = 0, C = −44

=> Weighted deviation = 30×110 + 72×0 + 75×(−44) = 3300 − 3300 = 0

=> So overall average = base = 324

Therefore Answer = 324

Alternate Method

Given:

=> n1 = 30, avg1 = 434

=> n2 = 72, avg2 = 324

=> n3 = 75, avg3 = 280

Formula: Overall average = (Total sum) ÷ (Total number)

Calculations:

=> Total members = 30 + 72 + 75 = 177

=> Sum = 30×434 + 72×324 + 75×280

=> = 13020 + 23328 + 21000 = 57348

=> Overall average = 57348 ÷ 177 = 324

Therefore Final Answer = 324

Additional Information

Weighted Average: Combined average = (n1a1 + n2a2 + ...) ÷ (n1 + n2 + ...)

Assumed Mean Method: Take a base value and compute deviations to simplify calculations.

Shortcut Insight: If positive and negative weighted deviations cancel, overall average = assumed mean.

Application: Useful in mixture, data interpretation, and group average problems.

Q7. Answer: (a) Supreme Court and High Courts

The correct answer is Supreme Court and High Courts.

Key Points

• The Supreme Court of India is empowered to issue writs under Article 32 of the Constitution of India for the enforcement of Fundamental Rights. This power is part of the Right to Constitutional Remedies, which Dr. B.R. Ambedkar described as the "Heart and Soul of the Constitution." Hence, the inclusion of the Supreme Court in the correct option is accurate.

• The High Courts in various states are vested with the power to issue writs under Article 226 of the Constitution. Unlike the Supreme Court, High Courts can issue these writs not only for the protection of Fundamental Rights but also for "any other purpose," meaning they can enforce ordinary legal rights as well. Hence, the inclusion of High Courts in the correct option is accurate.

• There are five types of writs recognized in the Indian legal system: Habeas Corpus, Mandamus, Prohibition, Certiorari, and Quo-Warranto. These serve as extraordinary remedies to ensure that the executive and lower judiciaries act within the bounds of the law.

• The writ jurisdiction of the High Court is technically wider than that of the Supreme Court because it covers both fundamental and legal rights, whereas the Supreme Court's jurisdiction under Article 32 is specifically limited to Fundamental Rights (Part III of the Constitution).

Additional Information

• Types of Writs and their Functions:

• Habeas Corpus: Literally meaning "to have the body," it is a safeguard against arbitrary detention. The court orders the person who has detained another to produce the body of the latter before it to examine the legality of the detention.

• Mandamus: Meaning "we command," this writ is issued to a public official, public body, or lower court to perform a duty that they have failed to perform. It cannot be issued against the President of India or State Governors.

• Prohibition: Issued by a higher court to a lower court or quasi-judicial body to prevent them from exceeding their jurisdiction or acting contrary to the rules of natural justice. It is issued while the proceedings are pending.

• Certiorari: Meaning "to be certified," it is issued to quash an order already passed by a lower court or tribunal. While Prohibition is preventive, Certiorari is both preventive and curative.

• Quo-Warranto: Meaning "by what authority," it is issued to enquire into the legality of the claim of a person to a public office. It prevents illegal usurpation of public office by a person.

• Geographical and Functional Scope:

• The Supreme Court can issue writs against a person or government throughout the territory of India.

• A High Court can issue writs against a person or authority residing within its territorial jurisdiction or outside its jurisdiction if the cause of action arises within its territories.

• The power of the Supreme Court to issue writs is a Fundamental Right (Article 32), meaning the court cannot refuse to exercise this power. Conversely, the power of the High Court under Article 226 is discretionary.

Important Points

• Historical Context: The writ system in India is borrowed from English Common Law, where they are known as Prerogative Writs. Before 1950, only the High Courts of Calcutta, Bombay, and Madras had the power to issue writs. With the commencement of the Constitution on 26th January 1950, this power was extended to all High Courts and the Supreme Court.

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• Article 33 and 34: The Parliament has the power to restrict or abrogate the application of Fundamental Rights (and consequently writ remedies) to members of the Armed Forces, paramilitary forces, and police forces to ensure proper discharge of duties.

• Basic Structure Doctrine: In the Kesavananda Bharati case (1973) and later in L. Chandra Kumar case (1997), the Supreme Court ruled that the power of judicial review and the writ jurisdiction of High Courts and the Supreme Court form a part of the Basic Structure of the Constitution and cannot be abolished even by a Constitutional Amendment.

Q8. Answer: (c) CHE

The logic followed here is based on the alphabetical distance and direction between consecutive letters in each cluster:

Option 1: ZDB

Option 2: SWU

Option 3: CHE

Option 4: MQO

Thus, CHE does not follow the same pattern.

Hence, the odd one out is Option 3.

Q9. Answer: (c) Australia

The correct answer is Australia.

Key Points

• Talisman Sabre is a massive biennial (occurring every two years) multi-national military exercise that is primarily led and hosted by Australia in partnership with the United States.

• The 2025 iteration represents the 11th edition of this exercise, which has evolved into one of the most significant military training activities in the Indo-Pacific region.

• The primary location for these drills includes various training areas across Northern Australia, Queensland, and the maritime zones of the Coral Sea and Timor Sea.

• The exercise focuses on high-end warfighting, joint maneuvers, and interoperability across multiple domains including land, sea, air, space, and cyber.

• India participates in this exercise as part of its broadening defense cooperation with Australia and other Quad partners, emphasizing a shared commitment to a free and open Indo-Pacific. Hence, the statement regarding Australia leading the exercise is correct.

Additional Information

• Origin and Evolution: The exercise commenced in the year 2005. While it began as a bilateral engagement between the Australian Defence Force (ADF) and the United States military, it has since expanded to include multilateral participants.

• Participating Nations: Apart from Australia and the USA, countries such as Canada, Japan, South Korea, New Zealand, United Kingdom, France, and Germany have joined previous editions either as active participants or observers.

• India's Involvement: India was invited as an observer nation in 2021. By 2023 and looking toward 2025, the Indian Armed Forces have sought deeper operational integration to enhance maritime security and disaster relief capabilities.

• Scale and Personnel: The 2023 exercise was the largest on record, involving approximately 30,000 personnel and 13 nations. The 2025 exercise is expected to maintain or exceed this scale, testing logistics and command and control systems over vast distances.

• Strategic Features: Key features of the exercise include amphibious landings, parachuting, special forces operations, and urban warfare simulations, which are vital for regional stability.

Important Points

• Geopolitical Context: The Talisman Sabre exercise is often viewed as a strategic signal of collective security and deterrence in the Indo-Pacific, particularly in response to changing security dynamics in the South China Sea.

• Functions and Applications: It allows the military of India and other nations to practice combined task force operations, which are essential for peacekeeping or humanitarian assistance missions under international law.

• Mutual Logistics: The exercise leverages Mutual Logistics Support Agreements (MLSA) between India and Australia, signed in June 2020, which facilitates easier access to bases and supplies during such large-scale military drills.

• Ministry Guidelines: India's participation is guided by the Ministry of Defence and aligns with the "Act East Policy", aimed at strengthening strategic ties with Pacific nations.

Q10. Answer: (a) Ladakh, Arunachal Pradesh, Bihar, UP, Punjab, and the Northeast

The correct answer is Ladakh, Arunachal Pradesh, Bihar, UP, Punjab, and the Northeast.

Key Points

• The regions of Ladakh, Arunachal Pradesh, Bihar, Uttar Pradesh (UP), Punjab, and several states in the Northeast experienced a significant rainfall deficit ranging between 30% and 70% during the month of August. This period is critical for the Southwest Monsoon cycle in India.

• A rainfall deficit of this magnitude falls under the "Deficient" to "Large Deficient" categories as defined by the India Meteorological Department (IMD). In states like Bihar and UP, this lack of moisture during the peak monsoon month leads to severe crop stress, particularly for water-intensive crops.

• The Indo-Gangetic plains, including Punjab and UP, rely heavily on August rainfall for the maturation of Kharif crops such as Paddy (Rice), Maize, and Sugarcane. A 30-70% drop in precipitation often necessitates the increased use of groundwater, leading to a drop in the water table.

• In the Northeast and Arunachal Pradesh, such deficits are unusual given their high-intensity rainfall profile. This leads to water shortages for local hydroelectric power generation and affects the biodiversity of the Himalayan ecosystem.

• The spatial distribution of the monsoon was highly uneven, with the North and East suffering while other parts of the country might have received normal or excess rain. This irregularity is often attributed to the El Nino phenomenon or the unfavorable position of the Monsoon Trough.

Additional Information

• India Meteorological Department (IMD):

• Established in 1875, the IMD is the principal agency responsible for meteorological observations, weather forecasting, and seismology.

• It categorizes rainfall as Normal (within 19% of the Long Period Average), Deficient (minus 20% to 59%), and Large Deficient (minus 60% to 99%).

• Impact on Agriculture:

• Kharif Season: This season lasts from June to October. Major crops include Rice, Soybean, and Cotton. Rainfall in August is vital for the grain-filling stage of Paddy.

• Economic Consequences: Agriculture contributes approximately 18-20% to India's GDP. Substantial rainfall deficits can lead to food inflation and lower rural demand.

• Geographical Factors:

• The Monsoon Trough: A low-pressure area that extends from Rajasthan to the Bay of Bengal. If this trough remains south of its normal position, North and East India (like Bihar and UP) remain dry.

• Break Monsoon: A condition where the monsoon trough shifts towards the Himalayan foothills, leading to a sharp decrease in rainfall over the plains while increasing it in the hills.

Important Points

• El Nino Southern Oscillation (ENSO): The warming of the central and eastern Pacific Ocean waters. It is historically linked to below-normal monsoon rainfall in India.

• Indian Ocean Dipole (IOD): Often called the "Indian Nino," a Positive IOD can sometimes offset the negative impacts of El Nino, bringing better rains to the Southern Peninsula but not always to the Northeast.

• State-Specific Data: During years of severe deficit, Bihar often records a departure of nearly 40-50%, significantly impacting its rain-fed farming systems. Ladakh, being a cold desert, suffers even more as its minimal water sources from glacier melt are not sufficiently supplemented by monsoon pulses.

Q11. Answer: (d) Mother’s father

Family Chart:

Decoding the Symbols:

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

Given: G # N # V + K # T

It means: G is the daughter of N, N is the daughter of V, V is the mother of K, K is the daughter of T.

Here, T is related to G as Mother’s father

Hence, the correct answer is Option 4.

Q12. Answer: (a) x = 2, y = - 2, z = 5

Shortcut Trick

=> From x = 3y + 2z − 2, substitute directly

=> Put in Eq(1): 3x − 4y = 6z − 16 → gives y = −2

=> Then x = 3(−2) + 2z − 2 = 2z − 8

=> Put in Eq(2): −4x + y + z = −5 → solve gives z = 5

=> Then x = 2

Therefore Answer = (2, −2, 5)

Alternate Method

Given:

=> 3x − 4y = 6z − 16

=> −4x + y + z = −5

=> x = 3y + 2(z − 1)

Formula: Substitution method

Calculations:

=> x = 3y + 2z − 2

=> Substitute in Eq(1): 3(3y + 2z − 2) − 4y = 6z − 16

=> 9y + 6z − 6 − 4y = 6z − 16

=> 5y = −10 → y = −2

=> x = 3(−2) + 2z − 2 = 2z − 8

=> Substitute in Eq(2): −4(2z − 8) − 2 + z = −5

=> −8z + 32 − 2 + z = −5

=> −7z = −35 → z = 5

=> x = 2z − 8 = 10 − 8 = 2

Therefore Final Answer = (2, −2, 5)

Additional Information

Substitution Method: Express one variable and substitute into other equations.

Elimination Method: Add/subtract equations to eliminate variables.

Consistency: Unique solution exists when equations are independent.

Quick Tip: Always simplify equations early to reduce calculation time.

Q13. Answer: (a) Freedom of religion

The correct answer is Freedom of religion.

Key Points

• Article 25 of the Indian Constitution guarantees the Freedom of Religion to all persons in India. It ensures the freedom of conscience and the right to freely profess, practice, and propagate religion. Statement 1 is correct.

• This right is available to both citizens and non-citizens (foreigners) residing in the country. It highlights the secular nature of the Indian State.

• The exercise of this right is not absolute and is subject to public order, morality, and health, as well as other provisions of Part III of the Constitution.

• Under Article 25, the State is permitted to regulate or restrict any economic, financial, political, or other secular activity which may be associated with religious practice.

• It also allows the Government to provide for social welfare and reform or the throwing open of Hindu religious institutions of a public character to all classes and sections of Hindus.

Additional Information

• Cultural and Educational Rights: These rights are enshrined in Articles 29 and 30 of the Constitution. They protect the interests of minorities (linguistic and religious) by allowing them to conserve their language, script, or culture and establish educational institutions of their choice. Statement 2 is incorrect.

• Right to Constitutional Remedies: Provided under Article 32, this allows citizens to move the Supreme Court for the enforcement of Fundamental Rights. Dr. B.R. Ambedkar called this article the "Heart and Soul of the Constitution." Statement 3 is incorrect.

• Right to Equality before Law: Guaranteed under Article 14, it states that the State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India. Statement 4 is incorrect.

• Secularism in India: Unlike the Western concept of separation of church and state, Indian Secularism means that the State maintains an equal distance from all religions and supports them equally. The word "Secular" was specifically added to the Preamble by the 42nd Amendment Act, 1976.

• Articles 25 to 28: Together, these four articles constitute the Right to Freedom of Religion in the Indian Constitution, covering individual and collective religious freedoms.

Important Points

• Definition of Hindu: For the purposes of Article 25, the term "Hindu" is defined to include people professing the Sikh, Jain, or Buddhist religions. This ensures that public religious institutions of these communities are also inclusive.

• Sikhism and Kirpans: Explanation 1 of Article 25 specifically mentions that the wearing and carrying of kirpans shall be deemed to be included in the profession of the Sikh religion.

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• Article 26: While Article 25 protects the rights of individuals, Article 26 protects the rights of religious denominations or sections thereof to manage their own religious affairs.

• Fundamental Rights: These rights are contained in Part III of the Constitution, which was adopted on 26 November 1949 and came into effect on 26 January 1950.

Q14. Answer: (a) The Atmiya Sabha was established in 1824

The correct answer is The Atmiya Sabha was established in 1824.

Key Points

• The Atmiya Sabha was founded by the great social reformer Raja Ram Mohan Roy. He is widely regarded as the "Father of the Indian Renaissance" for his tireless efforts in reforming Indian society and religion. Hence, statement 3 is correct.

• The Atmiya Sabha was established in the year 1814 (some historical records mention 1815). The statement claiming it was established in 1824 is factually incorrect. Hence, statement 1 is incorrect.

• The organization was established in Calcutta (now Kolkata), which served as the capital of the British East India Company and the hub of the Bengal Renaissance during the 19th century. Hence, statement 4 is correct.

• The Atmiya Sabha (Society of Friends) was a philosophical discussion circle that eventually paved the way and laid the foundation for the formation of the Brahmo Samaj in 1828. Hence, statement 2 is correct.

• The primary objective of the Atmiya Sabha was to promote the monotheistic ideals of the Vedanta and to conduct debates on religious and social reforms, challenging the prevailing orthodox practices of the time.

Additional Information

• Raja Ram Mohan Roy:

• He was a polyglot who mastered several languages including Sanskrit, Persian, Arabic, English, French, and Latin.

• In 1803, he published Tuhfat-ul-Muwahhidin (A Gift to Monotheists), which argued against idolatry and supported monotheism.

• The title 'Raja' was conferred upon him by the Mughal Emperor Akbar II in the year 1830.

• He played a crucial role in the abolition of Sati, which was legally banned by Lord William Bentinck in 1829.

• Social and Religious Reforms:

• The Atmiya Sabha held weekly meetings where texts from the Upanishads were recited and hymns were sung.

• Members of the Sabha included influential figures like Dwarkanath Tagore, Prasanna Coomar Tagore, and Brindaban Mitra.

• The Sabha campaigned against the caste system, polygamy, child marriage, and the illiteracy of women.

• It promoted a rationalist approach to religion, emphasizing that reason and logic should be the basis of theological beliefs.

Important Points

• Evolution into Brahmo Samaj: The transition from Atmiya Sabha to Brahmo Sabha (later Brahmo Samaj) marked the shift from a private discussion group to a public institutionalized movement for socio-religious reform in India.

• Literary Contributions: Raja Ram Mohan Roy started journals like Sambad Kaumudi (in Bengali) and Mirat-ul-Akbar (in Persian) to spread reformist ideas and educate the public on civil rights and administrative issues.

• Global Impact: His visit to England in 1831 was the first by an educated Indian of high caste to travel across the "black water," where he advocated for Indian interests before the British Parliament.

• Death: He passed away in 1833 at Stapleton near Bristol, United Kingdom, leaving behind a legacy that inspired later reformers like Ishwar Chandra Vidyasagar and Jyotiba Phule.

Q15. Answer: (b) 2020

The correct answer is 2020.

Key Points

• The Pradhan Mantri Matsya Sampada Yojana (PMMSY) was officially launched by Prime Minister Narendra Modi on 10th September 2020.

• The scheme was introduced as a part of the Aatmanirbhar Bharat Abhiyan package to bring about the Blue Revolution through sustainable and responsible development of the fisheries sector in India.

• The primary objective of this flagship scheme is to address critical gaps in the fisheries value chain, including production, productivity, quality, technology, post-harvest infrastructure, and marketing.

• It aims to enhance fish production to 22 million metric tons by the year 2024-25 from the levels of 13.75 million metric tons recorded in 2018-19.

• The scheme involves an estimated investment of Rs. 20,050 crores, which is the highest-ever investment specifically dedicated to the fisheries sector in India.

Additional Information

• Economic Targets and Export Growth:

• The PMMSY targets an increase in export earnings to Rs. 1,00,000 crores by 2024-25.

• It focuses on doubling the income of fishers and fish farmers while reducing post-harvest losses from the current 20-25% to about 10%.

• Employment Generation:

• The scheme is expected to generate about 15 lakh direct gainful employment opportunities and thrice this number as indirect employment opportunities in the fisheries sector.

• It emphasizes the social and economic security of fishers, fish farmers, and fish workers across the country.

• Scheme Structure:

• The PMMSY is an umbrella scheme with two separate components: Central Sector Scheme (CS) and Centrally Sponsored Scheme (CSS).

• The Central Sector Scheme is 100% funded by the Central Government, while the Centrally Sponsored Scheme involves cost-sharing between the Centre and the States/Union Territories.

• Technological Interventions:

• It promotes the use of modern technologies such as Recirculatory Aquaculture Systems (RAS), Bio-floc, and Seaweed farming.

• Special focus is given to cold chain development, ice plants, and refrigerated vehicles to maintain the quality of the produce.

Important Points

• Department and Ministry: The scheme is implemented by the Department of Fisheries, which falls under the Ministry of Fisheries, Animal Husbandry and Dairying.

• Duration: The scheme is designed for implementation over a period of 5 years, spanning from Financial Year 2020-21 to Financial Year 2024-25.

• Geographical Reach: It is implemented in all States and Union Territories of India, catering to both marine and inland fisheries.

• Beneficiary Coverage: Beneficiaries include fishers, fish farmers, fish workers, fish vendors, Fisheries Development Corporations, Self Help Groups (SHGs), and Joint Liability Groups (JLGs) in the fisheries sector.

Q16. Answer: (a) 1,000 crore

The correct answer is 1,000 crore.

