RRB NTPC (UG) CBT-I Official Paper (Held On: 08 Aug, 2025 Shift 2) (Previous Year Paper)

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

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GENERAL AWARENESS

Q1. Which Act created the post of the Governor-General of Bengal?

(a) Regulating Act, 1773
(b) Pitt's India Act, 1784
(c) Government of India Act, 1858
(d) Charter Act, 1813

Q2. Which global chip-design conference, returning to San Francisco in June 2025, for its 62^(nd) edition, announced a GenAI Chip Hackathon?

(a) ICCAD
(b) DAC
(c) ISSCC
(d) Hot Chips

Q3. At the time of independence, which sector contributed the largest share to India's national income?

(a) Trade
(b) Industry
(c) Service
(d) Agriculture

Q4. What is the primary aim of the 'Pradhan Mantri Ujjwala Yojana'?

(a) Providing free education to girls
(b) Providing LPG connections to women
(c) Providing employment in rural areas
(d) Providing mobile phones to rural households

Q5. During the colonial period in India, which social reformer worked for widow remarriage and against child marriage in Bengal?

(a) Ishwar Chandra Vidyasagar
(b) Swami Vivekananda
(c) Jyotiba Phule
(d) Syed Ahmed Khan

Q6. Which resilient and adaptable polymer is frequently found in industrial brushes, toothbrushes, and other cleaning supplies?

(a) Neoprene
(b) Terylene
(c) Teflon
(d) Nylon 6, 6

Q7. Who became the first athlete to break a national record at the Khelo India Para Games 2025 by lifting 101 kg in the 45 kg category powerlifting in March 2025?

(a) Khushboo Gill
(b) Sonam Patill
(c) Kavipriya Raja
(d) Jaspreet Kaur

Q8. Who was the Union Home Minister of India as of June 2025, following the general elections?

(a) Nirmala Sitharaman
(b) Rajnath Singh
(c) Amit Shah
(d) Piyush Goyal

Q9. A significant river of the Indian Desert, Luni originates from western slopes of the Aravalli ranges near which place in Rajasthan?

(a) Udaipur
(b) Rajsamand
(c) Sirohi
(d) Ajmer

Q10. Which stone was mainly utilised in building the Chennakeshava Temple in Belur, India?

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

Q11. Which of the following regional film industries is based in Chennai and produces movies in the Tamil language?

(a) Bollywood
(b) Mollywood
(c) Kollywood
(d) Tollywood

Q12. Which of the following allows users to delete a file using the mouse?

(a) Copy the file
(b) Drag it to the Recycle Bin
(c) Left-click the file
(d) Minimize the window

Q13. Which of the following Parliamentary Committees of India is considered a ‘Financial Committee’?

(a) Committee on Welfare of SCs and STs
(b) Committee on Petitions
(c) Committee on Privileges
(d) Estimates Committee

Q14. In how many assembly constituencies were the Delhi Assembly elections held on 5 February 2025?

(a) 62
(b) 70
(c) 78
(d) 55

Q15. Which 18^(th)-century revolt was led by Raja Chait Singh against British interference in the Benares region in 1781?

(a) Chuar Revolt
(b) Kol Revolt
(c) Benares Revolt
(d) Santhal Revolt

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Q16. Which of the following is a characteristic feature of subsistence farming?

(a) Use of modern irrigation techniques
(b) Use of high-yielding varieties
(c) Farming for family consumption
(d) Commercial crop production

Q17. Which of the following was the official theme for World Meteorological Day celebrated on 23 March 2025?

(a) Closing the Early Warning Gap Together
(b) Weather-Ready, Climate-Smart
(c) Invesng in Weather and Climate Services
(d) Climate Knowledge for Climate Acon

Q18. The Nizam of Hyderabad accepted British subsidiary alliance under _____.

(a) Sir John Shore
(b) Lord Hastings
(c) Lord Cornwallis
(d) Lord Wellesley

Q19. In which border areas did India and China agree on patrolling arrangements along the Line of Actual Control on 21 October 2024?

(a) Puga and Chumathang
(b) Rudok and Guge
(c) Depsang and Demchok
(d) Aksai and Lingzi Thang

Q20. Which Indian state hosted the 38th edition of the National Games in early 2025?

(a) Gujarat
(b) Goa
(c) Uttarakhand
(d) Kerala

Q21. If an object moves up to four times faster than the speed of sound, the condition is called:

(a) subsonic
(b) hypersonic
(c) supersonic
(d) transonic

Q22. The Faraizi Movement, led by Haji Shariatullah, focused on religious purification and resisting the British in which region?

(a) Punjab
(b) Gujarat
(c) Delhi
(d) Bengal

Q23. In 2025, the Federation of Indian Associations (FIA) elected Hemant Patel as President for the 2025–2026 term. Where is this organisation based?

(a) London, UK
(b) New Delhi, India
(c) Chicago, USA
(d) Toronto, Canada

Q24. According to the Brønsted-Lowry theory, which of the following defines an acid?

(a) Donates a proton
(b) Donates a hydroxide ion
(c) Accepts a proton

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(d) Accepts an electron pair

Q25. The Convention on Biological Diversity (CBD) was a result of which global conference?

(a) Earth Summit, 1992
(b) Stockholm Conference
(c) Paris Agreement
(d) Kyoto Conference

Q26. In 2025, what does the abbreviation NGLV stand for in ISRO's latest rocket programme?

(a) New Generation Lunar Vehicle
(b) Next Generation Launch Vehicle
(c) Nuclear Geo Launch Vehicle
(d) National Geo Lander Vehicle

Q27. In May 2025, ISRO's Aditya-L1 mission released its first set of scientific data. What is the primary objective of this mission?

(a) Observe the Sun's outermost layer
(b) Study Mars' atmosphere
(c) Explore the Moon's surface
(d) Investigate deep space phenomena

Q28. Which type of memory loses all its stored data when the power is turned off?

(a) ROM
(b) RAM
(c) USB flash drive
(d) Hard disk drive

Q29. What is the main reason behind the formation of lagoons along the Eastern Coastal Plains?

(a) Sand deposition along the shallow coastlines
(b) Tectonic activity and fault line shifts
(c) Coral reef development and volcanic islands
(d) Deposition by rivers and wave action along the coast

Q30. Which scheme has been launched by the Chief Minister of Kerala in May 2025 to educate migrant children?

(a) Usha
(b) Pratibha
(c) Gargi
(d) Jyothi

Q31. Which of the following is INCORRECT about the Harappans?

(a) The most favoured ornaments were beads of carnelian.
(b) They exported ornaments, timber, some objects of daily use.
(c) The Harappans were engaged in active trade.
(d) The Harappans used only gold to make tools, pots and pans.

Q32. Which of the following is a shallow desert depression formed by wind erosion?

(a) Pediment
(b) Deflation hollow
(c) Playa
(d) Inselberg

Q33. Privatisation aims to improve _____ in public enterprises.

(a) operational efficiency and competitiveness
(b) government expenditure
(c) bureaucratic control

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(d) political influence

Q34. The Rihand Hydroelectric Project is located in which district of Uttar Pradesh?

(a) Guna
(b) Sonebhadra
(c) Robertsganj
(d) Saharanpur

Q35. Which of the following communities may apply for Indian citizenship after just 6 years of residence, as per the Citizenship (Amendment) Act, 2019?

(a) Buddhists from Nepal
(b) Sikhs from Pakistan
(c) Jews from Israel
(d) Hindus from Sri Lanka

Q36. Which city hosted the opening ceremony of the 2025 National Games?

(a) Haridwar
(b) Dehradun
(c) Patna
(d) Nainital

Q37. President Murmu went to which country in April 2025 to represent India at the funeral of Pope Francis?

(a) Vatican City
(b) Italy
(c) France
(d) Germany

Q38. Which of the following is an example of soft infrastructure?

(a) Water pipelines
(b) Public education
(c) Bridges
(d) Airports

Q39. Which of the following statements regarding the estimation of India’s national and per capita income during the colonial rule is correct?

(a) The colonial government never made any sincere attempt to estimate India’s national and per capita income.
(b) The colonial government estimated India’s national and per capita income sincerely every year.
(c) The colonial government estimated India’s per capita income but ignored national income.
(d) The colonial government estimated India’s national income but ignored per capita income.

Q40. Under which of the following conditions is a Tribal Advisory Council (TAC) established in a State?

(a) When the tribal population exceeds 10%
(b) When the tribal population exceeds 50%
(c) If the State has any forest area
(d) If there is at least one Scheduled Tribe

MATHEMATICS

Q41. The sum of two numbers is 57 and their L.C.M. is 812. What are the two numbers?

(a) 21, 36
(b) 26, 31
(c) 28, 29
(d) 33, 24

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Q42. The greatest number that divides 131, 91, and 215, leaving remainders 8, 9, and 10 respectively, is:

(a) 37
(b) 61
(c) 57
(d) 41

Q43. By selling an article at 2/5 of its actual selling price, Nirbhay incurs a loss of 26%. If he sells it at 84% of its actual selling price, then the profit percentage is:

(a) 56.7%
(b) 57.8%
(c) 55.4%
(d) 55.6%

Q44. A man goes to Nagpur from Visakhapatnam at a speed of 55 km/hr and returns to Visakhapatnam at speed of 66 km/hr, through the same route. What is his average speed (in km/hr) of the entire journey?

(a) 58
(b) 60
(c) 63
(d) 55

Q45. The sum of five numbers is 655. The average of the first two numbers is 80 and the third number is 101. Find the average of the remaining two numbers.

(a) 198
(b) 182
(c) 181
(d) 197

Q46. Given that 58^(0.5) = x, 58^(0.79)= y and x^z = y^(10), then the value of z is close to:

(a) 15.54
(b) 18.48
(c) 16.7
(d) 15.8

Q47. Pallavi bought a toy for Rs. 740, decorated it at a cost of Rs. 16 and sold the toy for Rs. 558. Find the loss or profit percentage.

(a) 550% loss
(b) 560/21 % profit
(c) 550/21 % profit
(d) 550/21 % loss

Q48. A number when increased by 80% gives 2790. The number is:

(a) 3100
(b) 775
(c) 1550
(d) 4650

Q49. Rahul buys a box of pens (listed price of Rs. 900) with a trade discount of 30%. What is the net price?

(a) Rs. 600
(b) Rs. 700
(c) Rs. 750
(d) Rs. 630

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Q50. A cylindrical rod has an outer curved surface area of 3300 cm². If the length of the rod is 72 cm, then the outer radius (in cm) of the rod, correct to two places of decimal, is: Take Π = 22/7.

(a) 7.36
(b) 7.29
(c) 6.37
(d) 8.31

Q51. Which of the following numbers divides 481355?

(a) 3
(b) 15
(c) 5
(d) 6

Q52. A regular polygon has 30 sides. Find the measure of one interior angle.

(a) 168°
(b) 128°
(c) 48°
(d) 120°

Q53. A shopkeeper marked the price of a table as Rs. 1,400 and offered two successive discounts, one of which is 12%. If a customer pays Rs. 1,133.44 for the table, then what was the second discount percentage offered?

(a) 10%
(b) 8%
(c) 15 %
(d) 5%

Q54. Find the value of sin (90 − x) cos (180 − (x − y)) + cos (90 − x) sin (180 − (y − x)).

(a) sin y
(b) cos y
(c) −cos y
(d) −sin y

Q55. If the third proportional of 81 and 27 is x, then what is the value of x?

(a) 6
(b) 9
(c) 11
(d) 7

Q56. The current population of a town is 12,014. It increases by 25% and 60% in two successive years but decreases by 50% in the third year. What is the population of the town at the end of the third year?

(a) 12,014
(b) 12,015
(c) 12,019
(d) 12,013

Q57. Evaluate: (-9) - (-60) ÷ (-10) + (-3) × 6

(a) -36
(b) -33
(c) -35
(d) -32

Q58. Ritik and Sanjay together invested Rs. 79,200 in a business. At the end of the year, out of a total profit of Rs. 16,500, Sanjay's share was Rs. 3,600. What was the difference between their investments?

(a) Rs. 42,824
(b) Rs. 44,640

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(c) Rs. 46,400
(d) Rs. 42,889

Q59. The average weight of Vipul, Mohan and Mohammad is 45 kg. If the average weight of Vipul and Mohan is 43 kg and that of Mohan and Mohammad is 50 kg, then the weight of Mohan (in kg) is:
(a) 66
(b) 61
(c) 51
(d) 71

Q60. A train with a length of 195 m overtakes a man moving at a speed of 5 km/hr (in the same direction) in 13 seconds. How much time (in seconds) will it take this train to completely cross another train that is 255 m long, moving in the opposite direction at a speed of 76 km/hr?
(a) 13
(b) 31
(c) 32
(d) 12

Q61. Find the simple interest (in Rs.) on Rs. 1,200 at an interest rate of 3% per month for 11 months.
(a) Rs. 53
(b) Rs. 396
(c) Rs. 66
(d) Rs. 33

Q62. The sum of the squares of two consecutive odd natural numbers is 394. The sum of the numbers is:
(a) 24
(b) 22
(c) 32
(d) 28

Q63. Pipe P can fill 5/7 part of a tank in 30 hours, and pipe Q can fill 2/5 part of the same tank in 28 hours. Both P and Q were kept open for 7 hours, then both were closed. Pipe R alone was then opened and it emptied the water in the tank in 8 hours. Pipes P, Q and R together can fill the empty tank in:
(a) 210 hours
(b) 204 hours
(c) 222 hours
(d) 214 hours

Q64. A can do a work in 10 days and B can do the same work in 20 days. If they work on it together for 6 days, then what fraction of the work is left?
(a) 11/10
(b) 7/10
(c) 1/10
(d) 3/10

Q65. P, Q and R invested a sum in the ratio of 34 : 75 : 6, respectively. If they earned a total profit of Rs. 3,600 at the end of the year, what is the difference between the shares of Q and R?
(a) Rs. 2,109
(b) Rs. 2,316
(c) Rs. 2,264
(d) Rs. 2,160

Q66. Seven times the present age of P exceeds the present age of Q by 46 years. After 8 years, six times Q's age will be 24 years less than six times P's age at that time. What is the present age (in years) of Q?
(a) 11
(b) 12

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(c) 5
(d) 3

Q67. The area of a triangle is 1080 cm²and its sides are in the ratio 5 : 12 : 13. The perimeter of the triangle is:
(a) 210 cm
(b) 180 cm
(c) 150 cm
(d) 120 cm

Q68. Find the simple interest (in Rs.) on Rs. 4,000 at 6.75% per annum rate of interest deposited on 22 February 2024 and withdrawn on 23 April 2024.
(a) Rs. 44
(b) Rs. 43
(c) Rs. 46
(d) Rs. 45

Q69. simplify the given expression. $x(3x - 5) + 5(x^2 - 3) + 16$
(a) $8x^2 - 5x - 1$
(b) $8x^2 - 5x + 1$
(c) $8x^2 + 5x - 1$
(d) $-8x^2 - 5x - 1$

Q70. What smallest number should be added to 91673 so that the sum is completely divisible by 88?
(a) 24
(b) 21
(c) 23
(d) 26

GENERAL INTELLIGENCE AND REASONING

Q71. If '+' means 'subtraction', '−' means 'multiplication', '×' means 'division' and '÷' means 'addition', then what will come in place of the question mark (?) in the following equation?
12 + 105 × 3 ÷ 14 − 3 = ?
(a) 30
(b) 19
(c) 23
(d) 27

Q72. In a certain code language, 'PEST' is coded as '6324' and 'PENS' is coded as '8634'. What is the code for 'N' in the given code language?
(a) 4
(b) 8
(c) 6
(d) 3

Q73. LGEI is related to RMKO in a certain way based on the English alphabetical order. In the same way, JECG is related to PKIM. To which of the given options is HCAE related, following the same logic?
(a) INKG
(b) NIKG
(c) INGK
(d) NIGK

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Q74. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

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

(a) NJL
(b) LHJ
(c) TPS
(d) QMO

Q75. What should come in place of the question mark (?) in the given series?

670 669 661 634 570 ?

(a) 441
(b) 445
(c) 440
(d) 447

Q76. 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:

Some woods are chisels.

Some chisels are graphs.

Conclusions:

(I) Some woods are graphs.

(II) All graphs are chisels.

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

Q77. Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. You have to decide which conclusion(s) logically follow(s) from the given statements

Statements:

Some nuts are berries.

All fruits are berries.

Conclusions (I): Some nuts are fruits.

Conclusions (II): All berries are fruits.

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

Q78. Binoy starts from Point Y and drives 16 km towards the north. He then takes a right turn and drives 43 km, then turns right and drives 38 km. He then takes a right turn and drives 19 km. He takes a final right turn, drives 22 km and stops at Point Z. How far (shortest distance) and in which direction should he drive in order to reach Point Y again? (All turns are 90-degree turns only unless specified.)

(a) 31 km towards the south
(b) 24 km towards the west
(c) 29 km towards the east
(d) 22 km towards the east

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Q79. In a certain code language, ‘GUNS’ is coded as ‘7642’ and ‘STUN’ is coded as ‘2364’. What is the code for ‘T’ in the given code language?

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

Q80. DUMB is related to TMCT in a certain way based on the English alphabetical order. In the same way, POYV is related to FGON. To which of the given options is LQUX related, following the same logic?

(a) BIPL
(b) BPKI
(c) BIPK
(d) BIKP

Q81. Seven boxes F, G, H, M, N, O and P are kept one over the other but not necessarily in the same order.

Only two boxes are kept below O. Only one box is kept above N. Only one box is kept between N and H. G is kept immediately above M. F is kept at some place below P. How many boxes are kept between P and G?

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

Q82. 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) BX – HK
(b) GC – MP
(c) TP – ZD
(d) XT – DG

Q83. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete? GLE25 HMF36 ING47 JOH58 ?

(a) KPJ68
(b) KPI68
(c) KPJ69
(d) KPI69

Q84. L, M, N, O, Q, R and S are sitting around a circular table facing the centre of the table. Only one person sits between N and Q when counted from the left of Q. S sits third to the right of R. L sits third to the left of M. S sits to the immediate right of L. O is not an immediate neighbour of L. How many people sit between O and Q when counted from the right of O?

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

Q85. In the following number-pairs, the second number is obtained by applying certain mathematical operation(s) to the first number. Select the number-pair in which the numbers are related in the same way as are the numbers of the following pairs. (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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

130, 26

225, 45

(a) 155, 30
(b) 160, 32

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(c) 200, 42
(d) 185, 36

Q86. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

VKQ 142, ZPU 136, DUY 130, HZC 124, LEG 118, ?

(a) OIL 114
(b) PJK 112
(c) QKM 112
(d) LKJ 114

Q87. Five people (A, B, C, D and E) are sitting in a straight line. They all are facing towards the north. B is sitting immediately between C and E. A is sitting third to the left of E. C is sitting second to the right of D. Who is sitting at the extreme left end of line?

(a) D
(b) E
(c) B
(d) A

Q88. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) £ $ 7 1 1 @ @ 2 © 5 $ & @ £ % # 7 € © @ 8 $ (Right)

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

(a) 2
(b) 0
(c) 1
(d) 3

Q89. Seven boxes A, B, C, D, E, F, and G are kept one over the other but not necessarily in the same order.

Only four boxes are kept between A and E. Only G is kept above A. Only two boxes are kept between B and C. D is kept immediately above F. C is not kept immediately above D.

How many boxes are kept above D?

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

Q90. In a row of 47 students facing north, Shivangi is 21^(st) from the left end. If Ankit is 22^(nd) to the right of Shivangi, what is Ankit's position from the right end of the line?

(a) 4^(th)
(b) 5^(th)
(c) 3^(rd)
(d) 6^(th)

Q91. What should come in place of the question mark (?) in the given series?

31 47 63 79 ? 111 127

(a) 85
(b) 101
(c) 95
(d) 92

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Q92. Refer to the following number and symbol series and answer the question that follows. All numbers are single-digit. Counting to be done from left to right only.

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

If all the symbols and even numbers are dropped from the series, which of the following will be fourth from the right end?

(a) 7
(b) 5
(c) 9
(d) 3

Q93. Each of the digits in the number 8123457 is arranged in ascending order from left to right. The position(s) of how many digits will remain unchanged as compared to that in the original number?