Key Points

• The Petroleum and Natural Gas Regulatory Board (PNGRB) is undertaking a significant tariff revamp aimed at rationalizing the transportation costs associated with City Gas Distribution (CGD) networks. This move is expected to lead to an annual saving of approximately Rs. 1,000 crore for the industry and consumers. Hence, the correct option is 1,000 crore.

• The revamp is part of a broader strategy to simplify the tariff structure across the country, ensuring that natural gas becomes more affordable and accessible to a wider demographic.

• By reducing the transportation cost, the PNGRB aims to incentivize the shift from traditional fossil fuels like petrol and diesel to cleaner alternatives like Compressed Natural Gas (CNG) and Piped Natural Gas (PNG).

• The December 2025 timeline reflects the scheduled implementation phase for the revised Unified Tariff (UFT) mechanisms, which are designed to eliminate the "cascading effect" of multiple pipeline tariffs.

• This initiative is expected to benefit CGD entities operating in Geographical Areas (GAs) that were previously disadvantaged by high distance-based transportation charges.

Additional Information

• Petroleum and Natural Gas Regulatory Board (PNGRB):

• The PNGRB was established under the Petroleum and Natural Gas Regulatory Board Act, 2006.

• Its primary functions include protecting the interests of consumers and entities engaged in specified activities relating to petroleum, petroleum products, and natural gas.

• It regulates the transportation and distribution of natural gas through common carrier or contract carrier pipelines.

• One Nation, One Gas Grid:

• This is a flagship initiative of the Government of India to connect various gas sources to consumption hubs across the country.

• The goal is to increase the share of natural gas in India's energy mix from the current 6.7% to 15% by 2030.

• The Unified Tariff system is a critical component of this initiative, ensuring uniform pricing regardless of the distance from the gas source.

• City Gas Distribution (CGD) Network:

• The CGD network involves the supply of natural gas to domestic, commercial, and industrial consumers.

• As of 2024, PNGRB has authorized the development of CGD networks in nearly 300 Geographical Areas, covering approximately 98% of the country's population.

• The growth of this sector is vital for reducing carbon emissions and achieving environmental sustainability goals.

Important Points

• Economic Impact: The reduction of Rs. 1,000 crore in annual costs will likely improve the financial health of gas marketing

companies and lower the monthly bills for household PNG users.

• Key Entities: Major players in the CGD sector like Indraprastha Gas Limited (IGL), Mahanagar Gas Limited (MGL), and GAIL (India) Limited will be significantly impacted by these tariff changes.

• Incentivizing Infrastructure: By capping and rationalizing tariffs, the government encourages the private sector to invest more in pipeline infrastructure in remote locations such as the North-Eastern states and Southern India.

• Date and Year: The Unified Tariff (UFT) regulations were first notified in 2022, with progressive updates leading toward the 2025 milestones.

Q17. Answer: (b) 8%

Shortcut Trick

Marked = 250% of CP, Required SP = 230% of CP

Difference = 250 − 230 = 20

Discount % = (20 ÷ 250) × 100

=> = 8%

Therefore Answer = 8%

Alternate Method

Given:

=> Let CP = 100

=> MP = 150% above CP = 100 + 150 = 250

=> Gain = 130% => SP = 100 + 130 = 230

Formula:

=> Discount % = ((MP − SP) ÷ MP) × 100

Calculations:

=> Discount = 250 − 230 = 20

=> Discount % = (20 ÷ 250) × 100

=> = 8%

Final Answer: 8%

Additional Information

Marked Price Concept: MP = CP × (1 + Markup%)

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

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

Shortcut Idea: Assume CP = 100 for faster percentage comparison

Q18. Answer: (b) 13.75

Shortcut Trick

=> Time = 48/12 + 52/13 + 120/15

=> = 4 + 4 + 8 = 16 hr

=> Total distance = 48 + 52 + 120 = 220 km

=> Avg speed = 220 ÷ 16 = 13.75 km/h

Therefore Answer = 13.75 km/h

Alternate Method

Given:

=> Distances = 48, 52, 120 km

=> Speeds = 12, 13, 15 km/h

Formula:

=> Average Speed = Total Distance ÷ Total Time

Calculations:

=> Time1 = 48 ÷ 12 = 4 hr

=> Time2 = 52 ÷ 13 = 4 hr

=> Time3 = 120 ÷ 15 = 8 hr

=> Total time = 4 + 4 + 8 = 16 hr

=> Total distance = 48 + 52 + 120 = 220 km

=> Avg speed = 220 ÷ 16 = 13.75 km/h

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Final Answer: 13.75 km/h

Additional Information

Average Speed: Total Distance ÷ Total Time

Equal Distance Case: Avg speed = (2xy) ÷ (x + y)

Equal Time Case: Avg speed = (x + y) ÷ 2

Key Idea: Always convert each segment into time first

Q19. Answer: (b) 126

The logic followed here is:

thus, "126" will replace the question mark in the given series.

Hence, the correct option is "Option 2".

Q20. Answer: (c) Tughlaq Nama – Abul Fazal

The correct answer is Tughlaq Nama – Abul Fazal.

Key Points

• Tughlaq Nama is a famous Persian manuscript written by Amir Khusrau in approximately 1320. It describes the victory of Ghiyasuddin Tughlaq over Khusrau Khan and the establishment of the Tughlaq Dynasty in the Delhi Sultanate. Abul Fazal, on the other hand, was the court historian of Akbar and wrote the Akbarnama. Hence, the combination Tughlaq Nama – Abul Fazal is incorrect.

• Gita Govinda is a celebrated work composed by Jayadeva Goswami during the 12th century. He was the court poet of King Lakshmana Sena of Bengal. The book details the relationship between Lord Krishna and the Gopis, specifically Radha. Hence, the combination Gita Govinda – Jayadeva Goswami is correct.

• Baburnama is the autobiography of Zahir-ud-din Muhammad Babur, the founder of the Mughal Empire in India. It was originally written in the Chagatai Turkic language, which was the Turki mother tongue of the Timurids. It covers Babur's life from his accession in Fergana to his conquest of Hindustan in 1526. Hence, the combination Baburnama – Babur is correct.

• Prithviraj Raso is an epic poem written in Braj Bhasha by Chand Bardai. He was the court poet and a close friend of the Chauhan king Prithviraj III (Prithviraj Chauhan), who ruled Ajmer and Delhi. The text narrates the life, exploits, and the wars of the king, particularly the Battles of Tarain against Muhammad Ghori. Hence, the combination Prithiviraj Raso – Chand Bardai is correct.

Additional Information

• Amir Khusrau:

• Commonly known as the "Tut-i-Hind" or the "Parrot of India", he was a prolific Sufi musician, poet, and scholar.

• He was a spiritual disciple of Nizamuddin Auliya and lived during the reigns of seven different rulers of the Delhi Sultanate.

• He is often credited with the invention of the Sitar and the Tabla, and he laid the foundations of Qawwali music.

• His other notable works include Khaza'in-ul-Futuh, Nuh Sipihr, and Laila Majnu.

• Abul Fazal:

• He was one of the Navaratnas (Nine Jewels) in the court of Mughal Emperor Akbar.

• His monumental work, Akbarnama, is divided into three volumes, where the third volume is the Ain-i-Akbari, which details the administration and statistical data of the Mughal Empire.

• He was also responsible for translating the Bible into the Persian language.

• Literary Trends in Medieval India:

• The Medieval period saw a blend of Sanskrit, Persian, and Regional languages. While Persian was the official court language of the Sultanate and Mughals, the Bhakti movement promoted literature in vernacular tongues.

• The 16th century marked a golden age for autobiographies and biographies in Mughal India, such as the Humayunnama written by Gulbadan Begum.

Important Points

• Historical Context of Authors:

• Jayadeva Goswami: His work Gita Govinda became a foundation for Odissi dance and various Bhakti traditions across India.

• Babur: His Baburnama is noted for its naturalistic observations of flora and fauna in South Asia, making it a valuable source for environmental history.

• Chand Bardai: Although some historians debate the date of the current version of Prithviraj Raso, it remains a primary source for Rajput cultural identity and heroic folklore.

• Amir Khusrau: The Tughlaq Nama is essentially a historical masnavi, providing rare contemporary insights into the political shifts of the 14th century.

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Q21. Answer: (b) 670

Shortcut Trick

=> Let Krish = K, Veer = V

=> $K(1.1)^{13} = V(1.1)^{(14)}$

=> K = 1.1V => Ratio K : V = 11 : 10

=> Total = 21 parts = 1407 => 1 part = 67

=> Veer = 10 parts = 670

Therefore Answer = 670

Alternate Method

Given:

=> Total money = 1407

=> Rate = 10% p.a.

=> Krish time = 13 yrs, Veer time = 14 yrs

Formula:

=> Amount = $P(1 + r/100)^n$

Calculations:

=> $K(1.1)^{13} = V(1.1)^{(14)}$

=> K = V(1.1)

=> K : V = 11 : 10

=> Total parts = 21

=> 1 part = 1407 ÷ 21 = 67

=> Veer = 10 × 67 = 670

Final Answer: 670

Additional Information

Compound Interest: $A = P(1 + r/100)^n$

Ratio Trick: Compare powers to form direct ratio

Successive Multiplication: $(1.1)^{(14)} = (1.1)^{13} \times 1.1$

Key Idea: Reduce exponential equations into ratios

Q22. Answer: (a) YFI 70

The logic followed here is:

So, 'YFI 70' will replace the question mark in the given series.

Hence, the correct answer is "Option 1".

Q23. Answer: (c) 6.67

Shortcut Trick

=> In SI, doubling => Interest = Principal

=> So, SI = P

=> SI = (P × R × T) ÷ 100 = P

=> Cancel P => R × 15 = 100

=> R = 100 ÷ 15 = 6.67%

Therefore Answer = 6.67%

Alternate Method

Given:

Time (T) = 15 years

Amount = 2P

Formula:

SI = (P × R × T) ÷ 100

Amount = P + SI

Calculations:

=> 2P = P + SI

=> SI = P

=> P = (P × R × 15) ÷ 100
=> Cancel P => 1 = (R × 15) ÷ 100
=> R × 15 = 100
=> R = 100 ÷ 15 = 6.67%
Final Answer: 6.67%
Additional Information
Simple Interest Shortcut: If money doubles in T years => Rate = 100 ÷ T
Amount Formula: Amount = P + SI

Q24. Answer: (a) 100

Shortcut Trick
=> Let numbers be x and x + 2
=> $x^2 + (x + 2)^2 = 5002$
=> Try near $\sqrt{(5002 \div 2)} \approx \sqrt{2501} \approx 50$
=> Check 49 and 51 => $49^2 + 51^2 = 2401 + 2601 = 5002$
=> Sum = 49 + 51 = 100
Therefore Answer = 100
Alternate Method
Given:
Sum of squares = 5002
Formula:
Let numbers be x and x + 2
Calculations:
=> $x^2 + (x + 2)^2 = 5002$
=> $x^2 + x^2 + 4x + 4 = 5002$
=> $2x^2 + 4x + 4 = 5002$
=> $2x^2 + 4x - 4998 = 0$
=> $x^2 + 2x - 2499 = 0$
=> $x^2 + 2x + 1 = 2500$
=> $(x + 1)^2 = 2500$
=> x + 1 = 50 => x = 49
=> Numbers = 49 and 51
=> Sum = 49 + 51 = 100
Final Answer: 100
Additional Information
Consecutive Odd Numbers: Represented as x, x + 2, x + 4, ...
Square Identity: $(a + b)^2 = a^2 + b^2 + 2ab$
Perfect Square Trick: Convert quadratic into $(x + a)^2$ form for fast solving

Q25. Answer: (c) 5 – 25 – 45 – 135

The logic followed here is:
Logic:
First → Second: Square of the number
Second → Third: + 20
Third → Fourth: × 3
Check given sets:
8 → 64 → 84 → 252
=> $8^2 = 64$
=> 64 + 20 = 84
=> 84 × 3 = 252
12 → 144 → 164 → 492
=> $12^2 = 144$

=> 144 + 20 = 164

=> 164 × 3 = 492

Now, checking options:

Option 1: 4 – 16 – 46 – 153

=> $4^2 = 16$

=> 16 + 20 = 36

Option 2: 9 – 81 – 121 – 423

=> $9^2 = 81$

=> 81 + 20 = 101

Option 3: 5 – 25 – 45 – 135

=> $5^2 = 25$

=> 25 + 20 = 45

=> 45 × 3 = 135

Option 4: 14 – 256 – 456 – 969

=> $14^2 = 196$

Hence, the correct answer is Option 3.

Q26. Answer: (a) 2

Given number: 8134576

Logic:

Add 1 to each odd digit

Subtract 2 from each even digit

Original number: 8 1 3 4 5 7 6

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

New number: 6 2 4 2 6 8 4

Now, Second from the left = 2

Hence, the correct answer is Option 1.

Q27. Answer: (c) Sandstone

The correct answer is Sandstone.

Key Points

• The Kailasanatha Temple at Kanchipuram is the oldest structural temple in the city, built during the 8th century CE (approximately between 700-728 CE).

• It was commissioned by the Pallava king Narasimhavarman II, who is also famously known as Rajasimha. The temple is a masterpiece of the Rajasimha style of architecture.

• The primary material used for the construction of this temple is Sandstone. This choice of material allowed for highly intricate and detailed carvings that are difficult to achieve in harder stones. Hence, the option Sandstone is correct.

• The temple is dedicated to Lord Shiva and contains 58 small shrines situated around the main compound wall, which are also made of Sandstone.

• Unlike the earlier rock-cut temples of the Pallavas, this was a structural temple built from blocks of stone rather than being excavated from a single rock.

Additional Information

• Dravidian Architecture: The Kailasanatha Temple is considered one of the earliest and best examples of the Dravidian style of

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architecture. It features a massive Vimana (tower) and a multi-pillared Mandapa.

• Granite: While Granite was used in the earlier Pancha Rathas at Mahabalipuram and later became the standard material for Imperial Chola temples (like the Brihadisvara Temple in 1010 CE), it was not the primary material for the Kanchipuram Kailasanatha. Hence, the option Granite is incorrect.

• Brick: Brick and mortar were common in the Sangam period and early Pallava era for secular and smaller religious buildings, but the great structural temples of the 8th century transitioned to stone. Hence, the option Brick is incorrect.

• Marble: Marble was not a native material used in South Indian temple architecture during the 8th century. Its use is more associated with Dilwara temples in Rajasthan or Mughal architecture in North India. Hence, the option Marble is incorrect.

• Geographic Location: Kanchipuram, often called the "City of a Thousand Temples," is located in Tamil Nadu and served as the capital of the Pallava Dynasty between the 4th and 9th centuries.

Important Points

• Artistic Features: The temple is famous for its fresco paintings on the inner walls of the shrines, which are among the earliest surviving examples of Hindu wall paintings in South India.

• Historical Influence: It is widely believed that the Kailasanatha Temple at Kanchipuram served as an inspiration for the famous Kailasa Temple at Ellora (built by the Rashtrakutas) and the Virupaksha Temple at Pattadakal (built by the Chalukyas).

• Preservation: Because Sandstone is a relatively soft and porous rock, the temple has suffered from weathering over the centuries. The Archaeological Survey of India (ASI) manages the conservation of this site.

• Statues and Carvings: The temple walls are adorned with various forms of Lord Shiva, including the Dakshinamurthi and Lingodbhava forms, sculpted with a high degree of artistic finesse.

Q28. Answer: (c) Mutthuswami Dikshitar

The correct answer is Mutthuswami Dikshitar.

Key Points

• Mutthuswami Dikshitar (1775–1835) was a legendary poet and composer and is considered one of the Musical Trinity of Carnatic Music. He is world-renowned for his kritis that are characterized by a contemplative, meditative nature and a slow, majestic pace.

• His compositions are predominantly in Sanskrit, unlike his contemporary Thyagaraja, who primarily composed in Telugu. This choice of language adds to the intellectual and spiritual depth of his works.

• A defining feature of his style is the use of Vilambita Kala (slow tempo), which allows for the intricate exploration of the Raga Swaroopa (the essential form and spirit of the raga). This matches the description of capturing the essence of the raga through a slow, richly ornamented style. Hence, the statement in the question accurately describes his musical contributions.

• His works are richly ornamented with Gamakas (grace notes), which are executed with precision to highlight the subtle nuances of the Indian Classical Music system. His Vainika (Veena player) background heavily influenced his vocal compositions, leading to long, fluid melodic lines.

• Each of his kritis serves as a comprehensive Raga Lakshana, providing a complete structural map of the raga being used. His signature or Mudra used in his compositions is Guruguha.

Additional Information

• Thyagaraja Iyengar:

• Commonly known as Saint Tyagaraja, he lived from 1767 to 1847 in Thiruvaiyaru, Tamil Nadu.

• He was a prolific composer who wrote thousands of devotional compositions, mostly in praise of Lord Rama.

• His style is known for the introduction of Sangatis (variations on a melodic line) and is generally more rhythmic and emotional compared to the intellectual style of Dikshitar.

• His most famous works include the Pancharatna Kritis (Five Gems).

• The Musical Trinity:

• The Trinity of Carnatic Music refers to Thyagaraja, Mutthuswami Dikshitar, and Syama Sastri.

• All three were born in Tiruvarur in the Thanjavur district of Tamil Nadu within a short period of each other.

• They are credited with creating the modern structure of the Kriti and standardizing the Carnatic musical tradition in the 18th and 19th centuries.

• Ramanuja Srinivasani (Ariyakudi Ramanuja Iyengar):

• He was a prominent Carnatic vocalist (1890–1967) who is credited with establishing the modern Katcheri (concert) format.

• He was awarded the Padma Bhushan in 1958 and the Sangeet Natak Akademi Fellowship in 1952.

• His contribution was more towards the performance and standardization of concerts rather than being a primary composer of ancient kritis like the Trinity.

Important Points

• Navagraha Kritis: Mutthuswami Dikshitar composed a famous set of nine songs dedicated to the nine planets of Hindu astrology. These are considered technical masterpieces of compositional skill and astrological knowledge.

• Western Influence: Interestingly, Dikshitar also composed Nottusvaras, which are Sanskrit lyrics set to Western melodies (such as British colonial tunes), demonstrating his versatility and exposure to different musical systems in Madras.

• Temple Tradition: Most of his compositions are Sthala Puranas, describing the deities, temples, and rituals of the specific locations he visited across India.

• Kamalamba Navavarnams: This is a famous cycle of eleven kritis composed in the Sri Vidya tradition, dedicated to the Goddess at the Tiruvarur temple, showcasing his deep tantric and philosophical leanings.

Q29. Answer: (b) SabhaSaar

The correct answer is SabhaSaar.

Key Points

• The Government of India, specifically the Ministry of Panchayati Raj, unveiled the AI-powered tool SabhaSaar on the eve of the 79th Independence Day in August 2025. This initiative is aimed at revolutionizing the documentation process of local body meetings. Hence, the statement regarding SabhaSaar being the correct tool is correct.

• SabhaSaar is designed to utilize Artificial Intelligence (AI) and Machine Learning (ML) to automatically generate structured Minutes of Meetings (MoMs) from the audio or video recordings of Gram Sabha sessions. This ensures that every discussion and decision is captured with high precision.

• The primary function of SabhaSaar is to eliminate the delays and subjectivity associated with manual note-taking in Panchayati Raj Institutions (PRIs). By providing an automated summary, it enhances transparency and accountability in rural governance.

• The tool supports multiple regional languages of India, ensuring that the diverse linguistic landscape of the country does not hinder the digital documentation of Gram Panchayat proceedings.

• The launch of SabhaSaar is a significant step toward the Digital India mission, specifically targeting the grassroots level to empower Sarpanchs and Panchayat Secretaries with state-of-the-art technology.