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

Q94. BGLY is related to EIOA in a certain way based on the English alphabetical order. In the same way, NOXG is related to QQAI. To which of the given options is WUGM related, following the same logic?

(a) ZJOW
(b) ZJOI
(c) ZWOJ
(d) ZWJO

Q95. What should come in place of the question mark (?) in the given series?

312 296 280 264 ? 232 216

(a) 242
(b) 248
(c) 260
(d) 240

Q96. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

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

(a) DGF
(b) ORQ
(c) POT
(d) FIH

Q97. Himank starts from Point A and drives 13 km towards West. He then takes a left turn, drives 3 km, turns left and drives 16 km. He then takes a left turn and drives 6 km. He takes a final left turn, drives 3 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° turns only unless specified.)

(a) 3 km to South
(b) 4 km to South
(c) 4 km to North
(d) 3 km to North

Q98. If 2 is added to each even digit and 1 is subtracted from each odd digit in the number 5672493, then which of the following digits will be third from the left in the new number thus formed?

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

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Q99. If 2 is added to each even digit and 1 is subtracted from each odd digit in the number 29134576, then what will be the difference between the greatest and smallest digit in the number thus formed?

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

Q100. K is the son of I. I is the father of L. L is the mother of O. O is the brother of S. How is K related to O?

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

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Regulating Act, 1773

The correct answer is Regulating Act, 1773.

Key Points

• Regulating Act, 1773: This act was passed by the British Parliament to address the governance and financial issues in the East India Company. It created the post of Governor-General of Bengal, who was vested with significant administrative powers.

• The first Governor-General of Bengal was Warren Hastings, appointed under the provisions of this act. His office symbolized the centralization of power in British India.

• The act introduced a council of four members to assist the Governor-General, marking the beginning of structured British administration in India. Hence, the Regulating Act, 1773 is the correct answer.

• The Regulating Act also laid the foundation for the Supreme Court of Calcutta, established in 1774, which was the first British court in India.

• The act was a significant step in reforming the East India Company's governance and marked the beginning of Parliamentary control over its operations.

Additional Information

• Other Important Acts:

• Pitt's India Act, 1784: This act further enhanced British control over the East India Company by establishing a dual system of governance with the creation of the Board of Control. It did not create the post of Governor-General.

• Government of India Act, 1858: This act abolished the East India Company and transferred the governance of India directly to the British Crown. It created the post of Viceroy of India, not Governor-General of Bengal.

• Charter Act, 1813: This act renewed the East India Company's charter but allowed other traders to participate in trade with India. It did not create any new administrative posts like Governor-General.

• Governor-General of Bengal:

• The position was later upgraded to Governor-General of India in 1833 by the Charter Act of 1833, centralizing authority further.

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• The Governor-General was responsible for implementing British policies and maintaining control over territories in India.

• Supreme Court of Calcutta:

• Established under the Regulating Act, 1773, the Supreme Court of Calcutta marked the beginning of a formal British judicial system in India.

• It had jurisdiction over British subjects in Bengal, Bihar, and Orissa.

Important Points

• Key Characteristics of Regulating Act, 1773:

• The act introduced Parliamentary control over the East India Company, marking a significant shift in governance.

• It sought to address corruption and mismanagement within the company and improve accountability.

• Legacy of Governor-General:

• The Governor-General of Bengal played a crucial role in centralizing British administration, eventually leading to the establishment of the Governor-General of India.

• This position was pivotal in implementing British policies and maintaining their control over Indian territories.

Q2. Answer: (b) DAC

The correct answer is DAC.

Key Points

• Design Automation Conference (DAC): The DAC is one of the most prominent global conferences in the field of electronic design automation (EDA). It focuses on design methodologies, tools, and technologies for chip design and systems.

• The 62nd edition of DAC is scheduled to be held in June 2025 in San Francisco. This is a significant event in the technology and chip-design industry, attracting professionals, researchers, and students globally.

• The announcement of the GenAI Chip Hackathon at DAC highlights the conference's dedication to innovative and cutting-edge technologies. The hackathon is expected to address challenges in chip design using Generative AI (GenAI). Hence, this statement is correct.

• DAC's significance: DAC serves as a platform for showcasing advancements in EDA tools, chip-design methodologies, and new research ideas. It also encourages collaboration between academia and industry.

• The inclusion of a hackathon at DAC demonstrates the growing importance of AI-driven solutions in chip design and system optimization. This aligns with the industry's shift towards integrating AI technologies for enhanced performance and efficiency. Hence, DAC is the correct answer.

Additional Information

• DAC Overview:

• The Design Automation Conference (DAC) is one of the oldest and most prestigious conferences in the field of chip design. It began in 1964 and has grown to become a global event attracting industry leaders, innovators, and researchers.

• DAC covers topics related to EDA tools, semiconductor design, machine learning applications in chip design, and system optimization. The conference includes workshops, panels, and keynote sessions.

• Generative AI in Chip Design:

• Generative AI (GenAI): This technology employs AI models to generate solutions for complex design problems. In chip design, GenAI can assist in automating tasks such as layout creation, optimization, and verification.

• The integration of GenAI technologies into chip design processes is expected to reduce development time, improve efficiency, and enable innovation in semiconductor technologies.

• Notable DAC Features:

• The conference offers a unique blend of academic research presentations and industry exhibits showcasing state-of-the-art tools and technologies.

• The addition of events like the GenAI Chip Hackathon reflects the growing emphasis on interdisciplinary approaches to chip design and development.

Important Points

• Comparison of Options:

• ICCAD: The International Conference on Computer-Aided Design focuses on EDA methodologies but does not typically host chip hackathons. Hence, this is not the correct answer.

• ISSCC: The International Solid-State Circuits Conference concentrates on advancements in circuit designs and systems but does not focus on automation or hackathons related to GenAI. Hence, this is not the correct answer.

• Hot Chips: This conference emphasizes the presentation of high-performance chips and architectures but does not focus on EDA tools or hackathons. Hence, this is not the correct answer.

• Future Trends:

• The integration of AI technologies like GenAI into chip design will shape the future of the semiconductor industry, enabling faster

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development and smarter designs.

• Events like the GenAI Chip Hackathon serve as platforms for innovation and skill development, preparing the industry for emerging challenges and opportunities.

Q3. Answer: (d) Agriculture

The correct answer is Agriculture.

Key Points

• At the time of India's independence in 1947, the agriculture sector contributed the largest share to the national income. It was the backbone of the Indian economy during this period.

• Agriculture accounted for nearly 50% of the national income in India at the time of independence. This dominance was because of the large rural population and dependence on farming.

• The majority of the Indian population, approximately 70%-75%, lived in rural areas and relied on agriculture for their livelihood. Hence, the sector played a crucial role in the economy.

• During colonial rule, India's economy was primarily agrarian, and industries were underdeveloped due to the lack of proper investments and infrastructure. Thus, trade, industry, and services contributed less to the national income compared to agriculture.

• The British colonial policies focused on exploiting India's agricultural resources for their benefit, which further reinforced the agricultural dominance in the economy.

• Post-independence, while agriculture contributed the largest share to the national income, efforts were made to diversify the economy and develop industries and services.

• Even though agriculture was the primary contributor at independence, its share in the economy gradually declined with the growth of the industrial and service sectors over the subsequent decades.

• Hence, the correct answer is Agriculture.

Additional Information

• Significance of Agriculture in India's Economy:

• Agriculture has been the foundation of India's economy for centuries, supporting the livelihood of millions.

• At independence, India lacked industrial development, and agriculture was the primary source of income for most people.

• The country predominantly relied on subsistence farming, with farmers growing crops mainly for their consumption.

• Impact of British Rule on Indian Agriculture:

• The British focused heavily on cash crops like cotton, jute, and indigo for export, neglecting food crop production, which led to frequent famines.

• The Zamindari system introduced by the British exploited farmers, leading to financial hardships and poor agricultural practices.

• Transition After Independence:

• Post-independence, the government initiated measures like land reforms, the abolition of the Zamindari system, and the introduction of modern agricultural techniques to improve productivity.

• The Green Revolution in the 1960s further transformed the agricultural sector, making India self-sufficient in food production.

• Over time, the share of agriculture in the national income declined due to the rise of industrialization and the expansion of the service sector.

Important Points

• Sectoral Contributions at Independence:

• Agriculture contributed nearly 50% to the national income.

• The service sector contributed a much smaller share as it was underdeveloped compared to agriculture.

• The industrial sector was highly underdeveloped due to colonial exploitation and lack of investment.

• Current Scenario:

• Today, the services sector is the largest contributor to India's GDP, followed by industries and agriculture.

• Agriculture continues to play a vital role, employing a significant portion of India's population, despite its reduced share in national income.

Q4. Answer: (b) Providing LPG connections to women

The correct answer is Providing LPG connections to women.

Key Points

• Pradhan Mantri Ujjwala Yojana (PMUY) was launched by the Government of India in May 2016. Its primary aim is to provide free LPG connections to women belonging to economically weaker sections (EWS) of society.

• Under this scheme, a subsidy is provided for liquefied petroleum gas (LPG) connections, making clean cooking fuel accessible to households that previously relied on traditional cooking methods like firewood and coal.

• This initiative targets women as the primary beneficiaries, considering their role in managing household cooking and the adverse

health effects of using unclean fuels. Hence, option 2 is correct.

• Eligibility Criteria: Women from Below Poverty Line (BPL) families, identified through the Socio-Economic Caste Census (SECC) data, are eligible for this scheme.

• PMUY aims to reduce indoor air pollution and improve public health by promoting the use of cleaner cooking fuel. Hence, option 2 aligns with the scheme's objectives.

• The scheme also emphasizes women empowerment by easing their cooking burden and improving their quality of life, especially in rural areas.

Additional Information

• Specific Features of PMUY:

• Launch Date: The scheme was launched on May 1, 2016, by the Prime Minister of India, Narendra Modi.

• Implementation: It is implemented by the Ministry of Petroleum and Natural Gas. Beneficiaries receive a financial support of Rs. 1,600 per connection.

• Target Beneficiaries: Women from families below the poverty line, including those belonging to SC/ST communities, Most Backward Classes (MBC), and forest dwellers.