Additional Information

• SabhaSadan: This term generally refers to the assembly hall or the physical infrastructure where meetings are held. In the context of the 2025 announcement, it does not refer to the AI tool for generating meeting minutes. Hence, this statement is incorrect.

• GramVivaran: While the word "Vivaran" means description or account in Hindi, there was no tool launched under this specific name for AI-based MoM generation during the 79th Independence Day celebrations. Hence, this statement is incorrect.

• GramSattva: This term implies the "essence" or "spirit" of the village. While it sounds like a government initiative, it is not the name of the AI-powered minutes-generation tool launched by the Ministry of Panchayati Raj. Hence, this statement is incorrect.

• Ministry of Panchayati Raj (MoPR): This Cabinet ministry is responsible for the monitoring of Panchayati Raj and the 73rd Amendment Act of 1992. It has been at the forefront of digital initiatives like e-GramSwaraj and SVAMITVA.

• Gram Sabha: It is the primary body of the Panchayati Raj system and the oldest in India. It consists of all persons whose names are included in the electoral rolls for the Panchayat at the village level, playing a crucial role in Direct Democracy.

Important Points

• Technological Features: SabhaSaar uses advanced Natural Language Processing (NLP) to distinguish between different speakers and summarize key action points, which are then uploaded to the e-GramSwaraj portal for public access.

• Viksit Bharat 2047: The introduction of such tools is part of the broader vision of Viksit Bharat (Developed India) by 2047, where technology bridges the gap between rural and urban administrative standards.

• Data Security: The tool ensures that all recordings and generated documents are stored securely in government clouds (like NIC), maintaining the privacy and integrity of the Gram Sabha proceedings.

• Impact on Governance: By automating MoMs, the government aims to reduce the administrative burden on Panchayat officials, allowing them to focus more on developmental activities and citizen-centric services.

• Implementation: The rollout of SabhaSaar is expected to cover over 2.5 lakh Gram Panchayats across India, facilitating a uniform digital record-keeping standard.

Q30. Answer: (b) 32 days

Shortcut Trick

=> A = (A+B+C) − (B+C) = 1/54 − 1/56 = 1/1512

=> B = 75% more efficient => B = 7/4 × A = 1/864

=> Take LCM = 6048 => (A,B,C) = (4,7,101)

=> 52 days work = 52 × 112 = 5824 => Remaining = 224

=> Time by B = 224 ÷ 7 = 32 days

Therefore Answer = 32 days

Alternate Method

Given:

A+B+C = 54 days, B+C = 56 days
Formula:
Work Rate = 1 / Days
Calculation:
=> A = 1/54 − 1/56 = (56 − 54)/(54 × 56) = 1/1512
=> B = 75% more efficient than A => B = 7/4 × 1/1512 = 1/864
=> C = 1/56 − 1/864 = 101/6048
=> LCM = 6048

Person	Work/day
A	4
B	7
C	101
Total Work	6048
Total/day	112

=> Work done in 52 days = 52 × 112 = 5824
=> Remaining work = 6048 − 5824 = 224
=> Time by B = 224 ÷ 7 = 32 days
Final Answer: 32 days
Additional Information
Efficiency Relation: If B is 75% more efficient than A → B = 1.75A = 7/4 A
LCM Method: Assume total work = LCM of denominators to remove fractions
Work Formula: Work = Rate × Time
Difference Concept: Individual efficiency = Difference of combined efficiencies

Q31. Answer: (d) 39 cm

Shortcut Trick
=> Pipe radius = 1 cm, Tank radius = 100 cm
=> Height rise ratio = $(r_{pipe})^2 \times$ velocity × time) ÷ $R_{tank})^2$
=> = $(1^2 \times 500$ cm/s × 780 s) ÷ (100^2)
=> = (500 × 780) ÷ 10000 = 39 cm
Therefore Answer = 39 cm
Alternate Method
Given:
Diameter of pipe = 2 cm => radius = 1 cm
Velocity = 5 m/s = 500 cm/s
Time = 13 min = 780 s
Tank radius = 100 cm
Formula:
Volume = Area × Height
Calculation:
=> Volume flowing per second = $\pi \times 1^2 \times 500 = 500\pi$
=> Total volume in 780 s = $500\pi \times 780 = 390000\pi$
=> Tank base area = $\pi \times 100^2 = 10000\pi$
=> Height rise = Volume ÷ Area = $390000\pi \div 10000\pi$ = 39 cm
Final Answer: 39 cm
Additional Information
Cylinder Volume: Volume = $\pi r^2 h$
Flow Concept: Volume per second = Cross-sectional area × velocity
Unit Conversion: Always convert m to cm for consistency

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Height Formula: Height = Volume ÷ Base Area

Q32. Answer: (d) 20

Shortcut Trick

=> Work prop. to Men × Hours × Days

=> D = (15 × 6 × 20) ÷ (18 × 5)

=> = 1800 ÷ 90 = 20 days

Therefore Answer = 20 days

Alternate Method

Given:

15 men, 6 hours/day, 20 days

18 men, 5 hours/day, ? days

Formula:

Total Work = Men × Hours × Days

Calculation:

=> Total work = 15 × 6 × 20 = 1800 units

Men	Hours/day	Days	Work
15	6	20	1800
18	5	D	18 × 5 × D

=> 18 × 5 × D = 1800

=> 90D = 1800

=> D = 20 days

Final Answer: 20 days

Additional Information

Work Relation: Work prop. to Men × Time

Efficiency: More men or hours → less days

Direct Proportion: Work increases with manpower and time

Formula Use: D = (M1H1D1) ÷ (M2H2)

Q33. Answer: (a) 22

The logic followed here is:

Logic: Number ÷ 9

Given:

108 → 12

=> 108 ÷ 9 = 12

234 → 26

=> 234 ÷ 9 = 26

Now, 198 → ?

=> 198 ÷ 9 = 22

Hence, the correct answer is Option 1.

Q34. Answer: (a) 718.67

Shortcut Trick

=> Diameter = 14 => Radius = 7 cm

=> Hemisphere volume = $(2/3)\pi r^3$

=> = $(2/3) \times (22/7) \times 7^3$

=> = $(2/3) \times 22 \times 49 = 2156/3 = 718.67$

Therefore Answer = 718.67 cm^3

Alternate Method

Given:

=> Diameter = 14 cm => Radius = 7 cm

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=> π = 22/7

Formula:

=> Volume of hemisphere = (2/3)πr³

Calculations:

=> = (2/3) × (22/7) × 7 × 7 × 7

=> = (2/3) × 22 × 49

=> = 2156/3

=> = 718.67 cm³

Final Answer: 718.67 cm³

Additional Information

Sphere Volume: (4/3)πr³

Hemisphere: Half of sphere => (2/3)πr³

Surface Area (CSA): 2πr²

Key Idea: Always convert diameter to radius before applying formula

Q35. Answer: (a) 88

Shortcut Trick

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

=> $25 = x^2 + y^2 - 42$

=> $x^2 + y^2 = 67$

=> Required = 67 + 21 = 88

Therefore Answer = 88

Alternate Method

Given:

=> $x - y = 5$

=> $xy = 21$

Formula:

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

Calculations:

=> $25 = x^2 + y^2 - 2(21)$

=> $25 = x^2 + y^2 - 42$

=> $x^2 + y^2 = 67$

=> Required = $x^2 + y^2 + xy = 67 + 21 = 88$

Final Answer: 88

Additional Information

Identity: $(x - y)^2 = x^2 + y^2 - 2xy$

Another Identity: $(x + y)^2 = x^2 + y^2 + 2xy$

Useful Tip: Use identities to avoid solving variables

Key Idea: Convert given info into known algebraic identities

Q36. Answer: (b) magnetic field

The correct answer is magnetic field.

Key Points

• Hard Disk Drives (HDDs) utilize magnetic field technology to store and retrieve digital information. Data is recorded by magnetizing a thin film of ferromagnetic material on a disk.

• Inside an HDD, there are rapidly rotating platters coated with magnetic material. A magnetic read/write head on a moving actuator arm reads and writes data by changing the magnetic polarity of tiny areas on the platter surface.

• Each tiny area represents a bit, where the direction of magnetization signifies a binary 0 or 1. This method allows for non-volatile storage, meaning data is retained even when the power supply is turned off.

• Unlike optical technology used in CDs and DVDs, which relies on lasers to read "pits" and "lands" on a reflective surface, HDDs rely purely on electromagnetic principles.

• The magnetic field technology allows HDDs to achieve high storage densities and capacities, often reaching several terabytes (TB) in modern computing environments.

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Additional Information

• Solid-state memory: This technology is used in Solid State Drives (SSDs) and USB flash drives. Unlike HDDs, it has no moving parts and stores data in IC assemblies using NAND-based flash memory. It is faster and more durable than magnetic storage.

• Semiconductor chip: These are the primary building blocks of integrated circuits (ICs). While SSDs use them for storage, semiconductor chips are also the basis for Random Access Memory (RAM) and Central Processing Units (CPUs). RAM is volatile, meaning it loses data without power.

• Liquid crystal: This refers to Liquid Crystal Display (LCD) technology. It is used in monitors, smartphones, and televisions to produce images by modulating light. It is not a storage technology but an output technology.

• Optical storage: Devices like CD-ROMs, DVDs, and Blu-ray discs use a laser beam to scan the surface of the disc. The variations in reflectivity are translated back into binary data. These are generally slower than magnetic field based storage.

Important Points

• The first Hard Disk Drive was introduced by IBM in 1956, known as the IBM 350. It had a capacity of about 5 MB and was the size of two large refrigerators.

• Performance in magnetic storage is often measured by Rotational Speed, commonly 5400 RPM or 7200 RPM (Revolutions Per Minute). Higher RPM usually leads to faster data transfer rates.

• Magnetic storage is susceptible to physical shocks and strong external magnetic fields, which can lead to data corruption or mechanical failure of the actuator arm.

• Current advancements in magnetic recording include Shingled Magnetic Recording (SMR) and Heat-Assisted Magnetic Recording (HAMR), which aim to increase the areal density of bits on the platter.

• Common interfaces for connecting HDDs to a motherboard include SATA (Serial ATA) and SAS (Serial Attached SCSI).

Q37. Answer: (a) Small Industries Development Bank of India (SIDBI)

The correct answer is Small Industries Development Bank of India (SIDBI).

Key Points

• The Small Industries Development Bank of India (SIDBI) was established on April 2, 1990, under an Act of the Indian Parliament. It was initially set up as a wholly-owned subsidiary of the Industrial Development Bank of India (IDBI), but is currently an independent financial institution.

• The primary function of SIDBI is to serve as the principal financial institution for the promotion, financing, and development of the Micro, Small and Medium Enterprises (MSME) sector in India.

• It also coordinates the functions of other institutions engaged in similar activities to ensure a streamlined flow of credit to small-scale industries.

• The headquarters of SIDBI is located in Lucknow, Uttar Pradesh, making it one of the few national-level financial institutions headquartered outside the national capital or Mumbai.

• The institution plays a feature role in providing refinance facilities to banks and financial institutions, as well as direct lending to MSMEs to fill credit gaps.

Additional Information

• Industrial Finance Corporation of India (IFCI):

• Established on July 1, 1948, IFCI was the first Development Financial Institution set up by the Government of India after independence to provide long-term finance to the industrial sector.

• It is headquartered in New Delhi and was converted into a public limited company in 1993. Its main application is to provide financial assistance for the setting up of new industrial projects and the expansion of existing ones.

• Industrial Development Bank of India (IDBI):

• Established in July 1964 under the Industrial Development Bank of India Act, it originally functioned as a wholly-owned subsidiary of the Reserve Bank of India (RBI) before being transferred to the Government of India.

• Located in Mumbai, its primary uses were to provide credit and other financial facilities for the development of the fledgling Indian industry. In 2004, it was transformed into a commercial bank.

• Industrial Credit and Investment Corporation of India (ICICI):

• Formed in 1955 as a joint-venture initiative of the World Bank, the Government of India, and representatives of Indian industry.

• The principal objective was to create a development financial institution for providing medium-term and long-term project financing to Indian businesses. It later birthed ICICI Bank in 1994, which eventually merged with the parent entity in 2002.

Important Points

• SIDBI's Financial Impact: As of recent data, SIDBI has touched the lives of over 360 lakh persons in the MSME sector through its various schemes and digital platforms like Udyam Mitra and PSB Loans in 59 Minutes.

• Regulatory Framework: These institutions operate under the guidelines of the Reserve Bank of India (RBI) and the Ministry of Finance to maintain the financial stability of the industrial credit market.

• Significance of 1990: The year 1990 marked a transition in India’s economic policy, moving toward liberalization, which

necessitated a specialized body like SIDBI to support entrepreneurship and self-employment in the unorganized sector.

• MSME Definition: In India, MSMEs are defined based on investment and turnover, a fact that was revised in 2020 to include companies with up to Rs. 50 crore investment and Rs. 250 crore turnover under the Medium category.

Q38. Answer: (c) Article 41 - Provision for just and humane conditions of work and maternity relief

The correct answer is Article 41 - Provision for just and humane conditions of work and maternity relief.

Key Points

• Article 40 of the Constitution of India directs the State to take steps to organize village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government. This article reflects the Gandhian principle of decentralization. Hence, this statement is correctly matched.

• Article 43A was inserted by the 42nd Amendment Act, 1976. It mandates the State to take steps, by suitable legislation or in any other way, to secure the participation of workers in the management of undertakings, establishments, or other organizations engaged in any industry. Hence, this statement is correctly matched.

• Article 41 deals with the Right to work, to education, and to public assistance in certain cases. It directs the State to make effective provision for securing these rights in cases of unemployment, old age, sickness, and disablement. The provision for just and humane conditions of work and maternity relief is actually covered under Article 42. Hence, this statement is incorrectly matched.

• Article 39A, also added by the 42nd Amendment Act, 1976, specifies that the State shall ensure that the operation of the legal system promotes justice on a basis of equal opportunity. It specifically mandates the provision of free legal aid by suitable legislation or schemes to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities. Hence, this statement is correctly matched.

Additional Information

• Directive Principles of State Policy (DPSP): These are enumerated in Part IV of the Constitution of India, spanning from Article 36 to 51. They are fundamental in the governance of the country, and it is the duty of the State to apply these principles in making laws.

• Source and Nature: The concept of DPSP is borrowed from the Irish Constitution of 1937. Unlike Fundamental Rights, these principles are non-justiciable, meaning they are not enforceable by any court for their violation as per Article 37.

• Classification: Although the Constitution does not formally classify them, they are usually grouped into three categories: Socialistic Principles (e.g., Articles 38, 39, 41, 42), Gandhian Principles (e.g., Articles 40, 43, 46, 47, 48), and Liberal-Intellectual Principles (e.g., Articles 44, 45, 50, 51).

• 42nd Amendment Act, 1976: This amendment is often called the "Mini-Constitution" and added four new Directive Principles: Article 39 (opportunities for healthy development of children), Article 39A (equal justice and free legal aid), Article 43A (participation of workers in management), and Article 48A (protection and improvement of environment and safeguarding of forests and wildlife).

• Article 44: This article is currently a major topic of discussion in India as it relates to the Uniform Civil Code, which aims to replace personal laws based on the scriptures and customs of each major religious community with a common set of laws governing every citizen.

Important Points

• Article 42: It requires the State to make provision for securing just and humane conditions of work and for maternity relief. This is the correct article for the description wrongly attributed to Article 41 in the question.

• Article 45: Originally, it provided for free and compulsory education for children. However, after the 86th Amendment Act, 2002, which made elementary education a Fundamental Right under Article 21A, the subject matter of Article 45 was changed to Early Childhood Care and Education (ECCE) for all children until they complete the age of six years.

• Article 50: This article directs the State to take steps to separate the judiciary from the executive in the public services of the State, ensuring the independence of the judicial system.

• Article 51: It promotes international peace and security and maintains just and honorable relations between nations, fostering respect for international law and treaty obligations.

• Article 38: It directs the State to promote the welfare of the people by securing a social order permeated by justice—social, economic, and political—and to minimize inequalities in income, status, facilities, and opportunities.

Q39. Answer: (d) 1-b, 2-d, 3-c, 4-a

The correct answer is 1-b, 2-d, 3-c, 4-a.

Key Points

• Panihari (Rajasthan): This is a traditional folk song of Rajasthan usually sung by women while they fetch water from distant wells in the Thar Desert. It often depicts the scarcity of water and the daily lives of rural women. Hence, 1-b is the correct match.

• Khongjom Parba (Manipur): This is a popular musical ballad form of Manipur that narrates the story of the Anglo-Manipur War of 1891. It is performed to the accompaniment of a Dholak or drum. Hence, 2-d is the correct match.

• Wanawan (Jammu and Kashmir): It is a ritualistic folk music form predominantly sung in the Kashmir Valley during wedding

ceremonies. It is performed in a chorus by women and is considered essential for completing traditional rituals. Hence, 3-c is the correct match.

• Baul (West Bengal): This represents both a religious sect and a musical tradition from West Bengal and Bangladesh. The songs are mystic in nature, focusing on the search for the divine within the human body. Hence, 4-a is the correct match.

Additional Information

• Folk Music of Rajasthan:

• Rajasthan is rich in diverse musical traditions like Maand, Manganiyar, and Langa.

• Instruments such as the Kamayacha, Sarangi, and Khartal are frequently used.

• Panihari songs are often romantic or melancholic, reflecting the socio-cultural landscape of the arid regions.

• Folk Music of Manipur:

• Khongjom Parba singers are highly respected for their ability to narrate historical events with great emotion. It honors heroes like Major Paona Brajabashi who fought against the British.

• Other musical forms include Lai Haraoba music and Pena music, where the Pena (a stringed instrument) plays a central role.

• Folk Music of Jammu and Kashmir:

• Wanawan is unique because it does not traditionally use musical instruments; it relies on the synchronized clapping and vocal harmony of women.

• Other famous forms include Chakri, which is one of the most popular types of traditional music in Kashmir, and Sufiana Kalam, which has Persian influences.

• Folk Music of West Bengal:

• The Baul tradition was significantly influenced by the Bhakti and Sufi movements.

• In 2005, the Baul tradition of West Bengal was included in the UNESCO list of Masterpieces of the Oral and Intangible Heritage of Humanity.

• Famous Baul practitioners include Lalon Shah (Lalon Fakir), whose philosophy inspired poets like Rabindranath Tagore.

Important Points

• Bhatiali: Another famous folk song form of West Bengal, traditionally sung by boatmen while rowing downstream.

• Pandavani: A narrative folk singing style from Chhattisgarh that depicts stories from the Mahabharata, popularized by Teejan Bai.

• Lavani: A combination of traditional song and dance from Maharashtra, often performed to the beats of a Dholki.

• Bihu Geat: Folk songs of Assam performed during the Bihu festival, reflecting themes of love and nature.

• Mando: A slow-verse musical form from Goa that represents a fusion of Indian and Western musical traditions.

Q40. Answer: (b) 8

Shortcut Trick

=> Mean = (Total of values) ÷ 10 = 550 ÷ 10 = 55

=> Deviations: |58−55|+|65−55|+...+|60−55|

=> = 3+10+13+11+6+4+11+10+7+5 = 80

=> Mean deviation = 80 ÷ 10 = 8

Therefore Answer = 8

Alternate Method

Given:

=> Data: 58, 65, 42, 66, 49, 59, 44, 45, 62, 60

Formula:

=> Mean = (Sum of observations) ÷ n

=> Mean Deviation = (Σ|x − mean|) ÷ n

Calculations:

=> Sum = 550, n = 10

=> Mean = 550 ÷ 10 = 55

=> |x − 55| = 3,10,13,11,6,4,11,10,7,5

=> Sum of deviations = 80

=> Mean deviation = 80 ÷ 10 = 8

Final Answer: 8

Additional Information

Mean: Sum of observations ÷ Number of observations

Mean Deviation: Average of absolute deviations from mean

Absolute Value: Ignore sign (always positive)

Key Idea: Take modulus before summing deviations

Q41. Answer: (a) Due to agglomeration and services demand

The correct answer is Due to agglomeration and services demand.

Key Points

• Tertiary activities, often referred to as the service sector, involve the provision of services rather than the production of tangible goods. In India, large cities have become the primary hubs for these activities due to agglomeration economies, where the clustering of people and businesses leads to mutual benefits like shared infrastructure and a specialized labor pool.

• The high population density in urban areas creates a massive and diverse demand for services such as banking, insurance, education, healthcare, and entertainment. This demand is far higher in cities compared to rural areas, where primary activities like agriculture dominate.

• Large cities serve as administrative and financial centers. They house the headquarters of corporations, government offices, and stock exchanges (e.g., the Bombay Stock Exchange in Mumbai), which inherently require a vast network of supporting tertiary services.

• The presence of advanced infrastructure, including high-speed internet, international airports, and organized transport networks, facilitates the growth of the Information Technology (IT) and Business Process Outsourcing (BPO) sectors, which are major components of India's tertiary economy.

• Large urban centers also benefit from knowledge spillovers. The proximity of universities, research institutions, and private firms fosters innovation and the growth of quaternary activities, which are specialized tertiary services.

Additional Information

• Classification of Economic Sectors:

• Primary Sector: Involves the extraction of natural resources. Examples include farming, mining, and fishing. These are usually location-specific based on resource availability.

• Secondary Sector: Focuses on manufacturing and processing raw materials into finished goods. While present in cities, heavy industries often move to the outskirts due to land costs.

• Tertiary Sector: Includes trade, transport, communication, and professional services. It currently contributes more than 50% to India's Gross Value Added (GVA).

• Structural Transformation in India: Unlike many developed nations, India experienced a unique economic shift where it moved directly from an agrarian economy to a service-led economy, skipping the intensive industrialization phase seen in Western countries.

• Urbanization Trends: According to the Census of India 2011, approximately 31.16% of the population lived in urban areas. Projections suggest that by the year 2030, nearly 40% of Indians will reside in cities, further escalating the growth of the tertiary sector.

• Employment Data: While the tertiary sector contributes the most to the GDP, it does not yet employ the majority of the workforce. The Periodic Labour Force Survey (PLFS) often highlights that while agriculture employs nearly 45-48% of the population, the service sector is the fastest-growing employer in Tier-1 and Tier-2 cities.

Important Points

• Examples of Tertiary Hubs: Bengaluru is globally recognized as the "Silicon Valley of India" for its IT services. Mumbai is the financial capital, and Gurugram/Noida are major hubs for consultancy and BPO operations.

• Role of Liberalization: The 1991 Economic Reforms (LPG - Liberalization, Privatization, and Globalization) acted as a catalyst for the tertiary sector, allowing foreign direct investment (FDI) in telecommunications, retail, and banking.

• Service Sector Growth Rate: Historically, the service sector in India has maintained a growth rate of 7% to 9% annually, significantly outperforming the primary sector.

• Impact of Digital India: Launched in the year 2015, this initiative has further pushed tertiary activities into the digital realm, increasing the applications of e-commerce, fintech, and online education across all major Indian cities.

Q42. Answer: (d) 68°

Shortcut Trick

For a point C on the minor arc AB and tangents meeting at M:

Angle between tangents angle AMB = 2 × (angle ACB − 90°)

angle AMB = 2 × (124° − 90°)

angle AMB = 2 × 34°

angle AMB = 68°

Therefore Answer = 68°

Alternate Method

Given:

Center = P, angle ACB (on minor arc) = 124°, M is intersection of tangents at A and B.

Formula used:

Sum of opposite angles in cyclic quadrilateral = 180°

Angle at center = 2 × Angle at circumference

Sum of angles in tangent-quadrilateral angle AMB + angle APB = 180°

P A B C (124°) D M

Calculations:

Let D be a point on the major arc AB. ADBC forms a cyclic quadrilateral.

=> angle ADB + angle ACB = 180°

=> angle ADB = 180° − 124° = 56°

=> Central angle angle APB = 2 × angle ADB = 2 × 56° = 112°

=> In quadrilateral PAMB, angle PAM = angle PBM = 90° (Radius perpendicular to Tangent)

=> angle AMB = 180° − angle APB = 180° − 112° = 68°

Therefore The correct answer is 68° (Option 4).

Additional Information

Radius-Tangent Property

The tangent at any point of a circle is perpendicular to the radius through the point of contact (angle PAM = 90°).

Angle at Center Theorem

The angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle.

Tangent-Tangent Angle

The angle between two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segments joining the points of contact at the center.

Cyclic Quadrilateral

The sum of either pair of opposite angles of a cyclic quadrilateral is 180°.

Q43. Answer: (b) 5

Given: Seven boxes A, C, G, H, J, N and R are kept one over the other but not necessarily in the same order.

Only three boxes are kept above N.

Only one box is kept between H and N.

Only three boxes are kept between H and A.

A is kept at some place above N.

R is kept immediately below A.

C is kept at one of the places above G.

J is not kept immediately above or below H.

Position	Box
7 (Top)	J
6	A
5	R
4	N
3	C
2	H
1 (Bottom)	G

Boxes above H → J, A, R, N, C → 5

Hence, the correct answer is Option 2.

Q44. Answer: (b) asterisk *

The correct answer is asterisk *.

Key Points

• The asterisk (*) is a wildcard character used in Windows 11 and previous versions of the Windows Operating System to represent one or more characters in a search string. It allows users to find files when they only remember a partial name or part of a file extension.

• When using the File Explorer search bar, placing an asterisk at the beginning, middle, or end of a search term instructs the system to fill in the blanks with any available data. For example, searching for "test*" will return files named "test", "testing", and "test_results".

• The asterisk () can also be used to search for specific file types. By typing ".docx" into the search box, the system will filter and display every Microsoft Word document in the current folder or drive, regardless of the filename. Hence, the statement regarding the asterisk as the correct tool for partial name searches is correct.

• *In contrast, the dollar symbol ($), at the rate (@), and ampersand (&) do not function as wildcard characters for partial name searches in the standard Windows Search interface. These symbols are typically treated as literal characters or used in specific programming scripts and command-line parameters. *Hence, the options involving $, @, and & are incorrect.

• The Windows 11 search indexing service utilizes these wildcards to provide faster results from the metadata and filenames stored in the system index. This feature is essential for file management and data retrieval in professional and personal environments.

Additional Information

• Question Mark (?) Wildcard: Apart from the asterisk, Windows supports the question mark (?) as a wildcard. Unlike the asterisk, which represents any number of characters, the question mark represents exactly one character. For instance, searching "re?ad" might find "reads" but not "reading".

• Advanced Query Syntax (AQS): Windows 11 utilizes Advanced Query Syntax (AQS), which allows users to refine searches using parameters like size:, kind:, and datemodified:. For example, "kind:image" will show all photos, and "size:gigantic" will show files larger than 128 MB.

• Boolean Operators: Users can further refine File Explorer searches using Boolean operators such as AND, OR, and NOT. These must be typed in all capital letters to be recognized as logical operators rather than part of the filename.

• Windows 11 File Explorer Updates: The year 2021 saw the launch of Windows 11, which introduced a redesigned File Explorer with a command bar and tabbed interface (added in later updates in 2022). Despite these UI/UX changes, the core wildcard search functionality remains consistent with legacy systems like Windows 10 and Windows 7.

Important Points

• Search Scope: By default, Windows Search looks into the filenames, contents of indexed files, and file properties (like tags and authors). If you use an asterisk, it narrows the focus primarily to the string patterns within these attributes.

• Location of Search: To perform a partial search, the user must navigate to the upper-right corner of the File Explorer window. In Windows 11, this search box is integrated with the Ribbon-less interface for a cleaner look.

• Efficiency: Using wildcards is highly recommended when dealing with large datasets or cloud-synced folders (like OneDrive) where the exact naming convention might be forgotten.

• Limitations: While wildcards are powerful, they cannot be used to find hidden files unless the "Show hidden files, folders, and drives" option is enabled in the Folder Options menu of Windows 11.

Q45. Answer: (d) Ipsos Global Consumer Confidence Index

The correct answer is Ipsos Global Consumer Confidence Index.

Key Points

• The Ipsos Global Consumer Confidence Index is a monthly survey that tracks the level of optimism that consumers have regarding the economy and their personal financial situation. On 27 August 2025, the report indicated that global sentiment remained stable at -0.1 points. Hence, the identification of this index is correct.

• The index showed that consumer confidence remained unchanged for the second consecutive month. This stability suggests a period of cautious economic behavior among global consumers during the third quarter of 2025. Hence, this statement regarding the duration of stability is correct.

• The tracking of this data is vital for economists and policymakers to understand future spending patterns, as high confidence typically leads to increased consumer spending and economic growth, while a negative or stagnant score like -0.1 indicates a neutral to slightly pessimistic outlook. Hence, the functional relevance of the index is correct.

• The Ipsos survey typically covers 29 to 32 countries, providing a comprehensive global aggregate that reflects the mood across diverse markets including India, the USA, China, and various European nations. Hence, the geographic scope of the index is correct.

Additional Information

• Ipsos Global Consumer Confidence Index:

• This index is also known as the Primary Consumer Sentiment Index (PCSI). It is conducted via the Ipsos Online Panel system.

• It measures four fundamental sub-indices: Jobs (employment security), Expectations (economic outlook), Investment

(purchasing climate), and Current State (personal financial conditions).

• The year 2025 reports are particularly significant as they reflect the global recovery or stagnation following major geopolitical shifts and inflationary trends.

• J.P. Morgan Global PMI Composite Index:

• The Purchasing Managers' Index (PMI) is an indicator of manufacturing and service sector health.

• Unlike the consumer confidence index, the PMI focuses on supply chain managers and production levels rather than household consumers.

• A value above 50 indicates expansion, while a value below 50 signifies contraction in the global economy.

• UNDP Human Development Index (HDI) Score:

• The Human Development Index is a statistical composite index of life expectancy, education, and per capita income indicators.

• It was developed by Mahbub ul Haq and Amartya Sen and is published by the United Nations Development Programme (UNDP).

• It does not change monthly; it is an annual report focusing on long-term social and economic development rather than short-term consumer sentiment.

• World Bank Global Findex Database:

• The Global Findex is the world's most comprehensive data set on how adults save, borrow, make payments, and manage risk.

• Launched in 2011, it is updated every three years (e.g., 2014, 2017, 2021). It focuses on financial inclusion and access to bank accounts.

Important Points

• Calculation Methodology: The Ipsos index uses a weighted sample of adults aged 18–74 in most countries. The stability at -0.1 points in August 2025 reflects a "wait-and-watch" approach by the global public regarding interest rate changes by Central Banks.

• Historical Context: Consumer confidence is a leading indicator. During the Great Recession of 2008 and the COVID-19 pandemic, this index saw significant drops, whereas the 2025 data shows a trend of stagnant stabilization.

• Geographic Performance: While the global average was -0.1, individual country indices often vary. For example, emerging markets like India often maintain a higher positive score compared to the Global Index average.

• Report Date: The specific release date of 27 August 2025 falls into the cycle of end-of-month economic data releases used by investors to calibrate stock market expectations for the final quarter of the year.

Q46. Answer: (b) YC-BE

The logic followed here is based on the numerical position of letters in the alphabet and the fixed gap pattern between corresponding letters in each pair:

Option 1: CG – FJ

Option 2: YC – BE

Option 3: AE – DH

Option 4: WA – ZD

Thus, YC – BE does not follow the same +4, −1, +4 pattern.

Hence, the odd one out is Option 2.

Q47. Answer: (c) 4

Given: (Left) B T # A M @ * * # € © * C H # N £ H Q £ T O (Right)

Now, Letters which are immediately preceded by a letter and also immediately followed by a symbol.

So, Needed pattern is: Letter - Letter - Symbol.

(Left) B T # A M @ * * # € © * C H # N £ H Q £ T O (Right)

So, Only four letters satisfy the condition.

Hence, the correct answer is Option 3.

Q48. Answer: (d) Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answe...

The logic followed here is:

Logic: Combine both statements to form a complete comparison chain and identify the lightest parcel.

Statement I:

Bravo is heavier than Alpha but lighter than Cargo

=> Cargo > Bravo > Alpha

Statement II:

Delta is heavier than Bravo but lighter than Echo

=> Echo > Delta > Bravo

Now, combining both statements:

=> Echo > Delta > Bravo > Alpha

=> Cargo > Bravo > Alpha

From the combined chain, Alpha is lighter than Bravo, Cargo, Delta, and Echo.

So, Alpha is the lightest parcel.

Statement I alone → Not sufficient

Statement II alone → Not sufficient

Both together → Sufficient

Hence, the correct answer is Option 4.

Q49. Answer: (d) 4

Given: (Left) £ 9 2 9 £ # 4 9 8 2 9 © © 7 @ 6 8 € 7 € € # (Right)

Now, Numbers which are immediately preceded by a number and also immediately followed by a number.

So, Needed pattern is: Number - Number - Number.

(Left) £ 9 2 9 £ # 4 9 8 2 9 © © 7 @ 6 8 € 7 € € # (Right)

So, Only four numbers satisfy the condition.

Hence, the correct answer is Option 4.

Q50. Answer: (b) Storm surge

The correct answer is Storm surge.

Key Points

• A storm surge is an abnormal rise of water generated by a tropical storm, over and above the predicted astronomical tides. It is the most significant and destructive force associated with tropical cyclones when they make landfall in coastal regions. Hence, the correct answer is Storm surge.

• The primary cause of a storm surge is the strong winds in a tropical cyclone pushing the ocean water toward the shore. This causes a massive volume of water to pile up, leading to inundation of low-lying coastal areas.

• Low atmospheric pressure at the center of a cyclone also contributes to the surge, as the weight of the air on the ocean surface is reduced, allowing the sea level to rise. However, this "inverted barometer effect" is responsible for only about 5% to 10% of the total surge height.

• The destructive impact of a storm surge is extreme, as it can cause massive flooding, destroy buildings, wash away infrastructure like roads and bridges, and cause saline intrusion in agricultural lands. Historically, storm surges have been responsible for nearly 90% of all deaths occurring in tropical cyclones globally.

Additional Information

• Continuous Rainfall: While tropical storms bring heavy and continuous rainfall, it is generally considered a secondary destructive force in coastal regions compared to the surge. Rainfall leads to inland flooding and landslides, particularly in hilly terrains, but does not carry the same immediate mechanical destructive energy as a wall of seawater. Hence, this statement is incorrect as the primary force.

• High Temperature: Warm ocean surface temperatures (typically above 26.5°C) are a prerequisite for the formation and intensification of tropical storms. While temperature acts as the "fuel" for the cyclone, it is not the mechanical force that causes physical destruction on the ground. Hence, this statement is incorrect.

• Low Atmospheric Pressure: A tropical cyclone is defined by a low-pressure center (the eye). While the pressure gradient drives the wind speeds, the pressure itself is a meteorological characteristic rather than the primary destructive force experienced by coastal communities. Hence, this statement is incorrect.

• Regional Names: These storms are known by different names depending on their location: Hurricanes in the Atlantic Ocean and Northeast Pacific, Typhoons in the Northwest Pacific, and Cyclones in the South Pacific and Indian Ocean.

Important Points

• Bathymetry: The depth of the ocean near the coast significantly affects the height of the storm surge. A shallow continental shelf, like that in the Bay of Bengal, allows the water to pile up much higher than a deep continental shelf.

• Storm Tide: When a storm surge occurs at the same time as a high tide, it is referred to as a storm tide. This combination can result in water levels reaching over 20 feet or more in extreme cases.

• India's Vulnerability: The East Coast of India (bordering the Bay of Bengal) is more vulnerable to storm surges than the West Coast due to the funnel-shaped nature of the bay and the shallow sea floor. States like Odisha, Andhra Pradesh, and West Bengal are high-risk locations.

• Classification: The India Meteorological Department (IMD) classifies cyclones based on maximum sustained wind speed. A Super Cyclonic Storm features wind speeds exceeding 222 km/h, which can generate catastrophic storm surges.

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Q51. Answer: (c) 49√6/6

Shortcut Trick

Given sin A = P/H = √3 / 7 → P = √3, H = 7.

Calculate Base B = √(H² − P²) = √(7² − (√3)²) = √46.

Target expression: √23 × sec A × cosec A = √23 × (H/B) × (H/P)

= √23 × (7/√46) × (7/√3) = 49 ÷ √2 ÷ √3 = 49/√6.

Rationalizing: (49 × √6) / (√6 × √6) = 49√6 / 6.

Therefore Answer = 49√6 / 6

Alternate Method

Given:

sin A = √3 / 7, angle A is acute.

Formula used:

sin A = Perpendicular (P) / Hypotenuse (H)

cos A = Base (B) / Hypotenuse (H) = √(1 − sin²A)

sec A = 1/cos A, cosec A = 1/sin A

A B C H = 7 P = √3 B = √46 A

Calculations:

sin A = √3 / 7 => P = √3, H = 7

=> B = √(H² − P²) = √(7² − (√3)²) = √(49 − 3) = √46

=> sec A = H/B = 7 / √46

=> cosec A = H/P = 7 / √3

=> √23 × sec A × cosec A = √23 × (7/√46) × (7/√3)

=> (√23 × 49) / (√23 × √2 × √3) = 49 / √6

=> (49 × √6) / (√6 × √6) = 49√6 / 6

Therefore The correct answer is Option (3).

Additional Information

Reciprocal Identities

sec θ = 1/cos θ, cosec θ = 1/sin θ, and cot θ = 1/tan θ.

Pythagorean Identities

sin²θ + cos²θ = 1, 1 + tan²θ = sec²θ, and 1 + cot²θ = cosec²θ.

Trigonometric Product Formula

sec θ × cosec θ = (1/cos θ) × (1/sin θ) = 2 / sin(2θ).

Q52. Answer: (a) Bhadla Solar Park

The correct answer is Bhadla Solar Park.

Key Points

• Bhadla Solar Park is recognized as the largest solar power park in India and one of the largest in the world as of 2025. It is located in the Phalodi district (formerly part of the Jodhpur district) in the state of Rajasthan.

• The park boasts a massive total installed capacity of 2,245 Megawatts (MW). This capacity was reached through a phased development approach involving multiple solar power developers. Hence, the first option is correct.

• Geographically, the park is spread over an arid region covering approximately 14,000 acres (about 5,700 hectares). The location is ideal for solar energy due to its high solar radiation levels, which average around 5.72 kWh/m²/day, and the prevalence of clear skies for most of the year.

• The project was developed under the Ministry of New and Renewable Energy (MNRE) solar park scheme. Key agencies involved in its implementation include the Rajasthan Solar Park Development Company Limited (RSPDCL) and Saurya Urja Company of Rajasthan.

• The park contributes significantly to India’s goal of achieving Renewable Energy targets and reducing carbon emissions, utilizing advanced photovoltaic technology to harness the abundant sunlight of the Thar Desert.

Additional Information

• Pavagada Solar Park:

• Located in the Tumkur district of Karnataka, this park is also known as the Shakti Sthala Solar Power Project.

• It has a total capacity of 2,050 MW and was the world's largest solar park at the time of its full commissioning in 2019.

• The park is spread over 13,000 acres across five villages. It is unique because the land was not outright purchased but taken on

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lease from local farmers to support their livelihoods.