• Benefits of PMUY:

• Health Impact: Reduction in exposure to harmful pollutants like carbon monoxide (CO) and particulate matter (PM2.5), leading to better respiratory and cardiovascular health.

• Environmental Impact: Promotes the use of cleaner fuels, reducing deforestation and carbon emissions.

• Economic Impact: Saves time for women, enabling them to focus on education, work, or other activities.

• Key Achievements:

• Over 9 crore LPG connections have been distributed under PMUY as of 2023.

• The scheme has significantly contributed to increasing LPG penetration in rural areas, especially among economically backward households.

Q5. Answer: (a) Ishwar Chandra Vidyasagar

The correct answer is Ishwar Chandra Vidyasagar.

Key Points

• Ishwar Chandra Vidyasagar, a prominent social reformer during the colonial period in Bengal, is known for his relentless efforts to promote widow remarriage and oppose the practice of child marriage.

• He played a pivotal role in advocating the Hindu Widows' Remarriage Act, 1856, which legalized widow remarriage in India, marking a significant milestone in social reform.

• Vidyasagar was deeply influenced by progressive ideas and sought to improve the status of women in society, challenging orthodox traditions that discriminated against widows. Hence, statement is correct.

• In addition to advocating widow remarriage, Vidyasagar campaigned against child marriage, highlighting its adverse effects on the physical and mental health of young girls.

• He was a staunch believer in gender equality and worked tirelessly to provide access to education for women, establishing several schools for girls. Hence, statement is correct.

• Vidyasagar's reformist actions were met with resistance from conservative elements of society, yet his efforts laid the foundation for progressive changes in Indian society.

• He was instrumental in shaping modern Bengali society and is remembered as a beacon of progress and social change in colonial India. Hence, statement is correct.

• Hence, the correct answer is Ishwar Chandra Vidyasagar.

Additional Information

• Hindu Widows' Remarriage Act, 1856:

• This act was a landmark legislation introduced during British rule in India. It was strongly advocated by Ishwar Chandra Vidyasagar and passed on July 26, 1856.

• The act aimed to remove societal stigma surrounding widow remarriage and provide widows with legal and social recognition to remarry.

• Opposition to Child Marriage:

• Ishwar Chandra Vidyasagar actively campaigned against child marriage, which was widely practiced during the colonial period.

• He emphasized the adverse effects of child marriage on girls' health and sought to create awareness about its detrimental impact on society.

• Contribution to Women's Education:

• Vidyasagar was a pioneer in promoting women's education and founded several schools for girls in Bengal.

• He believed that education was the key to empowering women and enabling them to break free from societal constraints.

Important Points

• Key Characteristics of Ishwar Chandra Vidyasagar:

• He was born on September 26, 1820, in Bengal and is regarded as one of the greatest social reformers in Indian history.

• Vidyasagar was also a noted educationist, philosopher, and philanthropist, contributing significantly to the progress of Indian society.

• Impact of His Reforms:

• His efforts led to the passing of the Hindu Widows' Remarriage Act, which was a turning point for women's rights in India.

• He laid the foundation for future social reform movements, inspiring several generations of reformers to work towards gender equality and human rights.

Q6. Answer: (d) Nylon 6, 6

The correct answer is Nylon 6, 6.

Key Points

• Nylon 6, 6 is a type of polyamide polymer known for its high tensile strength and resilience, making it ideal for industrial applications such as brushes, toothbrush bristles, and cleaning supplies.

• It is created by polymerizing adipic acid and hexamethylene diamine, forming strong molecular chains that give it excellent durability and adaptability.

• This polymer is highly resistant to wear, abrasion, and chemicals, making it suitable for applications requiring long-lasting performance. Hence, statement is correct.

• Nylon 6, 6 has a high melting point and thermal stability, making it usable in environments involving heat or mechanical stress.

• Its flexibility allows it to be molded into various shapes, contributing to its widespread use in consumer and industrial products. Hence, the correct answer is Nylon 6, 6.

Additional Information

• Characteristics of Nylon 6, 6:

• It is a synthetic polymer with high tensile strength and excellent elasticity, making it resistant to deformation under stress.

• Its chemical resistance allows it to withstand exposure to oils, solvents, and other chemicals, making it suitable for industrial environments.

• Thermal properties: Nylon 6, 6 has a melting point of approximately 260°C, enabling its use in high-temperature applications.

• It exhibits low friction and good wear resistance, which makes it ideal for moving mechanical parts and cleaning tools.

• Applications of Nylon 6, 6:

• It is extensively used in manufacturing industrial brushes, toothbrush bristles, machine parts, fabrics, and fishing lines.

• In the automotive industry, it is used for engine components, fuel lines, and other durable parts.

• In construction, Nylon 6, 6 is utilized for ropes and nets due to its strength and resistance to environmental factors.

• Other Options:

• Neoprene: A synthetic rubber used for weather-resistant applications, wetsuits, and seals. It lacks the durability and adaptability of Nylon 6, 6.

• Terylene: A polyester polymer primarily used in textiles, but it does not possess the same mechanical resilience as Nylon 6, 6.

• Teflon: Known for its non-stick properties, Teflon is used in cookware and coatings but is not suitable for bristles or brushes.

Important Points

• History of Nylon:

• Invented in 1935 by Wallace Carothers at DuPont, Nylon revolutionized the synthetic polymer industry.

• Initially used in textile manufacturing, it later found applications in industrial and consumer products due to its versatility.

• Environmental Considerations:

• Nylon production involves petrochemical processes, raising concerns about sustainability and environmental impact.

• Efforts are underway to develop biodegradable alternatives to reduce ecological footprints.

Q7. Answer: (d) Jaspreet Kaur

The correct answer is Jaspreet Kaur.

Key Points

• Jaspreet Kaur made history in the 2025 Khelo India Para Games by becoming the first athlete to break a national record in the competition.

• She achieved this remarkable feat by lifting 101 kg in the 45 kg powerlifting category, setting a new milestone in the sport.

• The event was held in March 2025, and Jaspreet Kaur’s achievement was widely celebrated as a testament to perseverance and dedication. Hence, the correct answer is Jaspreet Kaur.

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• This record-breaking performance highlights the growing recognition and success of para-athletes in India, further emphasizing the importance of inclusive sporting events like the Khelo India Para Games.

Additional Information

• Khelo India Para Games:

• The Khelo India Para Games is an initiative under the Khelo India Program launched by the Government of India to promote sports among differently-abled athletes.

• The event focuses on fostering inclusivity, nurturing talent, and providing a platform for para-athletes to showcase their skills at a national level.

• Powerlifting as a Sport:

• Powerlifting is a strength-based sport where athletes compete in categories based on their body weight.

• Participants must execute three main lifts: the squat, bench press, and deadlift, although specific events like the para-games may focus on one lift, such as the bench press.

• Jaspreet Kaur competed in the 45 kg category and achieved a national record by lifting 101 kg, showcasing her immense strength and determination.

• Importance of Such Achievements:

• Breaking records in events like the Khelo India Para Games brings significant recognition to para-athletes and inspires others to pursue sports despite challenges.

• These achievements are a step towards greater inclusivity and equality in sports, encouraging more investment and attention to differently-abled athletes.

Important Points

• Jaspreet Kaur:

• Jaspreet Kaur's record-setting performance in the 101 kg lift is a significant achievement and has brought her recognition across the country.

• Her performance is a source of inspiration for aspiring para-athletes and highlights the importance of supporting para-sports initiatives.

• Recognition of Para-Athletes:

• Events like the Khelo India Para Games have increased awareness and support for para-athletes, helping them gain recognition at both national and international levels.

• The government's emphasis on inclusive sports platforms ensures that athletes like Jaspreet Kaur get the resources and encouragement needed to excel.

Q8. Answer: (c) Amit Shah

The correct answer is Amit Shah.

Key Points

• Amit Shah is a prominent Indian politician associated with the Bharatiya Janata Party (BJP). He has served as the Union Home Minister of India since May 2019, following the BJP's victory in the 2019 general elections.

• Amit Shah has played a key role in shaping India's internal policies, including national security, counter-terrorism, and administrative reforms.

• As of June 2025, Amit Shah continues to hold the position of Union Home Minister after the BJP's victory in the 2024 general elections. Hence, statement is correct.

• His tenure has been marked by significant decisions such as the abrogation of Article 370 and the reorganization of Jammu and Kashmir into two Union Territories in August 2019.

• Amit Shah has been instrumental in implementing policies related to border management, disaster response, and internal security, making him one of the most influential leaders in the Indian political landscape.

Additional Information

• Amit Shah's Political Career:

• Amit Shah began his political career in the BJP and rose to prominence due to his organizational skills and strategic acumen. He has held various positions within the party, including BJP President from 2014 to 2020.

• Under his leadership, the BJP won several state elections and expanded its influence across India, making it one of the strongest political parties in the country.

• Key Contributions as Union Home Minister:

• Amit Shah has overseen the implementation of landmark decisions, including the Citizenship Amendment Act (CAA) 2019, which sought to provide citizenship to refugees from neighboring countries.

• He has also focused on strengthening India's border infrastructure and enhancing the capacity of paramilitary forces.

• Example: The abrogation of Article 370 and the creation of Jammu and Kashmir as Union Territories in 2019 were significant

milestones under his leadership.

• Other Important Roles:

• Apart from his role as Union Home Minister, Amit Shah has contributed to various other initiatives, such as anti-corruption measures, electoral reforms, and the promotion of good governance.

• His leadership style is characterized by strategic planning, a focus on grassroots-level implementation, and an emphasis on national security.

Important Points

• Key Achievements as Home Minister:

• Amit Shah has worked towards modernizing the police forces and improving disaster response mechanisms to enhance India's internal security framework.

• He has also championed anti-terrorism measures and strengthened India's intelligence agencies for better coordination and effectiveness.

• Impact on Governance:

• His policies have focused on fostering a strong central government while ensuring the efficient functioning of state administrations.

• Amit Shah's leadership has been pivotal in shaping India's domestic and security policies, making him one of the most influential figures in Indian politics.

Q9. Answer: (d) Ajmer

The correct answer is Ajmer.

Key Points

• Luni River is a significant river flowing through the arid region of the Indian desert in Rajasthan.

• The river originates from the western slopes of the Aravalli ranges, near the town of Ajmer in Rajasthan.

• Ajmer is located in the central part of Rajasthan and is surrounded by the Aravalli hills, making it a suitable geographical location for river origins. Hence, the correct option is Ajmer.

• The Luni River flows southwest and drains into the Rann of Kutch, making it one of the few rivers in India that flows into an inland basin rather than the sea.

• Its name "Luni" is derived from its saline water, which is a result of the high salt content in the region. This further highlights the uniqueness of the river.

Additional Information

• Geographical Importance of Ajmer:

• Ajmer is located in the central part of Rajasthan, surrounded by the Aravalli ranges, which play a significant role in the origin of rivers like Luni.

• The region has a semi-arid climate, and rivers originating here often have saline water due to the geological characteristics of the area.

• About the Luni River:

• The Luni River is considered a vital water source for irrigation in the Indian desert region, despite its saline water.

• It originates near Ajmer and flows through districts like Pali, Jodhpur, Barmer, and Jalore.

• The river finally ends in the Rann of Kutch, which is a salt marsh located in Gujarat.

• Other Options:

• Udaipur: Known as the "City of Lakes," Udaipur is located in southern Rajasthan and is famous for its picturesque lakes rather than being a source of the Luni River.

• Rajsamand: It is famous for the Rajsamand Lake and does not serve as the origin point for the Luni River.

• Sirohi: Located in the south-western region of Rajasthan, Sirohi is known for Mount Abu but is not related to the Luni River's origin.

Important Points

• Significance of the Aravalli Ranges:

• The Aravalli ranges are one of the oldest mountain ranges in India, stretching across Rajasthan, Haryana, and Gujarat.

• They play an essential role in influencing the climatic and hydrological patterns of the region, including the origin of rivers like Luni.

• Economic Importance of Luni River:

• Even though the river water is saline, it is extensively used for irrigation in the desert region.

• The river supports agriculture and livestock, making it a critical resource for the arid and semi-arid zones of Rajasthan.

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Q10. Answer: (a) Soapstone

The correct answer is Soapstone.

Key Points

• Soapstone, also known as steatite, was the primary material used in constructing the Chennakeshava Temple in Belur, Karnataka, India.

• This material is widely appreciated for its softness, which makes it easy to carve intricate designs and sculptures, a hallmark of the Hoysala architecture.

• The temple, built during the Hoysala Empire in the 12th century, showcases elaborate carvings and fine details that are made possible due to the workability of soapstone. Hence, Soapstone is the correct answer.

• Soapstone is also durable and resistant to weathering, making it suitable for long-lasting structures like temples.

• The intricate carvings, such as depictions of deities, dancers, and cultural motifs, are made easier by the softness of soapstone, which can be finely detailed by skilled artisans. Hence, the correct material for the Chennakeshava Temple is Soapstone.

Additional Information

• About Soapstone:

• Soapstone is a metamorphic rock composed mainly of talc and magnesium silicate. It is soft, easy to carve, and has been used historically for sculptures and architecture.

• It is durable and weather-resistant, making it a popular choice for constructing temples and other monuments that require intricate detailing.

• Historical Context:

• The Chennakeshava Temple was commissioned by King Vishnuvardhana of the Hoysala Empire in 1117 CE.

• The temple is dedicated to Lord Vishnu and is a UNESCO World Heritage Site nominee due to its architectural brilliance and historical significance.

• Hoysala architecture is characterized by its star-shaped platforms, intricate carvings, and detailed sculptures, all of which were achieved using soapstone.

• Comparison with Other Materials:

• Marble: Although marble is also used for intricate carvings and sculptures, it is harder than soapstone and was not commonly used in Hoysala architecture.

• Sandstone: Sandstone is harder and more commonly used in North Indian temples like those in Rajasthan but lacks the softness required for intricate carvings.

• Granite: Granite is extremely hard and durable but difficult to carve, making it unsuitable for the detailed artistry seen in the Chennakeshava Temple.

Important Points

• Features of Soapstone:

• It is soft and allows artisans to carve intricate details with ease.

• It is weather-resistant and durable, ensuring the longevity of structures like temples.

• Examples of Soapstone Usage:

• Apart from the Chennakeshava Temple, soapstone was used in other Hoysala temples such as Halebidu and Somnathpur.

• It was widely used in South Indian temple architecture during the 12th to 14th centuries CE.

Q11. Answer: (c) Kollywood

The correct answer is Kollywood.

Key Points

• Kollywood is the film industry based in Chennai, Tamil Nadu, and it primarily produces films in the Tamil language. The name "Kollywood" is derived from Kodambakkam, a neighborhood in Chennai, which is the hub of Tamil cinema.

• Tamil cinema is one of the largest film industries in India, known for its rich history, cultural contributions, and technological advancements in filmmaking.

• Kollywood has produced numerous critically acclaimed films, including Enthiran (Robot), Baasha, and Kaala, which have been appreciated both nationally and internationally. Hence, Kollywood is the correct answer.

• The industry features renowned actors, directors, and musicians like Rajinikanth, Kamal Haasan, Mani Ratnam, and A.R. Rahman, who have contributed significantly to the global film scene.

• Chennai is the center of Tamil cinema, with major studios and production houses located in the city. It is often referred to as the Hollywood of South India due to its influence on Indian cinema. Hence, Kollywood is the correct answer.

Additional Information

• Bollywood:

• Bollywood is the Hindi-language film industry based in Mumbai, Maharashtra. It is the largest film industry in India in terms of

revenue and production.

• Bollywood is known for its colorful musicals, dance sequences, and drama, with globally popular films like Dangal, Sholay, and 3 Idiots.

• Mollywood:

• Mollywood refers to the Malayalam film industry, based in Kerala. It is known for realistic storytelling and high-quality cinematography.

• Popular films include Drishyam, Kumbalangi Nights, and Premam.

• Tollywood:

• Tollywood refers to the Telugu-language film industry, based in Hyderabad, Telangana.

• It has produced blockbuster films like Baahubali and RRR, which gained international recognition.

• History of Tamil Cinema:

• Tamil cinema started in the early 20th century. Kalidas (1931) was the first Tamil talkie film.

• It has evolved technologically, with Tamil filmmakers pioneering new innovations in special effects, cinematography, and storytelling.

Important Points

• Cultural Impact:

• Kollywood has a significant impact on Tamil culture and identity, with films often reflecting social issues, traditions, and politics.

• The industry has influenced other regional cinemas and contributed to the global recognition of Indian cinema.

• Key Contributions:

• Kollywood introduced technology-driven movies like Enthiran and 2.0, which showcased advanced special effects.

• The industry continues to produce films that are celebrated for their innovative themes and cultural relevance.

Q12. Answer: (b) Drag it to the Recycle Bin

The correct answer is Drag it to the Recycle Bin.

Key Points

• The Recycle Bin is a special folder in the Windows operating system where deleted files and folders are temporarily stored. This allows users to restore accidentally deleted items if needed.

• To delete a file using the mouse, you can simply drag the file or folder from its original location to the Recycle Bin icon on the desktop. This action moves the file to the Recycle Bin and does not permanently delete it.

• Dragging a file to the Recycle Bin is a simple and efficient way to delete a file without using any keyboard shortcuts or additional software.

• This method ensures that the file can still be retrieved if needed, as it is not permanently removed from the system until the Recycle Bin is emptied manually. Hence, the correct answer is Drag it to the Recycle Bin.

• Other options like "Copy the file," "Left-click the file," or "Minimize the window" do not allow you to delete the file. These actions perform different tasks unrelated to file deletion.

Additional Information

• Functions of the Recycle Bin:

• The Recycle Bin is used as a safeguard to prevent accidental permanent deletion of files. Files moved to the Recycle Bin can be restored to their original location if needed.

• Files in the Recycle Bin remain there until the user empties the bin. Once emptied, the files are permanently deleted and cannot be recovered without specialized software.

• Methods to Delete Files:

• Files can be deleted using various methods, such as:

• Dragging the file to the Recycle Bin (as explained above).

• Right-clicking the file and selecting "Delete" from the context menu.

• Using the Delete key on the keyboard, which also moves the file to the Recycle Bin.

• Permanent Deletion:

• To permanently delete a file (bypassing the Recycle Bin), you can use the Shift + Delete keyboard shortcut. This method does not store the file in the Recycle Bin and removes it immediately from the system.

• Permanent deletion is recommended only when you are absolutely sure that the file is no longer needed.

• Important Note:

• On some operating systems, the Recycle Bin may have a storage limit. If this limit is exceeded, older files in the Recycle Bin may be permanently deleted to make space for newly deleted files.

• It is good practice to regularly check and empty the Recycle Bin to free up disk space, especially if you are running low on

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storage.

Important Points

• The Recycle Bin is only available in Windows operating systems. Other operating systems, like macOS and Linux, have their own mechanisms for file recovery (e.g., Trash in macOS).

• Files deleted from external drives or removable storage devices (e.g., USB drives) may not go to the Recycle Bin and are often permanently deleted.

• Some system files or files with special permissions may not be moved to the Recycle Bin and are permanently deleted upon using the delete option.

Q13. Answer: (d) Estimates Committee

The correct answer is Estimates Committee.

Key Points

• Financial Committees: In the Indian Parliament, there are three significant financial committees: Public Accounts Committee, Estimates Committee, and Committee on Public Undertakings. These committees play a crucial role in ensuring financial accountability and efficiency.

• Estimates Committee: The Estimates Committee is one of the key financial committees of the Parliament. It focuses on examining the estimates included in the budget presented to the Parliament.

• This committee evaluates whether the money allocated to various departments is being utilized efficiently and economically. It also suggests alternative policies to bring efficiency in financial administration. Hence, the correct option is 'Estimates Committee'.

• Committee on Welfare of SCs and STs: This committee is not a financial committee but focuses on ensuring the welfare of Scheduled Castes (SCs) and Scheduled Tribes (STs) by examining policies and programs related to their development and upliftment. Hence, this option is incorrect.

• Committee on Petitions: This committee examines petitions submitted to Parliament on various issues. It is not directly related to financial matters. Hence, this option is incorrect.

• Committee on Privileges: This committee ensures that the privileges of members of Parliament are upheld and examines cases of breach of privilege. It is not a financial committee. Hence, this option is incorrect.

Additional Information

• Estimates Committee:

• The Estimates Committee was constituted in 1950 under the provisions of the Constitution of India.