• Kurnool Ultra Mega Solar Park:

• Situated in the Kurnool district of Andhra Pradesh, it has a capacity of 1,000 MW.

• It was developed by Andhra Pradesh Solar Power Corporation Private Limited (APSPCL) and covers an area of about 5,932 acres.

• On its commissioning, it was one of the single-location largest solar plants, attracting significant foreign direct investment (FDI).

• Rewa Solar Park:

• Located in the Rewa district of Madhya Pradesh, it has an operational capacity of 750 MW.

• It is one of the first solar projects in India to break the grid parity barrier. It is notable for supplying 24% of its generated energy to the Delhi Metro Rail Corporation (DMRC).

• It was the first solar project in the country to receive funding from the World Bank under its Clean Technology Fund.

Important Points

• National Solar Mission (NSM): Launched in January 2010, this is a major initiative of the Government of India to promote ecologically sustainable growth while addressing India's energy security challenge.

• Khavda Renewable Energy Park: Currently under construction in the Kutch district of Gujarat, this hybrid park is expected to have a capacity of 30 GW (30,000 MW). Once completed, it will likely surpass Bhadla as the largest renewable energy installation globally.

• International Solar Alliance (ISA): Headquartered in Gurugram, India, this alliance was co-founded by India and France to mobilize efforts against climate change through the deployment of solar energy solutions.

• India's Renewable Target: At the COP26 summit, India committed to reaching 500 GW of non-fossil fuel energy capacity by the year 2030. This includes a heavy reliance on large-scale solar parks to meet the increasing electricity demand.

Q53. Answer: (a) Iron ploughshares and axes

The correct answer is Iron ploughshares and axes.

Key Points

• The transition to the Iron Age, which began around 1200 BCE globally and approximately 1000 BCE in the Indian subcontinent, marked a significant shift in human capability to manipulate the environment.

• Iron ploughshares were a critical invention that allowed farmers to till heavy, wetter, and clayey soils that were previously impossible to cultivate with wooden or copper tools. This was particularly transformative in the Ganga Valley, where the soil was fertile but extremely dense and difficult to break.

• The use of Iron axes enabled the clearing of dense forests. Before the widespread use of iron, the thick vegetation of the Mid-Ganga plains acted as a barrier to large-scale human settlement and agriculture. Iron tools provided the durability and sharpness required for large-scale deforestation.

• This technological advancement led to a significant increase in agricultural production. With the ability to farm more land and deeper soil, societies could generate a food surplus, which is a prerequisite for the growth of cities and complex political structures.

• In the context of ancient India, these tools were instrumental in the rise of the Mahajanapadas (sixteen great kingdoms) around the 6th century BCE, as they provided the economic base for large armies and administrations.

Additional Information

• Comparison of Metals: Unlike Copper and Bronze, which are relatively soft and blunt easily when used against hard earth or thick wood, Iron is much harder and more abundant. The smelting process for iron required higher temperatures (approx 1538°C), a technology perfected during this era.

• Geographic Impact: The shift from the North-West (Indus region) to the East (Gangetic region) in Indian history was largely dictated by the availability of Iron ore deposits in areas like Magadha (modern-day Bihar). This gave Magadha a strategic advantage over other regions.

• Social Consequences: The efficiency of Iron ploughshares meant that fewer people were needed to produce food for the entire community. This led to occupational diversification, where individuals could become artisans, traders, or soldiers, fueling the Second Urbanization in India.

• Archaeological Evidence: Sites such as Atranjikhera, Hastinapur, and Noh have yielded various iron artifacts including hoes, sickles, and nails, confirming the widespread use of iron in daily life and agriculture during the Painted Grey Ware (PGW) culture phase.

Important Points

• Paddy Transplantation: Along with Iron tools, the technique of paddy transplantation (growing saplings in a nursery and then planting them in flooded fields) was introduced during this time. This combination drastically increased rice yields.

• Tool Evolution:

• Stone microliths: Used primarily in the Mesolithic age for hunting and gathering; unsuitable for heavy farming.

• Copper/Bronze: Used in the Chalcolithic and Harappan periods; limited to light soils or specialized craftwork.

• Iron: The definitive metal of the early Iron Age that catalyzed the expansion of agrarian civilization.

• Global Context: In Europe, the introduction of the heavy mouldboard plough in later centuries shared similar significance with the Iron ploughshare, allowing for the cultivation of the heavy clay soils of the Northern European Plain.

Q54. Answer: (c) Predicting the outcomes of genetic crosses

The correct answer is Predicting the outcomes of genetic crosses.

Key Points

• A Punnett square is a graphical representation used to determine the probability of an offspring expressing a particular genotype. It is a fundamental tool in the field of genetics to visualize how alleles from two parents combine. Hence, the statement regarding predicting outcomes of genetic crosses is correct.

• The device was devised by the British geneticist Reginald Punnett in the year 1905. It provides a simple way to calculate the mathematical probability of inheriting a specific trait based on Mendelian inheritance laws.

• The Punnett square works by placing the gametes (reproductive cells) of one parent across the top of a grid and the gametes of the other parent down the side. Each internal box of the square represents a possible zygote or offspring combination.

• It allows biologists to distinguish between the genotype (the genetic makeup) and the phenotype (the observable physical characteristics) of the resulting offspring. This is essential because different genotypes can sometimes result in the same phenotype due to dominance.

• The tool is primarily used for monohybrid crosses, which involve one trait controlled by a single gene, but it can be expanded into a 4x4 grid for dihybrid crosses involving two traits.

Additional Information

• Alleles and Variation: Alleles are different versions of a gene. An individual inherits two alleles for each gene, one from each parent. If the alleles are the same, the individual is homozygous; if they are different, they are heterozygous.

• Genotypic and Phenotypic Ratios: In a typical Mendelian monohybrid cross between two heterozygous parents (e.g., Bb x Bb), the Punnett square reveals a genotypic ratio of 1:2:1 (one BB, two Bb, one bb) and a phenotypic ratio of 3:1 (three dominant traits to one recessive trait).

• Dominant vs. Recessive: Dominant alleles (usually denoted by capital letters like B) mask the expression of recessive alleles (denoted by lowercase letters like b). A recessive trait only appears in the phenotype if the individual is homozygous recessive (bb).

• Applications: Beyond basic biology, the Punnett square is used in selective breeding of livestock and crops to ensure desired traits are passed down. It is also utilized in genetic counseling to assess the risk of a child inheriting genetic disorders like cystic fibrosis or sickle cell anemia.

• Limitations: While highly effective for simple Mendelian traits, the Punnett square is less useful for polygenic traits (controlled by many genes, like height) or complex inheritance patterns like incomplete dominance, codominance, and environmental influences.

Important Points

• Gregor Mendel's Influence: The logic behind the Punnett square is based on Gregor Mendel’s experiments with pea plants in the 1860s, specifically his Law of Segregation and Law of Independent Assortment.

• Test Cross: A test cross is a specific application where an individual with an unknown dominant phenotype is crossed with a homozygous recessive individual. The Punnett square is then used to analyze the offspring to determine if the unknown parent was homozygous dominant or heterozygous.

• Probability Calculation: It is vital to remember that the Punnett square predicts probability, not certain outcomes. For every fertilization event, the odds reset; for example, in a 50% chance scenario, it is possible for all offspring in a small sample to exhibit the same trait by chance.

• Modern Context: In 2024, while DNA sequencing provides direct evidence of genes, the Punnett square remains the foundational teaching tool in secondary education and introductory biology worldwide to explain heredity.

Q55. Answer: (c) 1, 2 and 3

The correct answer is 1, 2 and 3.

Key Points

• Operation Twist is a specialized monetary policy tool used by central banks to influence the interest rates in an economy. Its primary goal is to lower long-term interest rates to encourage borrowing and stimulate long-term investments, such as in infrastructure and housing. Hence, statement 1 is correct.

• Under this mechanism, the Reserve Bank of India (RBI) manages the yield on government securities (G-Secs). By manipulating the demand for different maturities, the central bank "twists" the yield curve, which helps in aligning market interest rates with the desired policy objectives and manages the flow of liquidity across different time horizons. Hence, statement 2 is correct.

• The operation is executed through Open Market Operations (OMOs) where the central bank performs simultaneous buying and selling of government securities. Specifically, it buys long-term securities (to push their prices up and yields down) and sells

short-term securities (of equivalent value) to keep the total money supply stable. Hence, statement 3 is correct.

• The RBI conducted its first Operation Twist in December 2019. This was done to address the issue of high long-term yields despite several cuts in the Repo Rate, ensuring better monetary policy transmission to the broader economy.

• By keeping the total value of securities bought and sold equal, the process is considered liquidity neutral, meaning it does not increase or decrease the total amount of money in the banking system, but rather changes the composition of the central bank's holdings.

Additional Information

• Historical Context: The term "Operation Twist" originated in the United States in 1961, during the Kennedy administration. The US Federal Reserve used it to strengthen the US Dollar and stimulate the economy. It was later used again by the Fed in 2011 following the global financial crisis.

• The Yield Curve: A yield curve is a line that plots interest rates of bonds having equal credit quality but differing maturity dates. A "twist" occurs when the slope of this curve changes—usually flattening it by reducing the gap between short-term and long-term rates.

• Open Market Operations (OMO): These are the market activities where a central bank buys or sells government bonds to regulate the money supply and interest rates. Buying bonds injects money, while selling bonds absorbs it.

• Impact on Borrowers: Since long-term yields serve as benchmarks for loans, a successful Operation Twist leads to a reduction in interest rates for home loans, car loans, and corporate bonds, making it cheaper for the public and businesses to borrow capital.

• Government Borrowing Cost: This policy also benefits the Government of India by reducing its cost of borrowing from the market, as the interest it has to pay on long-term debt decreases when yields fall.

Important Points

• Monetary Policy Committee (MPC): While the MPC decides the Repo Rate, the RBI has the discretion to use Operation Twist as an unconventional tool to ensure that the policy rates reflect in the market rates.

• Comparison with Quantitative Easing (QE): Unlike Quantitative Easing, which involves printing new money to buy assets and increasing the central bank's balance sheet, Operation Twist is revenue-neutral and does not expand the size of the RBI's balance sheet.

• Economic Significance: It is particularly useful during periods of economic slowdown when inflation is under control, but long-term investment remains sluggish due to high cost of credit.

• Market Reaction: When the RBI announces Operation Twist, bond prices for long-term maturities typically rise immediately, reflecting the market's anticipation of the central bank's purchasing power.

Q56. Answer: (d) 6:30 PM

Shortcut Trick

=> LCM(18, 24, 30) = 360 minutes = 6 hours

=> Bells meet every 6 hours

=> 1st = 6:30 AM, 2nd = 12:30 PM, 3rd = 6:30 PM

Therefore Answer = 6:30 PM

Alternate Method

Given:

A = 18 min, B = 24 min, C = 30 min

Start time = 6:30 AM

Formula:

Common interval = LCM of given times

Calculation:

=> $18 = 2 \times 3^2$

=> $24 = 2^3 \times 3$

=> $30 = 2 \times 3 \times 5$

=> LCM = $2^3 \times 3^2 \times 5$ = 360 minutes

=> 360 minutes = 6 hours

Occurrence	Time
1st	6:30 AM
2nd	12:30 PM
3rd	6:30 PM

Final Answer: 6:30 PM

Additional Information

LCM Concept: Used to find when repeating events coincide

Time Conversion: 60 minutes = 1 hour

Occurrence Pattern: n^(th) occurrence = Start time + (n−1)× interval

Prime Factorization: Helps in quick LCM calculation

Q57. Answer: (c) 257.1 gm

Shortcut Trick

=> Assume CP of 1 kg = 100

=> 55% loss claim => SP = 45

=> Actual gain 75% => SP = 175 for real 1 kg

=> So 45 (charged) corresponds to weight = (45/175) kg

=> = 0.257 kg = 257.1 gm

Therefore Answer = 257.1 gm

Alternate Method

Given:

Loss = 55% => SP = 45% of CP

Gain = 75% => SP = 175% of CP

Formula:

Weight used = (False SP / Actual SP) × 1 kg

Calculation:

=> Let CP of 1 kg = 100

=> False SP (loss claim) = 45

=> Actual SP (75% gain) = 175

Case	Value
CP	100
SP (claimed loss)	45
SP (actual gain)	175
Actual Weight	45 ÷ 175 = 0.257 kg

Final Answer: 257.1 gm

Additional Information

Profit Formula: Profit% = (SP − CP)/CP × 100

False Weight Trick: Profit increases when weight decreases

Loss Concept: Loss% reduces selling price artificially

Combined Effect: Profit = price gain + weight fraud

Q58. Answer: (c) Joining any political party after their election

The correct answer is Joining any political party after their election.

Key Points

• The Anti-Defection Law was enacted through the 52nd Constitutional Amendment Act in 1985, which added the Tenth Schedule to the Constitution of India.

• According to the provisions of the Tenth Schedule, an independent member of a House (one who is elected without being set up by any political party) shall be disqualified from being a member of the House if they join any political party after such election. Hence, joining any political party after their election is the correct action that attracts disqualification.

• Supporting a coalition government or remaining neutral during debates does not attract disqualification for an independent MP as they are not bound by any party whip unless they formally join a party. Hence, supporting a coalition government or remaining neutral are incorrect statements in the context of disqualification.

• Voting differently from a party whip is a ground for disqualification for members who belong to a political party, but since an independent member does not belong to any party, they are not subject to a whip unless they have joined a party (which itself would have already triggered disqualification). Hence, this statement specifically applies to party members, not independents.

• The primary objective of the Anti-Defection Law is to curb the evil of political defections motivated by the lure of office or other similar considerations, which endanger the foundations of democracy.

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Additional Information

• Categories of Members under Tenth Schedule:

• Members belonging to Political Parties: A member is disqualified if they voluntarily give up membership or vote/abstain from voting contrary to the direction issued by the political party without prior permission.

• Independent Members: An independent member (elected without a party ticket) is disqualified if they join a political party after the election.

• Nominated Members: A nominated member is disqualified if they join a political party after the expiry of 6 months from the date on which they take their seat.

• Deciding Authority: The question of disqualification on the ground of defection is decided by the Presiding Officer of the House, i.e., the Speaker in the Lok Sabha and the Chairman in the Rajya Sabha.

• Constitutional Articles: The Anti-Defection Law is related to Article 102(2) (for Parliament) and Article 191(2) (for State Legislatures) of the Constitution of India.

• Historical Context: The law was introduced during the tenure of Prime Minister Rajiv Gandhi in 1985 to bring stability to the Indian parliamentary system by preventing frequent floor-crossing.

Important Points

• The 91st Constitutional Amendment Act, 2003: This amendment changed the provision regarding "splits." Previously, a split involving one-third of the members of a party was exempt from disqualification. This was deleted in 2003, and now only a merger (involving at least two-thirds of the members) is recognized as a valid defense against defection.

• Judicial Review: In the landmark Kihoto Hollohan vs Zachillhu case (1992), the Supreme Court ruled that the decision of the Speaker/Chairman is subject to judicial review on grounds of malafides, perversity, etc., although it invalidated the provision that prohibited court intervention.

• Exceptions: Disqualification does not apply if a member leaves their original party as a result of a merger of the party with another party, provided at least two-thirds of the members of the legislative party have agreed to such a merger.

• Time Limit: The Constitution does not specify a time limit within which the Presiding Officer must decide on a disqualification petition, though the Supreme Court has recently suggested that such decisions should ideally be made within 3 months.

Q59. Answer: (b) 27

The logic followed here is:

thus, "27" will replace the question mark in the given series.

Hence, the correct option is "Option 2".

Q60. Answer: (b) 0.5

Shortcut Trick

=> 0.216 = $(0.6)^3$, 0.001 = $(0.1)^3$, 0.008 = $(0.2)^3$

=> Expression = 0.6 + 0.1 − 0.2

=> = 0.5

Therefore Answer = 0.5

Alternate Method

Given:

cbrt0.216 + cbrt0.001 − cbrt0.008

Formula:

cbrt(a/b) = cbrta / cbrtb

Calculation:

=> cbrt0.216 = cbrt(216/1000) = 6/10 = 0.6

=> cbrt0.001 = cbrt(1/1000) = 1/10 = 0.1

=> cbrt0.008 = cbrt(8/1000) = 2/10 = 0.2

Term	Value
cbrt0.216	0.6
cbrt0.001	0.1
cbrt0.008	0.2
Total	0.6 + 0.1 − 0.2 = 0.5

Final Answer: 0.5

Additional Information

Cube Root Identity: cbrta³ = a

Decimal Trick: Convert decimals into fractions for easy roots

Perfect Cubes: 216 = 6³, 8 = 2³, 1 = 1³

Simplification: Break numbers into known cube forms

Q61. Answer: (c) Interception by British intelligence and internal betrayal

The correct answer is Interception by British intelligence and internal betrayal.

Key Points

• The Ghadar Party planned a massive armed uprising in India during World War I, specifically targeting February 21, 1915, as the date for a pan-India mutiny. However, the movement faced a severe blow when British Intelligence successfully infiltrated the organization. Hence, the primary reason for the failure was interception and betrayal.

• A traitor named Kripal Singh, who had joined the inner circle of the revolutionaries, provided detailed information about the planned revolt to the British authorities. This allowed the British government to arrest several key leaders before the uprising could even begin. Hence, internal betrayal was a decisive factor.

• In response to the revolutionary threat, the British Government enacted the Defence of India Act 1915. This emergency legislation gave the state extraordinary powers to detain and prosecute political activists without trial, effectively crushing the Ghadarite network in Punjab. Hence, the legal crackdown by the British was a secondary but vital cause of failure.

• The planned mutiny in major military centers like Lahore and Firozpur failed because the British moved quickly to disarm Indian soldiers suspected of having Ghadarite sympathies and shifted loyal regiments to sensitive locations. Hence, the statement regarding interception by intelligence is correct.

• While the Ghadarites expected a mass civilian uprising, the lack of an organized local leadership and the prompt neutralisation of their emissaries meant that the Indian public remained largely unaware or inactive during the critical window. Hence, statement 4 regarding public apathy is a contributing factor but not the primary cause compared to intelligence failure.

Additional Information

• Foundation and Leadership: The Ghadar Party was an international political movement founded by expatriate Indians to overthrow British rule in India. It was established in 1913 in San Francisco, USA. Key founding figures included Lala Hardayal, Sohan Singh Bhakna (the first President), Pandit Kashi Ram, and Kartar Singh Sarabha.

• The Ghadar Journal: To spread their revolutionary ideology, the party published a weekly journal titled The Ghadar. The masthead of the paper described it as "Angrezi Raj ka Dushman" (An enemy of British rule). It was published in languages like Urdu, Punjabi, Hindi, and Gujarati, reaching Indian communities across the globe.

• The Komagata Maru Incident: In 1914, the Komagata Maru ship incident, where Indian passengers were denied entry into Canada and forcibly returned to India, served as a massive catalyst. The subsequent Budge Budge firing near Calcutta (now Kolkata) created deep resentment, which the Ghadar Party tried to harness for the 1915 revolt.

• Global Alliances: During World War I, the Ghadarites attempted to coordinate with the Berlin Committee and German intelligence (the Zimmermann Plan or Hindu-German Conspiracy) to smuggle arms and ammunition into India. However, most of these shipments were intercepted by the British and American authorities.

• Impact and Legacy: Despite the failure of the 1915 uprising, the Ghadar Movement left a lasting legacy of secularism and militant nationalism. Many members were executed or sentenced to life imprisonment in the Lahore Conspiracy Case. Their sacrifice inspired later revolutionaries like Bhagat Singh.

Important Points

• Ideological Features: The Ghadar Party was remarkably secular. Its members included Sikhs, Hindus, and Muslims who shared a common goal of a democratic and independent India. They consciously avoided communal politics.

• The 1915 Mutiny Plan: Revolts were planned to start in Lahore, Ferozepur, and Rawalpindi. Emissaries like Vishnu Ganesh Pingle and Sachindra Nath Sanyal worked to coordinate with Indian soldiers within the British Indian Army.

• The Role of USA: Initially, the United States provided a safe haven for Ghadar activities due to its neutral stance. However, after the USA entered World War I in 1917 on the side of the Allies, many Ghadar leaders were arrested and tried in the San Francisco Hindu-German Conspiracy Trial (1917-1918).

Q62. Answer: (d) Volume And Pressure

The correct answer is Volume and Pressure.

Key Points

• Boyle's Law specifically describes the inverse relationship between the Volume and Pressure of a gas. It states that for a fixed amount of an ideal gas kept at a constant temperature, the pressure and volume are inversely proportional to each other.

• The mathematical expression for this law is P prop. to 1/V or PV = k (where k is a constant). This means that the product of pressure and volume remains unchanged as long as the temperature does not fluctuate.

• If a gas undergoes a change in state from an initial pressure and volume to a final state, the formula used is P1V1 = P2V2.

• In this relationship, if the pressure applied to the gas increases, the volume occupied by the gas decreases significantly, and vice-versa. Hence, the statement that Boyle's law describes the relationship between Volume and Pressure is correct.

• The relationship between Pressure and Temperature is actually described by Gay-Lussac's Law, not Boyle's Law. Hence, the option involving Pressure and Temperature is incorrect.

• The relationship between Volume and Temperature is defined by Charles's Law. Hence, the option involving Volume and Temperature is incorrect.

Additional Information

• History and Origin: The law was named after Robert Boyle, an Anglo-Irish chemist and physicist, who published it in the year 1662. It is considered one of the first physical laws to be expressed as an equation describing the dependence of two variable quantities.

• Molecular Perspective: From the perspective of the Kinetic Theory of Gases, when the volume of a container is decreased, the gas molecules have less space to move, leading to more frequent collisions with the walls of the container. This increase in the frequency of collisions results in a higher pressure.

• Real-world Applications:

• Syringes: When the plunger of a syringe is pulled back, it increases the volume inside the barrel, which decreases the pressure, allowing liquid to be pushed in by atmospheric pressure.

• Human Breathing: When the diaphragm contracts, the volume of the lungs increases, causing the internal pressure to drop below atmospheric pressure, which draws air into the lungs.

• Scuba Diving: Divers must be careful about pressure changes. As they ascend, the pressure decreases, causing the volume of air in their lungs to expand, which can be dangerous if they hold their breath.

• Graphical Representation: A graph plotting Pressure (P) against Volume (V) at a constant temperature yields a hyperbolic curve, known as an isotherm. However, a plot of Pressure against 1/Volume results in a straight line passing through the origin.

Important Points

• Ideal Gas Law: Boyle's Law is a specific component of the Ideal Gas Law, which is represented by the formula PV = nRT. In this equation, n represents the number of moles, R is the universal gas constant (approx 8.314 J/mol·K), and T is the absolute temperature in Kelvin.

• Limitations: Boyle's law is strictly accurate only for Ideal Gases. Real gases follow Boyle's law fairly closely at low pressures and high temperatures, but deviate significantly under high pressure conditions where intermolecular forces become prominent.

• Comparison with other Laws:

• Charles's Law (1787): States V/T = k (at constant pressure).

• Gay-Lussac's Law (1802): States P/T = k (at constant volume).

• Avogadro's Law (1811): States V/n = k (at constant temperature and pressure).

Q63. Answer: (c) = BET, % = MFP

Given:

: CGW :: LDM : %

Option 1) # = AET, % = MFO

For # (AET) to CGW

For LDM to % (MFO)

Since the pattern (+2, +2, +3) does not match (+1, +2, +2), Option 1 is incorrect.

Option 2) # = ADS, % = NEO

For # (ADS) to CGW

For LDM to % (NEO)

Since the pattern (+2, +3, +4) does not match (+2, +1, +2), Option 2 is incorrect.

Option 3) # = BET, % = MFP

For # (BET) to CGW

For LDM to % (MFP)

Since the pattern (+1, +2, +3) matches (+1, +2, +3), Option 3 is correct.

Option 4) # = BDT, % = MEP

For # (BDT) to CGW

For LDM to % (MEP)

Since the pattern (+1, +3, +3) does not match (+1, +1, +3), Option 4 is incorrect.

Hence, the correct answer is "Option 3".

Q64. Answer: (c) Rs. 3000

Shortcut Trick

Ratio of Profit X : Y : Z = (Capital × Time) ratio

X : Y : Z = (5 × 6 + 2.5 × 6) : (3 × 12) : (7 × 12)

X : Y : Z = 45 : 36 : 84 = 15 : 12 : 28

Total units = 15 + 12 + 28 = 55 units = Rs. 55,000 → 1 unit = Rs. 1,000

Profit Difference (X − Y) = 15 − 12 = 3 units

Therefore Answer = 3000

Alternate Method

Given:

Initial investment ratio X : Y : Z = 5 : 3 : 7

X withdraws half capital after 6 months. Total profit = Rs. 55,000. Time = 1 year.

Formula used:

Profit Share prop. to Capital × Time

X (5 → 2.5) Y (Cap: 3) Z (Cap: 7) Time: 6+6m 12 months 12 months Profit Ratio = 15 : 12 : 28

Calculations:

Let initial capitals be 5k, 3k, and 7k.

=> X profit share = (5k × 6) + (2.5k × 6) = 30k + 15k = 45k

=> Y profit share = 3k × 12 = 36k

=> Z profit share = 7k × 12 = 84k

=> Ratio of Profit X : Y : Z = 45 : 36 : 84 = 15 : 12 : 28

=> Sum of ratio parts = 15 + 12 + 28 = 55 units

=> 55 units = Rs. 55,000 => 1 unit = Rs. 1,000

=> Difference between X and Y = (15 − 12) × 1,000 = Rs. 3,000

Therefore The correct answer is option (3).

Additional Information

Profit Sharing Rule

In a partnership, profit is always distributed in the ratio of (Capital × Time Period). Formula: P1:P2 = C1T1 : C2T2.

Active vs Sleeping Partner

An active partner manages the business and may receive a salary or commission before the remaining profit is divided according to investment ratios.

Compound Partnership

When partners invest different capitals for different durations, it is a compound partnership where effective capital = Σ(Capital × Duration).

Q65. Answer: (b) 120,000

Shortcut Trick

Loser got 38% votes, so Winner got 100% − 38% = 62% votes.

Difference in percentage = 62% − 38% = 24%.

Given that 24% of total votes = 28,800.

Total voters (100%) = (28,800 ÷ 24) × 100 = 1,200 × 100.

Therefore Answer = 120,000

Alternate Method

Given:

Votes percentage of the losing candidate = 38%

Victory margin (difference in votes) = 28,800

Formula used:

Total Votes = (Vote Difference ÷ Percentage Difference) × 100

Loser (38%) Winner (62%) Diff = 24% Total Voters = 100% 24% = 28,800 votes

Calculations:

Let the total number of voters be X.

=> Percentage of votes obtained by Winner = 100% − 38% = 62%

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=> Difference in percentage = 62% − 38% = 24%

=> 24% of X = 28,800

=> (24 ÷ 100) × X = 28,800

=> X = (28,800 × 100) ÷ 24

=> X = 1,200 × 100 = 120,000

Therefore The correct answer is 120,000.

Additional Information

Invalid Votes Logic

In cases involving invalid votes, subtract the invalid count from the total first: Valid Votes = Total Votes − Invalid Votes.

Winning Margin Formula

Margin = (Winner Percentage − Loser Percentage) × Total Valid Votes. Always ensure the percentages sum to 100% of the valid votes.

Successive Percentage Change

For population or value changes over n years at rate R: Final Value = Initial Value × $(1 + R/100)^n$.

Q66. Answer: (a) 4

Given: (Left) K C © C V € @ € # U © & Y £ © I $ N W # & Q (Right)

Now, Symbols which are immediately preceded by a letter and also immediately followed by a symbol.

So, Needed pattern is: Letter - Symbol - Symbol.

(Left) K C © C V € @ € # U © & Y £ © I $ N W # & Q (Right)

So, Only four symbols satisfy the condition.

Hence, the correct answer is Option 1.

Q67. Answer: (c) 26.22

Shortcut Trick

=> Class width h = 8, take A = 28

=> Midpoints x: 4, 12, 20, 28, 36, 44

=> d = (x − 28)/8 => -3, -2, -1, 0, 1, 2

=> f d = -6 − 8 − 7 + 0 + 3 + 12 = -6

=> Σf = 27

=> Mean = 28 + (-6/27)×8 = 26.22

Therefore Answer = 26.22

Alternate Method

Given: Class intervals and frequencies

Formula: Mean = Σ(fx) / Σf

=> Midpoints (x): 4, 12, 20, 28, 36, 44

=> Frequencies (f): 2, 4, 7, 5, 3, 6

=> fx values:

=> 2×4 = 8

=> 4×12 = 48

=> 7×20 = 140

=> 5×28 = 140

=> 3×36 = 108

=> 6×44 = 264

=> Σfx = 708

=> Σf = 27

=> Mean = 708 / 27 = 26.22

Therefore Final Answer = 26.22

Additional Information

Assumed Mean Method: Mean = A + (Σfd / Σf) × h

Midpoint Formula: x = (lower + upper) / 2

Direct Method: Mean = Σ(fx) / Σf

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Step Deviation: d = (x − A)/h simplifies calculation

Q68. Answer: (a) BALD-ALDB-LDBA

The logic followed here is:

Given:

DASH → ASHD → SHDA

Similarly,

GAME → AMEG → MEGA

Now check options:

Option 1: BALD → ALDB → LDBA

Option 2, 3, 4 do not follow the same consistent cyclic left shift pattern.

Hence, the correct answer is Option 1.

Q69. Answer: (a) Potential energy

The correct answer is Potential energy.

Key Points

• Potential energy is defined as the energy stored in an object because of its position, state, or configuration. When an object is lifted from the ground, work is performed against the force of gravity.

• The specific type of energy stored when an object is raised is called Gravitational Potential Energy (GPE). This energy is "stored" because the object has the "potential" to do work when it is released and falls back toward the Earth.

• The amount of potential energy stored is directly proportional to three factors: the mass of the object, the acceleration due to gravity, and the height above the reference point (usually the ground).

• The mathematical formula for calculating this energy is P.E. = mgh, where m represents the mass in kilograms, g represents the acceleration due to gravity (approximately 9.8 m/s² on Earth), and h represents the height in meters.

• Since the question describes raising an object (changing its position relative to the ground), the energy stored is potential energy. Hence, the statement regarding potential energy is correct.

Additional Information

• Kinetic Energy:

• This is the energy possessed by an object due to its motion. If an object is at rest at a height, its kinetic energy is zero.

• The formula for kinetic energy is K.E. = 1/2 mv², where v is the velocity of the object.

• As an object falls from a height, its potential energy is converted into kinetic energy. Hence, the statement regarding kinetic energy is incorrect in the context of storage by raising.

• Heat Energy:

• Also known as thermal energy, it results from the internal motion of atoms and molecules within a substance.

• It is often a byproduct of friction or combustion. Raising an object does not store thermal energy within it. Hence, the statement regarding heat energy is incorrect.

• Electrical Energy:

• This energy is caused by the movement of electrons (electric charge) through a conductor like a copper wire.

• It is used to power industrial machines, household appliances, and electronic devices. Mechanical lifting does not store electrical charge. Hence, the statement regarding electrical energy is incorrect.

• Law of Conservation of Energy:

• This fundamental principle of physics states that energy cannot be created or destroyed; it can only be transformed from one form to another.

• In this scenario, the chemical energy from a person's muscles or the mechanical energy of a machine is transformed into the potential energy of the raised object.

Important Points

• Reference Level: The value of potential energy depends on the datum or reference level chosen. Usually, the ground is considered zero potential energy, but any point can be chosen as the baseline.

• Conservative Force: Gravity is a conservative force, meaning the work done in moving an object between two points is independent of the path taken. Whether you lift an object straight up or carry it up a ramp to the same height, the potential energy stored remains the same.

• Units: The SI unit for all forms of energy, including potential energy, is the Joule (J), named after the English physicist James Prescott Joule. One Joule is equal to one Newton-meter (N·m).

• Applications: This principle is used in hydroelectric dams, where water is stored at a high elevation (potential energy) and then released to turn turbines (converting to kinetic energy) to generate electricity.

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Q70. Answer: (d) 2

Given: Seven people A, B, C, D, E, F and G are sitting around a circular table facing the centre.
F sits third to the left of C.
C is an immediate neighbour of A and G.
D sits to the immediate right of G.
G sits second to the left of B.
So, the people between B and C when counted from the right of C are G and D = 2 people
Hence, the correct answer is "Option 4".

Q71. Answer: (d) 9

Shortcut Trick
=> Divisibility rule of 4: last 2 digits must be divisible by 4
=> Number = 718A5104 => last 2 digits = 04
=> 04 is divisible by 4 (independent of A)
=> So A can be any digit from 0 to 9
Therefore Answer = 9
Alternate Method
Given: Number = 718A5104
Formula: A number is divisible by 4 if its last two digits are divisible by 4
=> Last two digits = 04
=> 04 ÷ 4 = 1 (integer)
=> Hence divisible by 4 for any value of A
=> Maximum digit A can take = 9
Therefore Final Answer = 9
Additional Information
Divisibility by 4: Last 2 digits divisible by 4
Divisibility by 8: Last 3 digits divisible by 8
Divisibility by 2: Last digit even
Place Value: Changing A does not affect last two digits here

Q72. Answer: (a) 16

Shortcut Trick
=> Ratio Sugar : Flour = 3 : 4
=> Sugar becomes 12 => multiply by 4
=> Flour = 4 × 4 = 16
Therefore Answer = 16
Alternate Method
Given: Sugar : Flour = 3 : 4
Formula: x / y = 3 / 4
=> Let multiplier = k
=> 3k = 12 => k = 4
=> Flour = 4k = 4 × 4 = 16
Therefore Final Answer = 16
Additional Information
Ratio Concept: a : b = ka : kb
Unitary Method: Find value of 1 part then multiply
Proportion: a / b = c / d
Scaling Rule: Multiply both terms by same number

Q73. Answer: (b) Only conclusion (II) follows.

Given Statements:
All sand is stone.
All sand is cement.

Some cements are mud.

The least possible Venn diagram for the given statement is:

Conclusions:

I. Some muds are sand - False (Only some cements are mud, but sand being inside cement does not guarantee overlap with mud).

II. Some cements are stone - True (Since all sand is both cement and stone, that common part proves some cement is stone).

So, only conclusion II follows.

Hence, the correct answer is Option 2.

Q74. Answer: (a) = DNV % = CMU

The logic followed here is:

: KUC :: VFN : %

Option 1) # = DNV % = CMU

Option 2) # = DNV % = CMP

Option 3) # = DUV % = CMU

Option 4) # = DNV % = CNU

Hence, the correct answer is "Option 1".

Q75. Answer: (b) Fakir–Sannyasi Rebellion

The correct answer is Fakir–Sannyasi Rebellion.

Key Points

• Majnu Shah was one of the most prominent leaders of the Fakir Rebellion, which was part of the larger Fakir–Sannyasi Rebellion that occurred in Bengal during the late 18th century (approximately 1763 to 1800).

• He was a Sufi saint belonging to the Madariya Sufi order and hailed from the Mewat region. He established his operational base at Bogra (present-day Bangladesh) to lead the resistance against the British East India Company.

• The rebellion was a reaction to the Great Bengal Famine of 1770 and the restrictive taxation policies and land revenues imposed by the British, which severely affected the wandering Sufi Fakirs and Hindu Sannyasis who relied on alms and traditional land rights.

• Majnu Shah successfully organized armed groups of Fakirs who conducted raids on British factory storehouses and treasuries in districts like Rangpur, Dinajpur, and Rajshahi.

• He is celebrated for his efforts to foster Hindu-Muslim unity during the struggle, as he worked closely with Sannyasi leaders like Bhavani Pathak to challenge the colonial administration.

Additional Information

• Kol Rebellion (1831–1832):

• This was a major tribal uprising by the Kol people of the Chhotanagpur region (present-day Jharkhand).

• The rebellion was led by Buddhu Bhagat, Joa Bhagat, and Madara Mahato against the transfer of tribal lands to non-tribal settlers (Sikh and Muslim farmers) and the oppressive revenue systems of the British.

• It was characterized by large-scale violence and the burning of houses belonging to outsiders (Dikus) and government officials.

• Santhal Rebellion (1855–1856):

• Commonly known as the Santhal Hool, this rebellion took place in the Rajmahal Hills (Damin-i-koh) of Bihar and Bengal.

• It was led by four brothers—Sidhu Murmu, Kanhu Murmu, Chand Murmu, and Bhairav Murmu—against the Zamindari system, money-lenders, and British colonial authority.

• The revolt resulted in the creation of the Santhal Pargana district through the Santhal Parganas Tenancy Act to protect tribal rights.

• Indigo Revolt (1859–1860):

• This was a peasant movement in Bengal where farmers refused to grow indigo under the exploitative contracts of European planters.

• The movement began in Nadia district and was led by Digambar Biswas and Bishnu Charan Biswas.

• The plight of the farmers was famously depicted in the play 'Nil Darpan' written by Dinabandhu Mitra in 1860, which played a crucial role in mobilizing public opinion.

Important Points

• Literary Influence: The Sannyasi-Fakir Rebellion served as the inspiration for Bankim Chandra Chattopadhyay's famous Bengali novel 'Anandamath', published in 1882. This novel also contains the national song of India, 'Vande Mataram'.

• Key Figures: Apart from Majnu Shah, other notable leaders included Musa Shah (his brother), Cherag Ali, Bhavani Pathak, and Devi Chaudhurani, a woman leader who commanded a large force against the British.

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• Nature of Warfare: The rebels primarily used guerrilla warfare tactics, utilizing the dense forests of Bengal to launch surprise attacks on Company troops and then retreating before reinforcements could arrive.

• Outcome: While the rebellion did not succeed in overthowing British rule, it remained a persistent administrative challenge for nearly four decades, forcing the British to increase their military presence in rural Bengal.

Q76. Answer: (c) Cytoskeleton

The correct answer is Cytoskeleton.

Key Points

• The cytoskeleton is a complex, dynamic network of interlinking protein filaments and tubules present in the cytoplasm of all cells, including those of bacteria and archaea. It extends from the cell nucleus to the cell membrane.

• Its primary function is to provide structural support and maintain the cell shape. By acting as a mechanical scaffolding, it prevents the cell from collapsing and protects it from external mechanical stress.

• The cytoskeleton is composed of three main types of protein fibers: microtubules, microfilaments (actin filaments), and intermediate filaments. Each of these components has unique features and functions within the cell.

• Beyond structure, it plays a vital role in intracellular transport, acting as a "track" for the movement of organelles and vesicles. It is also essential for cell division (forming the spindle apparatus) and cell motility through structures like cilia and flagella.

• In eukaryotic cells, the cytoskeleton is highly organized and facilitates cytoplasmic streaming, which is the movement of the fluid substance within the cell to distribute nutrients and enzymes.

Additional Information

• Nucleus:

• Often referred to as the "control center" of the cell, it was first discovered by Robert Brown in the year 1831.

• It contains the majority of the cell's genetic material in the form of DNA (deoxyribonucleic acid) organized into chromosomes.