• It consists of 30 members, all of whom are elected by the Lok Sabha from amongst its members. Members of the Rajya Sabha are not included.

• The term of office of the members is one year.

• Its main objective is to examine the budget estimates and suggest measures for improving the efficiency and economy of financial administration.

• Public Accounts Committee:

• This committee examines the audit reports of the Comptroller and Auditor General (CAG) and ensures accountability in government spending.

• It consists of 22 members (15 from Lok Sabha and 7 from Rajya Sabha).

• Committee on Public Undertakings:

• This committee evaluates the performance of public sector enterprises and suggests measures for their improvement.

• It consists of 22 members (15 from Lok Sabha and 7 from Rajya Sabha).

• Non-Financial Committees:

• Committees like the Committee on Welfare of SCs and STs, Committee on Petitions, and Committee on Privileges focus on social and administrative matters rather than financial issues.

Important Points

• Significance of Financial Committees:

• These committees ensure transparency and accountability in the financial operations of the government.

• They provide recommendations for efficient utilization of public funds, thereby promoting economic growth and development.

• Role of Estimates Committee:

• The committee helps in identifying areas where resources are being wasted and suggests measures for improvement.

• It works to ensure that the budget allocation aligns with the priorities and goals of the government.

Q14. Answer: (b) 70

The correct answer is 70.

Key Points

• The Delhi Legislative Assembly consists of 70 assembly constituencies, which represent the elected members of the state legislature.

• The Delhi Assembly elections are conducted across these 70 constituencies, where eligible voters elect their representatives.

• The elections held on 5 February 2025 followed the same pattern as previous elections, with voting organized in all 70 constituencies.

• The Election Commission of India (ECI) is responsible for overseeing the elections in Delhi, ensuring a fair and transparent process in all constituencies.

• The number 70 has remained constant since the formation of the Delhi Legislative Assembly under the provisions of the Government of National Capital Territory of Delhi Act, 1991. Hence, the correct answer is 70.

Additional Information

• Delhi Legislative Assembly:

• The Delhi Legislative Assembly was established in 1993 under the provisions of the Government of National Capital Territory of Delhi Act, 1991.

• It is a unicameral legislature, consisting of 70 members, each elected from a single-member constituency.

• The Assembly is responsible for making laws on subjects listed in the State List and Concurrent List except for land, police, and public order.

• Delhi Assembly Elections:

• Elections for the Delhi Legislative Assembly are held every five years, unless the assembly is dissolved earlier.

• The elections are conducted under the supervision of the Election Commission of India, which ensures free and fair voting.

• The elected members of the assembly represent their respective 70 constituencies and are responsible for governance and legislation in the National Capital Territory of Delhi.

• Government of National Capital Territory of Delhi Act, 1991:

• This act provided for the creation of the Delhi Legislative Assembly, granting Delhi a partial statehood status.

• Under this act, Delhi has powers similar to those of a state, except in matters of land, police, and public order, which remain under the control of the central government.

Important Points

• Structure of Assembly Constituencies:

• Each of the 70 constituencies represents a geographical area, ensuring proportional representation of the population.

• Constituencies are delineated based on guidelines set by the Delimitation Commission, ensuring fair distribution of voters.

• Role of Election Commission:

• The Election Commission of India oversees all elections in Delhi, ensuring adherence to democratic principles and electoral laws.

• The commission ensures that elections in all 70 constituencies are conducted in a transparent and unbiased manner.

• Historical Insights:

• The first Delhi Assembly elections were held in 1993, following the establishment of the legislative assembly under the 1991 Act.

• The number of constituencies has remained at 70 since its inception.

Q15. Answer: (c) Benares Revolt

The correct answer is Benares Revolt.

Key Points

• The revolt occurred due to the imposition of excessive demands and interference by the British in the affairs of the Benares region.

• Raja Chait Singh was arrested by the British, but he managed to escape, leading to widespread rebellion among his followers in the region.

• The Benares Revolt is considered one of the early instances of resistance against British colonial policies in India.

• Raja Chait Singh was the ruler of Benares and ascended the throne in the 1770s. He was a vassal of the British East India Company but resented British interference in his administration.

• The British administration under Warren Hastings imposed heavy tax demands on Indian rulers to finance their wars and administration.

• Though the revolt was suppressed, it signaled the growing unrest among Indian rulers against British policies.

• The Chuar Revolt: Occurred in West Bengal during the late 18th century. It was a tribal rebellion against British exploitation.

• The Santhal Revolt: Took place in 1855, led by the Santhal community against exploitation by landlords and the British.

• Significance of Early Revolts:

• They also highlighted the socio-political changes brought about by colonial interference in traditional systems.

Q16. Answer: (c) Farming for family consumption

The correct answer is Farming for family consumption.

Key Points

• Subsistence farming is primarily aimed at meeting the needs of the farmer's family. The crops produced are consumed by the family, with little to no surplus left for sale in the market.

• This type of farming is common in developing countries, where farmers rely on traditional techniques and tools for cultivation.

• The focus of subsistence farming is on basic staple crops, such as rice, wheat, maize, and millet, which are essential for the farmer's household consumption.

• Unlike commercial farming, subsistence farming does not emphasize profit-making. It is a small-scale activity centered on the survival of the family. Hence, farming for family consumption is the correct answer.

• Options like "Use of modern irrigation techniques" and "Use of high-yielding varieties" are incorrect as these are usually associated with modern or commercial farming rather than subsistence farming.

• Similarly, "Commercial crop production" is not a characteristic of subsistence farming. Instead, it focuses on producing crops for market sale and profit, which differs from the goal of subsistence farming. Thus, these options are not correct.

• Subsistence farming is often practiced in rural areas with limited resources, where farmers depend on natural rainfall and organic fertilizers.

• This type of farming is labor-intensive and involves the use of simple tools like plows, hoes, and sickles.

Additional Information

• Features of Subsistence Farming:

• Small Land Holdings: The land used for cultivation is usually small and is worked on by the family members themselves.

• Traditional Methods: Farmers rely on traditional farming methods, such as manual plowing and organic fertilizers.

• Rain-fed Irrigation: Most subsistence farming is dependent on natural rainfall rather than advanced irrigation systems.

• Low Productivity: Due to the lack of modern techniques and resources, the productivity of subsistence farming is relatively low.

• Prevalence of Subsistence Farming:

• Developing Countries: Subsistence farming is widely practiced in countries such as India, Nepal, Bangladesh, and many African nations, where agriculture is the primary source of livelihood for many families.

• Remote Areas: It is more common in rural and remote regions with limited access to markets, resources, and infrastructure.

• Comparison with Commercial Farming:

• Objective: While subsistence farming focuses on survival, commercial farming aims at generating profit.

• Use of Technology: Modern machinery and advanced techniques are typically used in commercial farming, unlike subsistence farming.

• Market Orientation: In commercial farming, crops are grown for sale, while in subsistence farming, they are primarily for family consumption.

Important Points

• Types of Subsistence Farming:

• Primitive Subsistence Farming: Practiced in small patches of land using primitive tools. Examples include shifting cultivation and nomadic herding.

• Intensive Subsistence Farming: Characterized by the use of more labor and simple tools to produce maximum yield on small land areas. It is commonly seen in densely populated regions of Asia.

• Challenges in Subsistence Farming:

• Climate Dependency: Farmers are heavily reliant on weather conditions, making them vulnerable to droughts or floods.

• Lack of Modern Inputs: Limited access to fertilizers, quality seeds, and irrigation facilities reduces productivity.

Q17. Answer: (a) Closing the Early Warning Gap Together

The correct answer is Closing the Early Warning Gap Together.

Key Points

• World Meteorological Day is celebrated globally on March 23 every year to commemorate the establishment of the World Meteorological Organization (WMO), which was formed in 1950.

• The theme for World Meteorological Day 2025 is "Closing the Early Warning Gap Together." This theme emphasizes the importance of strengthening early warning systems to enhance disaster preparedness and mitigate the impact of extreme weather events. Hence, this is the correct answer.

• Early warning systems are crucial for saving lives and reducing economic losses caused by natural disasters such as hurricanes, floods, and droughts.

• The selection of this theme aligns with the WMO's commitment to building resilience and ensuring that vulnerable communities have access to timely and accurate weather forecasts, enabling them to take appropriate actions to safeguard lives and property.

• The focus on collaboration, as indicated by the phrase "together," highlights the need for global partnerships, knowledge sharing, and cooperation between nations, organizations, and stakeholders to address the challenges posed by climate change and extreme weather events.

Additional Information

• World Meteorological Day:

• It is celebrated on March 23 to commemorate the establishment of the World Meteorological Organization (WMO) in 1950.

• Each year, the day is celebrated with a specific theme that highlights the importance of meteorology in addressing global challenges such as climate change, disaster risk reduction, and sustainable development.

• World Meteorological Organization (WMO):

• The WMO is a specialized agency of the United Nations responsible for promoting international cooperation in atmospheric science, climatology, hydrology, and related fields.

• It was established in 1950 and has its headquarters in Geneva, Switzerland. The organization works with member countries to enhance weather forecasting and early warning systems.

• Importance of Early Warning Systems:

• Early warning systems provide communities with critical information about impending hazards, enabling them to take timely and effective actions to reduce risks.

• According to the United Nations, timely early warnings can reduce disaster-related mortality by up to 30%. They play a vital role in disaster risk reduction.

• Early warning systems are particularly crucial in regions vulnerable to extreme weather events, such as tropical cyclones, floods, and droughts.

Q18. Answer: (d) Lord Wellesley

The correct answer is Lord Wellesley.

Key Points

• The Subsidiary Alliance was a policy introduced by Lord Wellesley, who served as the Governor-General of India from 1798 to 1805. This policy was aimed at extending British control over the Indian princely states.

• The main feature of this policy was that the Indian rulers had to accept British forces to be stationed within their territories and pay for their maintenance. In return, they would receive protection from external threats and internal revolts.

• The Nizam of Hyderabad was the first Indian ruler to accept the Subsidiary Alliance in 1798. This made Hyderabad a dependent ally of the British Empire, and the Nizam ceded control over his foreign relations to the British. Hence, the correct answer is Lord Wellesley.