• The primary function of the nucleus is to maintain the integrity of genes and to control the activities of the cell by regulating gene expression.

• Golgi apparatus:

• Also known as the Golgi complex or Golgi body, it was identified by the Italian biologist Camillo Golgi in 1898.

• Its main application is the processing, packaging, and sorting of proteins and lipids synthesized in the endoplasmic reticulum.

• It functions like a "post office," adding carbohydrate tags to molecules to ensure they reach their correct location within or outside the cell.

• Peroxisome:

• These are small, membrane-bound organelles containing oxidative enzymes, discovered by Christian de Duve in 1967.

• A major function is the breakdown of fatty acids through beta-oxidation and the detoxification of hydrogen peroxide (a toxic byproduct) into water and oxygen using the enzyme catalase.

• They are especially abundant in the liver and kidney cells of mammals to assist in the detoxification of alcohol and other harmful substances.

Important Points

• Microtubules: These are the thickest components (about 25 nanometers in diameter), made of tubulin proteins. They are essential for chromosome movement during mitosis and serve as the main structural components of centrioles.

• Microfilaments: These are the thinnest components (about 7 nanometers), composed of actin. They are crucial for muscle contraction, cell crawling, and the formation of the cleavage furrow during cell division.

• Intermediate Filaments: Measuring about 8 to 12 nanometers, these fibers (like keratin) are more permanent than the other two and provide tensile strength to the cell, anchoring the nucleus and other organelles in place.

• In Prokaryotes, although once thought to lack a cytoskeleton, research has identified homologs like FtsZ and MreB that perform similar functions in maintaining cell shape and assisting in binary fission.

Q77. Answer: (a) Brundtland Report

The correct answer is Brundtland Report.

Key Points

• The concept of Sustainable Development gained worldwide recognition and popularity following the publication of the Brundtland Report in October 1987.

• The report is officially titled "Our Common Future" and was published by the World Commission on Environment and Development (WCED), which was chaired by Gro Harlem Brundtland, the former Prime Minister of Norway.

• The Brundtland Report provided the most widely accepted definition of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

• The primary objective of the report was to address the conflict between global environmental problems and the needs of economic development, suggesting that the two could be harmonized through sustainable practices.

• It identified three fundamental pillars of sustainability: economic growth, environmental protection, and social equity, emphasizing that development must be holistic.

Additional Information

• Rio Report (Earth Summit): Following the momentum of the Brundtland Report, the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, was held in Rio de Janeiro, Brazil, in 1992. It led to the creation of Agenda 21 and the Rio Declaration.

• Kyoto Report (Kyoto Protocol): This refers to the international treaty linked to the UNFCCC, adopted in December 1997 in Kyoto, Japan. Its primary focus was on legally binding targets for developed countries to reduce greenhouse gas emissions.

• Earth Report: While there are various environmental reports titled "Earth Report," the term often loosely refers to the Global 2000 Report to the President issued in 1980 in the United States, which warned of massive environmental changes, though it did not popularize "Sustainable Development" as effectively as the 1987 report.

• The Brundtland Commission was established by the United Nations in 1983 to investigate the accelerating deterioration of the human environment and natural resources.

• The report's legacy led directly to the Millennium Development Goals (MDGs) in 2000 and the current Sustainable Development Goals (SDGs) adopted by the UN in 2015, which consist of 17 goals to be achieved by 2030.

Important Points

• The Brundtland Report highlighted the concept of "intergenerational equity," which implies that the current generation has a moral obligation to leave the planet in a state that is at least as productive as they found it.

• It also introduced the idea of "intra-generational equity," advocating for the reduction of poverty and the redistribution of resources to ensure that the needs of the world's poor are prioritized.

• The WCED consisted of representatives from 21 different nations, ensuring that the report reflected both developed and developing world perspectives on ecology and economy.

• The report was a critical precursor to the UN Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD), establishing the framework for international environmental law.

Q78. Answer: (d) 170

Shortcut Trick

=> 6 consecutive even numbers => symmetric around average

=> Numbers: 175 − 5, 175 − 3, 175 − 1, 175 + 1, 175 + 3, 175 + 5

=> Smallest = 175 − 5 = 170

Therefore Answer = 170

Alternate Method

Given: Average = 175, total numbers = 6

Formula: Sum = Average × Number of terms

=> Sum = 175 × 6 = 1050

=> Let numbers be x, x+2, x+4, x+6, x+8, x+10

=> Sum = 6x + 30

=> 6x + 30 = 1050

=> 6x = 1020

=> x = 170

Therefore Final Answer = 170

Additional Information

Average Concept: Average = Sum / Number

Consecutive Even Numbers: Differ by 2 each time

Symmetry Trick: Numbers spread equally around mean

General Form: n terms => x, x+d, x+2d...

Q79. Answer: (c) 1,43,000

Shortcut Trick

=> Monthly saving = 24000 − (7500 + 3500) = 24000 − 11000 = 13000

=> Birthday month saving = 0

=> Savings for 11 months = 13000 × 11 = 143000

Therefore Answer = 143000

Alternate Method

Given: Salary = 24000

=> Expenses = 7500 + 3500 = 11000

Formula: Saving = Income − Expenses

=> Monthly saving = 24000 − 11000 = 13000

=> Total yearly saving (without birthday) = 13000 × 12 = 156000

=> Birthday month saving spent = 13000

=> Final saving = 156000 − 13000 = 143000

Therefore Final Answer = 143000

Additional Information

Income Formula: Savings = Income − Expenses

Annual Saving: Monthly saving × 12

Adjustment: Subtract extra expenses if any

Budgeting Rule: Fixed − Variable gives net saving

Q80. Answer: (d) Article 239

The correct answer is Article 239.

Key Points

• Article 239 of the Constitution of India explicitly states that every Union Territory shall be administered by the President acting, to such extent as he thinks fit, through an administrator to be appointed by him with such designation as he may specify. This provision ensures that the Union Government maintains direct control over these territories for strategic, administrative, or cultural reasons. Hence, the option containing Article 239 is correct.

• Article 241 pertains to the power of Parliament to constitute a High Court for a Union Territory or declare any court in such territory to be a High Court for all or any of the purposes of the Constitution. It does not deal with the general administration by the President. Hence, the statement regarding Article 241 is incorrect.

• Article 240 grants the President the power to make regulations for the peace, progress, and good government of certain Union Territories, such as the Andaman and Nicobar Islands, Lakshadweep, Dadra and Nagar Haveli and Daman and Diu, and Puducherry. While it involves the President, it specifically focuses on legislative/regulatory power rather than the basic administrative appointment. Hence, the statement regarding Article 240 is incorrect.

• Article 242 originally related to the administration of Coorg, which was a Part C State. However, this article was repealed by the Constitution (Seventh Amendment) Act, 1956, following the reorganization of states. Hence, the statement regarding Article 242 is incorrect.

Additional Information

• Union Territories (UTs): These are federal territories in India that are governed directly by the Central Government. Unlike States, which have their own governments and Governors, UTs are under the direct jurisdiction of the Union. As of 2024, there are 8 Union Territories in India.

• The Seventh Constitutional Amendment Act (1956): This was a landmark Act that introduced significant changes to the structure of Indian states. It abolished the classification of states into Part A, B, C, and D and introduced the concept of Union Territories. It also amended Article 239 to its current form.

• Designation of Administrators: The administrator appointed by the President under Article 239 is often designated as a Lieutenant Governor in UTs with a legislative assembly (like Delhi, Puducherry, and Jammu & Kashmir) or simply as an Administrator in others (like Chandigarh and Lakshadweep).

• Article 239A and 239AA: Article 239A was inserted in 1962 to allow Parliament to create a Legislature or Council of Ministers for Puducherry. Article 239AA is a special provision specifically for the National Capital Territory of Delhi, inserted by the 69th Amendment Act, 1991.

Important Points

• The President can also appoint the Governor of an adjacent State as the administrator of a Union Territory. In such cases, the Governor exercises his functions as such administrator independently of his Council of Ministers in the State.

• The Administrator of a Union Territory is an agent of the President and not a constitutional head of state like the Governor of a State.

• In 2019, the Jammu and Kashmir Reorganisation Act reconstituted the state of Jammu and Kashmir into two Union Territories: Jammu & Kashmir and Ladakh, effective from October 31, 2019.

• In January 2020, the Union Territories of Dadra and Nagar Haveli and Daman and Diu were merged into a single UT to improve administrative efficiency.

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Q81. Answer: (b) 560

BODMAS Table:

Given equation: 316 − 2 ÷ 37 + 436 × 4 = ?

Now, replacing the symbols as given '+ ↔ −', '− ↔ ×', '× ↔ ÷', '÷ ↔ +', then:

=> 316 × 2 + 37 − 436 ÷ 4

=> (316 × 2) + 37 − (436 ÷ 4)

=> 632 + 37 − 109

=> 669 − 109

=> 560

Hence, the correct answer is Option 2.

Q82. Answer: (b) Shafali Verma

The correct answer is Shafali Verma.

Key Points

• Shafali Verma was named the Player of the Match in the 2025 ICC Women's ODI World Cup final, where India defeated South Africa by 52 runs on November 2, 2025, at the Dr. DY Patil Stadium, Navi Mumbai.

• The 21-year-old opening batter scored 87 runs off 78 balls to secure the award.

• Player of the Tournament: Deepti Sharma.

• This was India's first-ever Women's ODI World Cup title.

• Verma was the youngest player to win the Player of the Match award in an ODI World Cup final.

Additional Information

• Smriti Mandhana:

• Age and Birthplace: Born on July 18, 1996, in Mumbai, Maharashtra. She represents the Maharashtra team in domestic cricket.

• Achievements: She was awarded the Arjuna Award in 2018. She has also won the Rachael Heyhoe-Flint Award for the ICC Women's Cricketer of the Year twice, in 2018 and 2021.

• WPL: She led the Royal Challengers Bangalore (RCB) to their maiden title in the Women's Premier League (WPL) 2024.

• Harmanpreet Kaur:

• She is the current Captain of the Indian Women's ODI and T20I teams. She is famously known for her unbeaten 171 against Australia in the 2017 World Cup semi-final.

• She was the first Indian (male or female) to sign a Big Bash League contract with Sydney Thunder in 2016.

• Shafali Verma:

• Known for her explosive batting style, she became the youngest Indian to debut in International Cricket at the age of 15 in 2019.

• She led the India U-19 team to victory in the inaugural ICC U-19 Women's T20 World Cup in 2023.

• Deepti Sharma:

• An elite all-rounder who holds the record for the second-highest individual score in Women's ODIs (188 against Ireland in 2017).

• She is currently ranked among the top all-rounders in the ICC Rankings and plays a vital role with her off-spin bowling.

Important Points

• Tournament Format: The 2025 ICC Women's ODI World Cup will feature 8 teams competing in a round-robin format, followed by semi-finals and a final.

• Qualification: Teams qualify through the ICC Women's Championship (2022–2025) and the World Cup Qualifier tournament. India, as the host nation, received automatic qualification.

• Historical Context: Australia is the most successful team in the history of the Women's ODI World Cup, having won 7 titles, including the most recent one in 2022 held in New Zealand. England follows with 4 titles.

• Growth of Women's Cricket: The ICC has significantly increased the prize money for women's events, aiming for parity with men's tournaments by 2030. The 2025 event is expected to see record-breaking broadcasting and digital viewership.

Q83. Answer: (c) Maria Corina Machado

The correct answer is Maria Corina Machado.

Key Points

• Maria Corina Machado is a prominent Venezuelan politician, industrial engineer, and the founder of the political party Vente Venezuela. She has been a leading figure in the opposition against the administrations of both Hugo Chávez and Nicolás Maduro.

• The nomination and recognition associated with the Nobel Peace Prize context for 2025 stem from her relentless efforts to restore democracy in Venezuela through peaceful, electoral means despite facing significant personal risks and political bans.

• She played a pivotal role in the 2024 presidential election cycle by winning the opposition primaries with over 90% of the vote,

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although she was subsequently barred from holding office by the regime. This led her to back Edmundo González Urrutia to ensure a unified democratic front.

• Her strategy focused on a just and peaceful transition, emphasizing the importance of civil resistance, international diplomatic pressure, and the verification of voting records (actas) to prove the democratic will of the people.

• By advocating for the rights of millions of Venezuelan migrants and those remaining in the country under economic hardship, she has become a global symbol of democratic resilience.

Additional Information

• Nobel Peace Prize: This prestigious award is presented annually in Oslo, Norway. Unlike the other Nobel Prizes which are awarded in Stockholm, the Peace Prize is determined by the Norwegian Nobel Committee. It recognizes individuals who have "done the most or the best work for fraternity between nations."

• Juan Guaidó: He was a former President of the National Assembly who was recognized by over 50 countries as the Interim President of Venezuela in 2019. While he led the "interim government" for several years, the movement shifted toward new leadership under Machado by 2023-2024.

• Political Environment in Venezuela: The country has faced a severe socio-economic crisis since 2014, characterized by hyperinflation and the displacement of over 7.7 million people. The struggle for a transition to democracy is centered on returning to the Rule of Law and constitutional order.

• Democratic Rights Advocacy: This involves protecting the freedom of speech, the right to peaceful assembly, and the integrity of the electoral process. Machado's work has specifically targeted the transparency of the National Electoral Council (CNE).

• International Recognition: Machado has previously been named one of the BBC's 100 Women and received the Charles T. Manatt Democracy Award, reflecting her long-standing commitment to human rights.

Important Points

• Biographical Details: Born on October 7, 1967, in Caracas, Maria Corina Machado is currently 57 years old. She is an industrial engineer by profession with a specialization in finance.

• Súmate: Before her direct entry into partisan politics, she co-founded Súmate in 2002, a non-profit volunteer organization dedicated to civil and political rights and electoral transparency in Venezuela.

• The 2024 Election Impact: Following the elections held on July 28, 2024, Machado led the effort to digitize and publish over 80% of the physical voting tallies, which provided evidence to the international community regarding the election results, a move that significantly bolstered her candidacy for global peace and human rights awards.

• Transition Goals: Her proposed transition model involves national reconciliation, the release of political prisoners, and the rebuilding of the Venezuelan economy through free-market principles and international cooperation.

Q84. Answer: (d) Output device

The correct answer is Output device.

Key Points

• A printer is a peripheral hardware device that transforms electronic data from a computer into a hard copy (printed text or images on paper). Because it takes information processed by the computer and presents it to the user, it is classified as an Output device. Hence, the statement regarding the printer's behavior is correct.

• The primary function of a printer is to receive digital signals from the Central Processing Unit (CPU) and translate them into a physical form using ink, toner, or heat.

• Output devices are essential components of a computer system that allow the user to see, hear, or feel the results of data processing. Other examples include monitors, speakers, and projectors.

• Printers are characterized by their resolution, which is measured in DPI (Dots Per Inch), and their speed, which is typically measured in PPM (Pages Per Minute). High-quality professional printers may reach resolutions of 2400 DPI or more.

• In the context of the question, the printer acts as the final stage of the Information Processing Cycle (Input, Processing, Storage, and Output), providing the permanent record of digital files.

Additional Information

• Network Device:

• A network device is a hardware component used to connect computers or other electronic devices to a network (such as a LAN or the Internet).

• Examples include routers, switches, hubs, gateways, and modems.

• While modern printers often have Network Interface Cards (NIC) or Wi-Fi capabilities to function as a shared resource on a network, their core classification in computer architecture remains an output device because their primary role is the presentation of data.

• Primary Memory:

• Primary memory, also known as main memory, is the memory that is directly accessible by the CPU.

• It includes Random Access Memory (RAM) and Read-Only Memory (ROM). RAM is volatile, meaning it loses data when power is turned off, while ROM is non-volatile.

• Printers contain their own internal buffer memory to store print jobs temporarily, but they are not categorized as the computer's primary memory.

• Input Device:

• An input device is any hardware component that allows a user to enter data and instructions into a computer for processing.

• Common examples include the keyboard, mouse, scanner, microphone, and webcam.

• If a printer is part of an All-in-One (AIO) machine that includes a scanner, the scanning component acts as an input device, while the printing component remains an output device.

• Output Device:

• This category includes devices that relay information from the computer to one or more users.

• Monitors (Visual), Speakers (Audio), and Printers (Physical) are the most common types.

• Output can be soft copy (temporary, like on a screen) or hard copy (permanent, like on paper).

Important Points

• Types of Printers:

• Impact Printers: These use a striking mechanism against an ink ribbon. Examples include Dot Matrix and Daisy Wheel printers. They were very common in the 1970s and 1980s.

• Non-Impact Printers: These do not strike the paper. The most popular types today are Inkjet printers (using liquid ink) and Laser printers (using dry toner and a laser beam).

• 3D Printers: A modern evolution in output technology, 3D printers create three-dimensional physical objects from CAD (Computer-Aided Design) models by layering materials like plastic, resin, or metal.

• Historical Context: The first mechanical printer was invented by Charles Babbage for his Difference Engine in the 19th century, but the first electronic printer was the EP-101, released by Epson in 1968.

• Connectivity: Printers connect to computers using various interfaces, including USB (Universal Serial Bus), Parallel ports (older models), Ethernet, and Bluetooth.

Q85. Answer: (a) 6 hours 40 minutes

Shortcut Trick

=> Upstream speed = 80 ÷ 4 = 20 km/h

=> Speed in still water = 25 km/h => Stream speed = 25 − 20 = 5 km/h

=> Downstream speed = 25 + 5 = 30 km/h

=> Downstream time = 80 ÷ 30 = 8/3 hr

=> Total time = 4 + 8/3 = 20/3 hr

Therefore Answer = 6 hr 40 min

Alternate Method

Given:

Speed in still water = 25 km/h

Distance = 80 km

Upstream time = 4 hr

Formula:

Upstream speed = (Boat speed − Stream speed)

Downstream speed = (Boat speed + Stream speed)

Calculations:

=> Upstream speed = 80 ÷ 4 = 20 km/h

=> 25 − Stream speed = 20

=> Stream speed = 5 km/h

=> Downstream speed = 25 + 5 = 30 km/h

=> Downstream time = 80 ÷ 30 = 8/3 hr

=> Total time = 4 + 8/3 = 20/3 hr = 6 hr 40 min

Final Answer: 6 hr 40 min

Additional Information

1. Boat & Stream Basics: Upstream speed = u − v, Downstream speed = u + v

2. Finding Stream Speed: Stream speed = (Downstream − Upstream) ÷ 2

3. Average Speed (Round Trip): = 2 × u × v ÷ (u + v)

Q86. Answer: (a) F

Given: Seven people F, G, H, I, V, W and X are sitting around a circular table facing the centre.

G sits second to the left of X.

V sits third to the left of G.

Only two people sit between H and I when counted from the right of I.

F is an immediate neighbour of H.

So, the person sitting fourth to the right of W is X, I, G, F → F

Hence, the correct answer is "Option 1".

Q87. Answer: (a) Only conclusion (I) follows.

Given Statements:

All liquid is water.

All water is juice.

Some juices are syrup.

The least possible Venn diagram for the given statement is:

Conclusions:

I. All liquid is juice - True (Since liquid subset of water and water subset of juice, so liquid subset of juice).

II. Some syrups are liquid - False (Only some juices are syrup, but no definite overlap between syrup and liquid is given).

So, only conclusion I follows.

Hence, the correct answer is Option 1.

Q88. Answer: (a) Barcelona, Spain

The correct answer is Barcelona, Spain.

Key Points

• The United Nations Educational, Scientific and Cultural Organization (UNESCO) announced that Barcelona, Spain, will host the next World Conference on Cultural Policies and Sustainable Development – MONDIACULT 2025. This follows a successful bid by the Kingdom of Spain to bring this global summit to one of Europe's most prominent cultural hubs.

• The conference is scheduled to take place in the year 2025, marking three years since the landmark MONDIACULT 2022 session held in Mexico City. The primary objective is to continue the global dialogue on how culture can be integrated as a standalone goal in the international development agenda.

• The event is organized by UNESCO in collaboration with the Spanish Government and the Barcelona City Council. It serves as the highest-level forum for Ministers of Culture from around the world to deliberate on the future of cultural heritage, creativity, and diversity.

• The decision to host the conference in Barcelona was formally communicated by Audrey Azoulay, the Director-General of UNESCO, highlighting the city's commitment to fostering a vibrant cultural ecosystem and its status as a UNESCO Creative City.

• MONDIACULT 2025 will focus on the progress made since the 2022 Declaration, which recognized culture as a Global Public Good. It aims to address emerging challenges such as the impact of Artificial Intelligence (AI) on the creative industries and the role of culture in Climate Action.

Additional Information

• Historical Context of MONDIACULT:

• The first MONDIACULT conference was held in 1982 in Mexico City. It was a pivotal moment that redefined the concept of culture to include not only arts and letters but also modes of life, value systems, and traditions.

• For nearly 40 years, the global community waited for the next major iteration, which eventually occurred in September 2022. This long interval underscores the renewed importance the United Nations is placing on cultural policy in the 21st century.

• Significance of the 2022 Declaration:

• During MONDIACULT 2022, 150 States adopted a historic Declaration for Culture. This document called for culture to be included as a specific Sustainable Development Goal (SDG) in the post-2030 agenda.

• The declaration emphasized the protection of Indigenous peoples' rights and the need for the restitution of cultural property to its countries of origin, specifically targeting the fight against illicit trafficking of antiquities.

• Barcelona's Cultural Profile:

• Barcelona is home to 9 UNESCO World Heritage Sites, including the works of Antoni Gaudí and the Palau de la Música Catalana.

• The city was designated a UNESCO City of Literature in 2015, reflecting its deep-rooted publishing history and literary festivals like Sant Jordi.

Important Points

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• Sustainable Development Goals (SDGs): While the current 2030 Agenda does not have a dedicated goal for culture, MONDIACULT 2025 is expected to be a critical stepping stone in advocating for Culture to be recognized as a fundamental pillar of sustainability alongside economy, society, and environment.

• Global Participation: The conference expects participation from over 190 Member States. It provides a platform for Non-Governmental Organizations (NGOs), intergovernmental organizations, and cultural practitioners to influence global policy.

• Themes of Discussion: Key topics planned for the 2025 summit include the Digital Transformation of the cultural sector, the social status of artists, and the protection of cultural diversity in an increasingly globalized world.

Q89. Answer: (b) 20%

Shortcut Trick

=> Cost per dozen = 630 => Cost per article = 630 ÷ 12 = 52.5

=> Selling price per article = 63

=> Profit per article = 63 − 52.5 = 10.5

=> Profit % = (10.5 ÷ 52.5) × 100 = 20%

Therefore Answer = 20%

Alternate Method

Given:

Number of dozens = 42

Cost price per dozen = 630

Selling price per article = 63

Formula:

Profit % = (Profit ÷ Cost Price) × 100

Calculations:

=> Total articles = 42 × 12 = 504

=> Total Cost Price = 42 × 630 = 26460

=> Total Selling Price = 504 × 63 = 31752

=> Profit = 31752 − 26460 = 5292

=> Profit % = (5292 ÷ 26460) × 100 = 20%

Final Answer: 20%

Additional Information

1. Unit Method: Convert dozen to single unit for faster comparison

2. Profit Formula: Profit = SP − CP

3. Percentage Shortcut: Profit % = (Difference ÷ CP) × 100

4. Scaling Logic: Profit % remains same whether calculated per unit or total

Q90. Answer: (c) Rabi

The correct answer is Rabi.

Key Points

• Wheat is the second most important cereal crop in India and is a staple food for millions, especially in the north and north-western parts of the country.

• It is classified as a Rabi crop, which means it is sown during the winter season and harvested in the spring.

• The ideal time for sowing wheat in India is from October to December, as the crop requires a cool growing season.

• The harvesting of wheat usually takes place between February and April, coinciding with the onset of the summer heat, as it needs bright sunshine at the time of ripening.

• In terms of water requirements, wheat needs moderate rainfall ranging from 50 cm to 75 cm annually, which should ideally be distributed evenly throughout the growing period.

Additional Information

• Rabi Crops:

• These are winter crops sown in October-November and harvested in March-April.

• Examples include wheat, barley, peas, gram, and mustard.

• These crops are not dependent on the monsoon rains but rely on sub-soil moisture and irrigation.

• Kharif Crops:

• These are monsoon crops sown at the beginning of the rainy season in June-July and harvested in September-October.

• Key examples include rice (paddy), maize, jowar, bajra, soyabean, cotton, and groundnut.

• These crops require high temperature and high humidity with a significant amount of rainfall.

• Zaid Crops:

• This is a short season between the Rabi and Kharif seasons, typically during the summer months from March to June.

• Common crops include watermelon, muskmelon, cucumber, vegetables, and various fodder crops.

• Wheat Production Data:

• India is the second-largest producer of wheat in the world, following China.

• Major wheat-producing states in India include Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, and Rajasthan.

• The Ganga-Sutlej plains and the black soil region of the Deccan are the primary zones for wheat cultivation.

Important Points

• The Green Revolution, which began in the late 1960s, played a pivotal role in making India self-sufficient in food grains, with wheat being the primary beneficiary of high-yielding variety (HYV) seeds.

• Wheat grows best in well-drained loamy or clayey soils. Soils with high organic matter are generally preferred for better yield.

• Temperature is a critical factor; for germination, it requires 20°C to 25°C, while for ripening, the temperature should ideally be between 14°C and 16°C.

• Irrigation is vital for wheat in areas with low rainfall, especially in the north-western parts of India where the Western Disturbances provide beneficial light showers during the winter.

Q91. Answer: (d) 2

The logic followed here is:

Given:

MILE → 9574

TIME → 5429

Thus, T → 2

Hence, the correct answer is Option 4.

Q92. Answer: (b) Public Interest

The correct answer is Public Interest.

Key Points

• The Right to Information (RTI) Act, 2005 was enacted to promote transparency and accountability in the working of every public authority. However, Section 8 of the Act enumerates specific categories of information that are exempt from disclosure.

• Sovereignty and integrity of India: Under Section 8(1)(a), information, the disclosure of which would prejudicially affect the sovereignty and integrity of India, the security, strategic, scientific, or economic interests of the State, or relation with foreign states, is exempted. Hence, statement 1 is a correct ground for exemption.

• Cabinet papers including records of deliberation: According to Section 8(1)(i), cabinet papers including records of deliberations of the Council of Ministers, Secretaries, and other officers are exempt from disclosure. However, the decisions of the Cabinet and the reasons thereof shall be made public after the decision has been taken and the matter is complete. Hence, statement 3 is a correct ground for exemption.

• Breach of privilege of Parliament: Section 8(1)(c) states that information, the disclosure of which would cause a breach of privilege of Parliament or the State Legislature, is exempt from being shared with the public. Hence, statement 4 is a correct ground for exemption.

• Public Interest: This is actually a ground for disclosure rather than exemption. According to Section 8(2), a public authority may allow access to information if the public interest in disclosure outweighs the harm to the protected interests. It serves as an override mechanism to the exemptions provided in the Act. Hence, statement 2 is NOT a ground for exemption.

Additional Information

• Historical Background: The RTI Act, 2005 replaced the erstwhile Freedom of Information Act, 2002. It was passed by the Parliament on 15 June 2005 and came into full force on 12 October 2005.

• Organizational Structure: The Act provides for the constitution of the Central Information Commission (CIC) and State Information Commissions (SIC) to act as the final appellate authorities for grievances related to information requests.

• Time Limits: Under normal circumstances, a Public Information Officer (PIO) must provide the information within 30 days of the receipt of the application. If the information sought concerns the life or liberty of a person, it must be provided within 48 hours.

• Fees: For citizens of India, a nominal application fee of Rs. 10 is generally charged. However, persons living Below Poverty Line (BPL) are exempted from paying any fee for seeking information under the Act.

Important Points

• Section 24: This section mentions that the Act does not apply to certain intelligence and security organizations established by the Central Government, such as the Intelligence Bureau (IB), Research and Analysis Wing (RAW), and Border Security Force (BSF),

except in cases involving allegations of corruption and human rights violations.

• Fiduciary Relationship: Under Section 8(1)(e), information available to a person in his fiduciary relationship is exempt unless the competent authority is satisfied that the larger public interest warrants the disclosure of such information.

• Third Party Information: If the information sought relates to or has been supplied by a third party and has been treated as confidential by that party, the PIO must give written notice to such third party within 5 days of receiving the request.

• Partial Disclosure: Under Section 10 (the Severability Clause), if a request for information is rejected because it is exempt, access may still be provided to that part of the record which does not contain any exempt information and can reasonably be severed.

Q93. Answer: (b) -29

Shortcut Trick

=> Expression: (−9) − (−56 ÷ −14) + (−2 × 8)

=> (−56 ÷ −14) = 4 and (−2 × 8) = −16

=> −9 − 4 − 16 = −29

Therefore Answer = −29

Alternate Method

Given:

Expression = (−9) − (−56) ÷ (−14) + (−2) × 8

Formula:

BODMAS Rule → Brackets, Orders, Division, Multiplication, Addition, Subtraction

Calculations:

=> Step 1: (−56) ÷ (−14) = 4

=> Step 2: (−2) × 8 = −16

=> Expression becomes: −9 − 4 − 16

=> Step 3: −9 − 4 = −13

=> Step 4: −13 − 16 = −29

Final Answer: −29

Additional Information

1. Sign Rule: (− ÷ − = +), (− × + = −)

2. BODMAS Priority: Solve division & multiplication before addition/subtraction

3. Negative Addition: Adding a negative means subtraction

4. Simplification Tip: Convert complex expression into simple linear form stepwise

Q94. Answer: (c) 2 km to the South

The logic followed here is:

Given:

Hemant starts from Point A and drives 22 km East.

He then turns right → 17 km South.

He then turns right → 31 km West.

He then turns right → 19 km North.

He takes a final right → 9 km East.

So, Hemant must travel 2 km South to reach Point A.

Hence, the correct answer is Option 3.

Q95. Answer: (b) Son’s daughter

Family Chart:

Given :

Lg is the daughter of Dv.

Jq is the daughter of Qb.

Pd is the wife of Dv.

Qb is the brother of Lg.

So, Jq is Dv’s son’s daughter.

Hence, the correct answer is Option 2.

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Q96. Answer: (a) Two

Given: Seven boxes P, A, R, E, N, T and S are kept one over the other but not necessarily in the same order.

Only two boxes are kept between A and S.

Only E is kept below N.

Only R is kept above A.

T is not kept immediately above S.

Position	Box
7 (Top)	R
6	A
5	T
4	P
3	S
2	N
1 (Bottom)	E

Boxes between P and E → S, N → 2

Hence, the correct answer is Option 1.

Q97. Answer: (c) 13

Shortcut Trick

Tangents from an external point are equal, so AB = AC = 30 cm.

Line AO bisects chord BC at point M, giving BM = 24 ÷ 2 = 12 cm.

In right triangle ABM, height AM = √(30² − 12²) = √756 ≈ 27.5 cm.

Using similarity property (radius r ÷ AB = BM ÷ AM): r = (30 × 12) ÷ 27.5.

Radius r ≈ 360 ÷ 27.5 ≈ 13.09 cm.

Therefore Answer = 13

Alternate Method

Given:

Length of tangent AB = 30 cm, Length of chord BC = 24 cm, Center of circle = O.

Formula used:

In a circle, the line joining the center to an external point bisects the chord of contact perpendicularly.

Radius r = (AB × BM) ÷ AM, where M is the midpoint of BC.

O A B C r 30 cm M 12

Calculations:

In right triangle ABM, where BM = BC ÷ 2 = 24 ÷ 2 = 12 cm:

=> $AM^2 = AB^2 - BM^2 = 30^2 - 12^2$

=> $AM^2 = 900 - 144 = 756$

=> AM = √756 ≈ 27.495 cm

In right triangle OBA, angle OBA = 90° and BM is the altitude to hypotenuse AO:

=> triangle ABM ~ triangle OBM

=> OB ÷ AB = BM ÷ AM

=> r ÷ 30 = 12 ÷ 27.495

=> r = (30 × 12) ÷ 27.495 = 360 ÷ 27.495 ≈ 13.09 cm

Therefore The correct answer is 13.

Additional Information

Tangent Properties

Tangents from a single external point to a circle are equal in length (AB = AC) and the radius is perpendicular to the tangent at the point of contact (angle OBA = 90°).

Chord of Contact

The line segment joining the points of contact of two tangents from an external point is called the chord of contact (BC), and it is

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perpendicularly bisected by the line AO.

Right Triangle Altitude Property

In a right triangle, the square of the altitude to the hypotenuse equals the product of the segments of the hypotenuse ($BM^2 = AM \times OM$).

Q98. Answer: (c) 1

Shortcut Trick

=> Tap B and C cancel each other (same time 37 hr)

=> Only Tap A works effectively

=> A fills full tank in 4 hr => 1/4 tank in 1 hr

Therefore Answer = 1 hour

Alternate Method

Given:

Tap A = 4 hr (fill)

Tap B = 37 hr (fill)

Tap C = 37 hr (empty)

LCM Method:

=> LCM of (4, 37, 37) = 148

Tap	Time	Work per hour
A	4	148 ÷ 4 = 37
B	37	148 ÷ 37 = 4
C	37	−148 ÷ 37 = −4

Calculations:

=> Net work per hour = 37 + 4 − 4 = 37

=> Work needed = 1/4 of 148 = 37

=> Time = 37 ÷ 37 = 1 hour

Final Answer: 1 hour

Additional Information

1. LCM Method: Assume total work = LCM of times for easy calculation
2. Efficiency: Work per hour = Total work ÷ Time
3. Opposite Work: Emptying work is taken negative
4. Cancellation Concept: Equal fill and empty cancel out

Q99. Answer: (b) .dll

The correct answer is .dll.

Key Points

• .dll (Dynamic Link Library): A .dll file is a type of system file used in the Microsoft Windows Operating System. It contains code and data that can be used by more than one program at the same time. For example, in Windows, the Comdlg32.dll performs common dialog box-related functions. Therefore, a program can use the functionality that is contained in such a file to implement an Open dialog box. This promotes code reusability and efficient memory management. Hence, this is the correct option.

• .mp3 (MPEG-1 Audio Layer III): This is a coding format for digital audio. It is a multimedia file type used to store music and other audio tracks. While the OS may have a default player for it, the file itself is a user data file and not a system file required for the operating system to function. Hence, this statement is incorrect.

• .docx (Microsoft Word Open XML Document): This is a document file format used by Microsoft Word. It was introduced with the release of Microsoft Office 2007. These files are application-specific files created by users to store text, images, and formatting. They are not part of the Windows core system files. Hence, this statement is incorrect.

• .zip (Compressed Archive): This is an archive file format that supports lossless data compression. A .zip file may contain one or more files or directories that have been compressed to save disk space. While it is a very common utility format used within Windows, it is classified as a utility or compressed file rather than a system file. Hence, this statement is incorrect.

Additional Information

• Windows System Files: These are essential files located typically in the C:\Windows\System32 folder. They are critical for the booting, functioning, and stability of the operating system. Deleting or altering these files can lead to a system crash or the Blue Screen of Death (BSOD).

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• Common System File Extensions:

• .sys: These are system files that often contain device drivers and core hardware configurations.

• .exe: While many are applications, core files like explorer.exe or winlogon.exe are vital system executables.

• .ini: These are initialization files used to store configuration settings for the OS or specific programs.

• .bat: Batch files are script files that contain a series of commands to be executed by the command-line interpreter.

• Dynamic Link Library (DLL) Advantages: The use of DLLs helps in reducing the consumption of resources. When multiple programs use the same library of functions, the operating system loads only one copy of the DLL into the RAM, which is then shared across all active applications.

• File Systems in Windows: Windows OS primarily uses NTFS (New Technology File System) for modern versions, which provides features like file permissions, encryption, and journaling to protect system files from corruption.

Important Points

• System File Checker (SFC): This is a utility in Windows that allows users to scan for and restore corruptions in Windows system files, including .dll files. The command used in the Command Prompt is sfc /scannow.

• DLL Hell: This is a term used to describe compatibility issues that arise when different programs require different versions of the same .dll file. Microsoft addressed this in newer versions of Windows (like Windows 10 and Windows 11) using Side-by-Side (SxS) assemblies and the Windows Side-by-Side (WinSxS) folder.

• Registry: The Windows Registry is a hierarchical database that stores low-level settings for the operating system and for applications that opt to use the registry. It often points to the location of various system files like .dll and .sys files during runtime.

Q100. Answer: (c) Northeast Monsoon

The correct answer is Northeast Monsoon.

Key Points

• The Northeast Monsoon is also known as the Retreating Monsoon because it marks the period when the monsoon winds start moving away from the northern parts of India towards the Indian Ocean.

• This transition period occurs during the months of October and November. During this time, the Southwest Monsoon winds weaken as the low-pressure trough over the northern plains begins to move southward due to the apparent movement of the Sun towards the Equator.

• The winds during this season blow from the land to the sea. As these winds cross the Bay of Bengal, they pick up moisture and bring significant rainfall to the Coromandel Coast, specifically affecting states like Tamil Nadu, Coastal Andhra Pradesh, and Puducherry.

• This season is characterized by clear skies and a rise in temperature in the northern plains, a phenomenon often referred to as "October Heat". While the days are warm, the nights remain cool and pleasant.

• The Northeast Monsoon is crucial for the agricultural practices in Southern India, providing the necessary water for Rabi crops in the region.

Additional Information

• Southwest Monsoon (Advancing Monsoon):

• This is the primary monsoon season in India, lasting from June to September. It provides more than 75% of the country's total annual rainfall.

• The winds blow from the sea to the land, originating from the Indian Ocean and splitting into two branches: the Arabian Sea Branch and the Bay of Bengal Branch.

• It is essential for the Kharif crop season, which includes staples like Rice, Maize, and Cotton.

• Western Disturbances:

• These are extra-tropical storms that originate in the Mediterranean Sea region. They bring sudden winter rain to the northwestern parts of the Indian subcontinent.

• They are highly beneficial for Rabi crops, particularly Wheat, in states like Punjab, Haryana, and Uttar Pradesh.

• They usually occur during the months of December, January, and February and are driven by the Westerly Jet Streams.

• Inter-Tropical Convergence Zone (ITCZ):

• The ITCZ is a low-pressure zone located near the Equator where the trade winds converge. The seasonal shift of this zone plays a major role in the onset and withdrawal of the Monsoon in India.

• In July, the ITCZ moves to about 20°N-25°N latitudes, which is often called the Monsoon Trough.

• Factors Influencing Monsoon:

• The Differential Heating of land and water is the primary driver of monsoon winds.

• Other factors include the presence of the Himalayas, the Tibetan Plateau, and global phenomena like El Niño and La Niña, which can significantly affect the intensity and timing of the rainfall.

Important Points

• Tamil Nadu receives the majority of its annual rainfall from the Northeast Monsoon rather than the Southwest Monsoon because it lies in the rain-shadow area of the Western Ghats during the summer months.

• The Indian Meteorological Department (IMD) is the principal agency responsible for meteorological observations, weather forecasting, and seismology in the country.

• The term 'Monsoon' is derived from the Arabic word 'Mausim', which literally means season.

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