• The acceptance of the alliance by the Nizam marked a significant milestone in British expansionism in India, as it allowed them to establish a firm foothold in southern India. This was also a strategic move to counter threats from other powers like the French.

• Under the terms of the Subsidiary Alliance, the Nizam agreed to disband his existing army and rely solely on the British forces for protection. This severely limited his sovereignty and made Hyderabad a satellite state of the British Empire.

Additional Information

• Subsidiary Alliance:

• This was a diplomatic strategy by Lord Wellesley to expand British influence in India without direct annexation. It enabled the British to control the foreign policies of Indian rulers while reducing their military capabilities.

• Under this alliance, Indian rulers were required to station British troops in their territories and pay for their upkeep. Failure to pay would result in the cession of territory.

• Example: Apart from Hyderabad, other states like Mysore, Tanjore, and Awadh also accepted the Subsidiary Alliance.

• Lord Wellesley:

• He was the Governor-General of India from 1798 to 1805. Known for his aggressive expansionist policies, he aimed to establish British supremacy in India through treaties and alliances.

• The Subsidiary Alliance was one of his most significant policies, which allowed the British to exercise indirect control over Indian states.

• Impact of Subsidiary Alliance:

• It increased British control and influence in India. However, it weakened the Indian rulers militarily and financially, making them dependent on the British.

• It paved the way for further annexations and the eventual establishment of British rule over most of India.

Important Points

• Key Features of Subsidiary Alliance:

• The Indian ruler had to disband his own army and rely on British troops for protection.

• The ruler had to pay for the maintenance of British troops, failing which territory would be ceded as payment.

• The ruler could not employ any European in his service without British approval.

• The ruler had to accept a British Resident in his court, who would oversee the administration and act as a representative of British interests.

• Historical Context:

• The Subsidiary Alliance was part of the British strategy to counter the influence of other European powers, particularly the French, in India during the late 18th and early 19th centuries.

• It played a key role in the expansion of British territories and influence in India, paving the way for the establishment of the British Empire.

Q19. Answer: (c) Depsang and Demchok

The correct answer is Depsang and Demchok.

Key Points

• The Line of Actual Control (LAC) is the demarcation line that separates Indian and Chinese territories. It is not an internationally agreed boundary but a result of historical disputes.

• On 21 October 2024, India and China reached an agreement on patrolling arrangements for specific border areas to reduce tensions and ensure peace. These areas included Depsang and Demchok.

• Depsang is a region located in the northern part of Ladakh, adjacent to Aksai Chin. It has been a site of repeated military standoffs between India and China. The agreement aimed to de-escalate tensions in this highly sensitive area.

• Demchok is situated in southeastern Ladakh and has been a contested area due to its proximity to Chinese-controlled territories. Frequent patrol encounters have occurred here, making it crucial for both nations to establish clear patrolling protocols.

• The agreement between the two nations is part of ongoing diplomatic efforts to resolve border disputes and ensure peace along the LAC. Hence, the correct answer is Depsang and Demchok.

Additional Information

• Line of Actual Control (LAC):

• The LAC is approximately 3,488 kilometers long and traverses several regions, including Ladakh, Uttarakhand, Himachal Pradesh, Sikkim, and Arunachal Pradesh.

• It is divided into three sectors: the Western Sector (Ladakh), Central Sector (Uttarakhand and Himachal Pradesh), and Eastern Sector (Arunachal Pradesh).

• The LAC is not a mutually agreed boundary but rather a result of differing perceptions of territorial claims by India and China.

• Depsang Region:

• Depsang Plains are strategically important due to their proximity to the Daulat Beg Oldie airstrip and other critical military installations.

• The region has witnessed standoffs, particularly during the 2020 Galwan Valley clash, highlighting its significance in India-China relations.

• Demchok Region:

• Demchok is located in southeastern Ladakh and is claimed by China as part of Tibet.

• The area is known for its strategic location and frequent military patrolling by both nations.

• India-China Border Disputes:

• India and China have long-standing territorial disputes, primarily over Aksai Chin and Arunachal Pradesh.

• Efforts to resolve these disputes have included agreements such as the 1993 Border Peace and Tranquility Agreement and the 2005 Protocol on Modalities for the Implementation of Confidence-Building Measures.

Important Points

• Recent Developments in India-China Relations:

• The Galwan Valley clash in June 2020 marked a significant escalation in tensions, leading to enhanced military deployment along the LAC.

• Both nations have conducted diplomatic talks and military-level discussions to reduce tensions, with limited success in certain areas like Depsang and Demchok.

• Strategic Importance of Ladakh:

• Ladakh serves as a critical area for maintaining territorial integrity due to its proximity to sensitive regions like Aksai Chin and Tibet.

• The region also holds strategic importance in terms of military logistics, connectivity, and surveillance operations.

Q20. Answer: (c) Uttarakhand

The correct answer is Uttarakhand.

Key Points

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• The 38th National Games are scheduled to be hosted by the state of Uttarakhand in early 2025. The announcement reflects the state's growing capability to organize large-scale events.

• The National Games are a multi-sport event in India where athletes from across the country participate, representing their respective states and union territories. It is considered a prestigious national-level sporting event.

• Uttarakhand is known for its scenic beauty, which makes it a unique location for hosting a national-level event like the National Games. Hence, the correct answer is Uttarakhand.

• Infrastructure: Uttarakhand is working on enhancing its sports infrastructure and facilities to successfully host the games. This includes stadiums, training facilities, and accommodation for athletes and officials.

• Hosting the National Games is expected to boost tourism and local development in the state, leveraging its status as a prominent destination for adventure sports and cultural tourism.

Additional Information

• About Uttarakhand:

• Uttarakhand is a state located in the northern part of India. It was carved out of Uttar Pradesh and became a separate state in November 2000.

• Known as the "Land of the Gods," Uttarakhand is famous for its Himalayan mountains, pilgrimage sites, and natural beauty. The state attracts both tourists and adventure enthusiasts.

• National Games Overview:

• The National Games are organized by the Indian Olympic Association (IOA) in collaboration with the respective state governments.

• The games include a wide array of sports such as athletics, swimming, football, basketball, hockey, and more, aimed at promoting sports culture in the country.

• The last National Games were held in 2022 in Gujarat, which showcased the state's organizational capabilities and infrastructure development.

• Importance of Hosting National Games:

• Hosting such events boosts the local economy through tourism and employment opportunities. It also enhances the state's sports infrastructure.

• It provides a platform for athletes to compete and prepare for international events like the Olympics, Commonwealth Games, and the Asian Games.

• The event helps to identify talent at the grassroots level and promotes a culture of fitness and sportsmanship.

Important Points

• Previous Hosts:

• 2015: Kerala hosted the 35th National Games.

• 2022: Gujarat hosted the 36th National Games.

• 2023: Goa is set to host the 37th National Games, following Gujarat's successful organization.

• Significance of Uttarakhand’s Hosting:

• This marks a significant milestone for Uttarakhand, as it is the first time the state will host the National Games.

• The event is expected to place Uttarakhand on the national and international map for sports tourism.

Q21. Answer: (c) supersonic

The correct answer is supersonic.

Key Points

• The condition where an object moves up to four times faster than the speed of sound is called supersonic speed.

• This speed is also often expressed as a Mach number of up to Mach 4, where Mach 1 is the speed of sound.

• Supersonic refers to conditions where an object travels at a speed between Mach 1 to Mach 5.

• The speed of sound in air is approximately 343 meters per second.

Additional Information

• Categories of Speed:

• Subsonic: Speeds lower than the speed of sound (below Mach 1). Examples include commercial airplanes such as the Boeing 737.

• Transonic: Speeds close to the speed of sound (Mach 0.8–1.2). This range includes aircraft transitioning through the speed of sound, where air pressure changes significantly.

• Supersonic: Speeds greater than the speed of sound (Mach 1–5). Examples include military jets like the F-22 Raptor.

• Hypersonic: Speeds exceeding Mach 5. This is the realm of cutting-edge technology like space shuttles and hypersonic missiles.

• Applications of Hypersonic Technology:

• Military: Hypersonic missiles are being developed by countries like Russia, the United States, and China for rapid, precise strikes.

• Space Exploration: Hypersonic speeds are crucial for vehicles re-entering Earth's atmosphere, such as the Space Shuttle.

• Challenges in Hypersonic Travel:

• High temperatures due to air friction necessitate the use of advanced materials that can withstand extreme heat.

• Complex propulsion systems, such as scramjets, are required to maintain hypersonic speeds.

Important Points

• Scientific Advances:

• Research in hypersonic technology is advancing rapidly, with organizations like NASA and private companies leading the way in developing hypersonic aircraft and space vehicles.

• Hypersonic vehicles have significant potential in the fields of space exploration, defense, and commercial transportation, allowing for faster global travel.

• Historical Development:

• The first hypersonic flight was achieved by the X-15 rocket plane, which reached speeds of Mach 6.72 in 1967.

• Current developments include the U.S. Air Force's Hypersonic Conventional Strike Weapon (HCSW) program and Russia's Avangard hypersonic missile.

Q22. Answer: (d) Bengal

The correct answer is Bengal.

Key Points

• The Faraizi Movement was started in the early 19th century by Haji Shariatullah. It aimed to purify Islam by removing un-Islamic practices and ensuring strict adherence to Islamic principles.

• This movement primarily focused on religious purification and addressing the socio-economic challenges faced by Muslims during the British colonial period.

• The movement was rooted in the region of Bengal, which was under significant British influence during the colonial period. Hence, the correct answer is Bengal.

• Haji Shariatullah emphasized the removal of corrupt practices such as the worship of saints and other customs that were not in line with Islam.

• The movement also had a socio-political aspect, as it opposed the exploitation of peasants by landlords and the British administration.

• The Faraizi Movement later became a platform for raising awareness among Muslims regarding their rights and fighting against British colonial oppression. Thus, this movement played a crucial role in Bengal.

Additional Information

• About Haji Shariatullah:

• Haji Shariatullah was born in 1768 in Bengal and became a prominent figure in Islamic reform movements.

• He traveled to Mecca for pilgrimage, where he was influenced by the Wahhabi movement, which emphasized strict adherence to Islamic teachings.

• Upon returning to Bengal, he initiated the Faraizi Movement, which became widely known for its religious and social reform activities.

• Objectives of the Faraizi Movement:

• The movement aimed at purifying Islam by encouraging Muslims to abandon non-Islamic practices.

• It also sought to empower the peasant class and resist exploitation by landlords and the British authorities.

• The movement promoted unity among Muslims and stressed the importance of following the Faraiz, or obligatory duties, according to Islamic law.

• Impact of the Movement:

• It helped in raising awareness about socio-economic injustices and led to the empowerment of marginalized sections of the Muslim community.

• The movement also inspired other reform movements and contributed to the development of a distinct socio-political identity for Muslims in Bengal.

Important Points

• Reasons for the Focus on Bengal:

• Bengal was under British rule and heavily impacted by colonial policies that led to the exploitation of local resources and people.

• The region had a significant Muslim population, many of whom were economically marginalized and in need of social reform.

• Comparison with Other Movements:

• Punjab: Known for movements like the Singh Sabha Movement focused on Sikh reforms, which differed from the Islamic focus of

the Faraizi Movement.

• Gujarat: Predominantly influenced by Hindu reform movements like the Arya Samaj, not directly connected to the Faraizi Movement.

• Delhi: While significant as a political center, it was not a focal point for the Faraizi Movement, which centered around Bengal.

Q23. Answer: (c) Chicago, USA

The correct answer is Chicago, USA.

Key Points

• The FIA is known for organizing large-scale events that celebrate Indian culture, heritage, and achievements of the Indian-American community. It plays a vital role in fostering unity and collaboration among Indian-origin individuals.

• Hemant Patel was elected as the President of the FIA for the 2025–2026 term. The election highlights the active participation of Indian-Americans in community and organizational leadership.

• The FIA also advocates for issues affecting the Indian diaspora, including immigration reforms, cultural preservation, and fostering better ties between India and the United States.

• The FIA is one of the largest umbrella organizations for people of Indian origin in the United States. It represents various regional and cultural Indian groups.

• India Day Parade: The FIA organizes the annual India Day Parade, which is a significant event celebrating Indian Independence and culture. It attracts thousands of participants and spectators.

• The FIA advocates for issues affecting Indian-Americans, such as immigration, education, and cultural preservation.

• Chicago has a significant population of Indian-Americans, making it an important center for Indian cultural activities in the United States.

• Prominent individuals like Hemant Patel have played a key role in leading organizations like FIA, showcasing the leadership potential of the Indian community abroad.

Q24. Answer: (a) Donates a proton

The correct answer is Donates a proton.

Key Points

• According to the Brønsted-Lowry theory, an acid is defined as a substance that donates a proton (H^+ ion) to another substance. This makes option 1 correct.

• The theory was proposed by Johannes Nicolaus Brønsted and Thomas Martin Lowry in 1923 to explain the behavior of acids and bases in terms of proton transfer.

• Option 2, "Donates a hydroxide ion," is incorrect because hydroxide ions (OH^-) are associated with bases, not acids.

• Option 3, "Accepts a proton," is incorrect because accepting a proton is the property of a Brønsted-Lowry base, not an acid.

• Option 4, "Accepts an electron pair," is not applicable under the Brønsted-Lowry theory. Instead, this is a characteristic of Lewis acids, which accept electron pairs.

• The Brønsted-Lowry theory specifically focuses on the transfer of protons (H^+ ions) between substances, making option 1 the most accurate definition of an acid in this context.

• Therefore, the correct answer is Donates a proton.

Additional Information

• Brønsted-Lowry Theory:

• The Brønsted-Lowry theory defines acids as substances that donate protons (H^+ ions) and bases as substances that accept protons.

• The proton transfer process occurs in aqueous solutions, where acids release protons and bases capture them.

• Examples of Brønsted-Lowry acids include HCl (hydrochloric acid), which donates a proton to water, forming hydronium ions (H3O^+).

• Comparison with Other Theories:

• Arrhenius Theory: Defines acids as substances that increase the concentration of H^+ ions in an aqueous solution and bases as substances that increase OH^- concentration.

• Lewis Theory: Defines acids as electron-pair acceptors and bases as electron-pair donors. This is a broader theory compared to the Brønsted-Lowry definition.

• Examples of Brønsted-Lowry Acids and Bases:

• Acids: HCl, H2SO4, HNO3, CH3COOH (acetic acid).

• Bases: NH3 (ammonia), OH^- (hydroxide ion), and CO_3^{2-} (carbonate ion).

Important Points

• Applications of the Brønsted-Lowry Theory:

• The theory is widely used in chemistry to explain acid-base reactions, such as neutralization reactions where acids and bases react to form water and a salt.

• It helps in understanding the behavior of compounds in water and other solvents, especially in titration and buffer systems.

• Limitations of the Theory:

• The Brønsted-Lowry theory is limited to proton transfer and does not explain acid-base behavior in non-aqueous systems where no protons are involved.

• For example, it cannot explain the behavior of substances like BF3 (boron trifluoride), which act as acids by accepting electron pairs but do not donate protons.

Q25. Answer: (a) Earth Summit, 1992

The correct answer is Earth Summit, 1992.

Key Points

• The Convention on Biological Diversity (CBD) was adopted during the Earth Summit, which was held in Rio de Janeiro, Brazil, in 1992.

• The Earth Summit, officially known as the United Nations Conference on Environment and Development (UNCED), was a landmark global conference that focused on sustainable development and environmental protection.

• The CBD is an international treaty aimed at conserving biodiversity, promoting sustainable use of its components, and ensuring the fair and equitable sharing of benefits arising from the utilization of genetic resources.

• It was one of the key outcomes of the Earth Summit, alongside other agreements like the Agenda 21, the Rio Declaration, and the United Nations Framework Convention on Climate Change (UNFCCC).

• The CBD entered into force on December 29, 1993, and has been ratified by nearly all countries worldwide. Hence, the statement is correct.

Additional Information

• Earth Summit, 1992:

• The Earth Summit was held from June 3 to June 14, 1992, in Rio de Janeiro, Brazil, and was attended by over 100 heads of state and representatives from 178 nations.

• Its goal was to address urgent environmental and development issues such as deforestation, climate change, loss of biodiversity, and sustainable development.

• The summit led to the creation of several key international agreements, including the CBD, UNFCCC, and the United Nations Convention to Combat Desertification (UNCCD).

• Convention on Biological Diversity (CBD):

• The CBD aims to conserve biodiversity, promote its sustainable use, and ensure the fair sharing of benefits from genetic resources.

• It covers ecosystems, species, and genetic resources and emphasizes the importance of protecting traditional knowledge and practices related to biodiversity.

• The CBD has three main objectives: conservation of biological diversity, sustainable use of its components, and equitable sharing of benefits arising from genetic resources.

• Other Conferences Mentioned:

• Stockholm Conference (1972): Known as the United Nations Conference on the Human Environment, it was the first major international meeting on environmental issues. It led to the establishment of the United Nations Environment Programme (UNEP).

• Paris Agreement (2015): An international treaty within the UNFCCC, focused on limiting global warming to below 2 degrees Celsius.

• Kyoto Conference (1997): Adopted the Kyoto Protocol, an international treaty that committed industrialized countries to reduce greenhouse gas emissions.

Important Points

• Key Facts about the CBD:

• As of October 2023, the CBD has been ratified by 196 parties, including nearly every country except the United States.

• The CBD has inspired several protocols, such as the Cartagena Protocol on Biosafety (2003) and the Nagoya Protocol on Access and Benefit Sharing (2014).

• Significance of the Earth Summit:

• The summit marked the beginning of global cooperation on environmental issues and sustainable development.

• It highlighted the interdependence of economic development and environmental preservation.

Q26. Answer: (b) Next Generation Launch Vehicle

The correct answer is Next Generation Launch Vehicle.

Key Points

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• NGLV (Next Generation Launch Vehicle) is a part of the Indian Space Research Organisation (ISRO)'s initiative to develop advanced rocket technologies for future space missions.

• The NGLV is designed to be a successor to ISRO’s existing launch vehicles, such as the Polar Satellite Launch Vehicle (PSLV) and Geosynchronous Satellite Launch Vehicle (GSLV).

• This new launch vehicle aims to meet the demands for launching heavier payloads into various orbits, including geostationary, low Earth, and deep space missions.

• NGLV incorporates cutting-edge technologies such as reusable components, advanced propulsion systems, and improved efficiency to reduce costs and enhance reliability.

• It is expected to play a critical role in India’s future deep space exploration missions and in meeting the growing demands for satellite launches worldwide.

• The development of NGLV reflects ISRO’s commitment to advancing India’s space capabilities and ensuring competitiveness in the global space launch market.

Additional Information

• Indian Space Research Organisation (ISRO):

• ISRO is India’s premier space agency, established in 1969 and headquartered in Bengaluru. It is responsible for advancing space technology and conducting space missions for civilian and military applications.

• ISRO has developed several successful launch vehicles, including the PSLV, GSLV, and GSLV Mk III, which have placed satellites into orbit for communication, navigation, Earth observation, and interplanetary exploration.

• Key achievements: ISRO's remarkable missions include Chandrayaan (India’s lunar exploration program), Mangalyaan (Mars Orbiter Mission), and the Gaganyaan human spaceflight program.

• Importance of NGLV:

• The NGLV is vital for India’s ambition to expand its presence in the space sector, especially in launching heavier payloads and undertaking interplanetary exploration missions.

• The vehicle is expected to have advanced features such as reusable stages, modular design, and compatibility with various payloads.

• It will help India compete globally in the space launch industry, offering cost-effective and reliable solutions for satellite deployments.

• Existing Launch Vehicles:

• PSLV: Known for its versatility, PSLV has launched satellites into various orbits, including polar and geostationary transfer orbits. It has been operational since 1993.

• GSLV: Designed for heavier payloads and geostationary missions, it incorporates cryogenic engine technology. First launched in 2001.

• GSLV Mk III: India’s most powerful rocket, used for heavy payloads and deep space exploration. It was first launched in 2014 and is integral to the Gaganyaan mission.

Important Points

• Global Space Industry:

• The global space industry is valued at around $400 billion, with satellite launches being a key contributor.

• India has become a key player in offering cost-effective satellite launching services, with ISRO being renowned for its low-cost missions.

• Key Features of NGLV:

• Reusable components: This feature will reduce costs and make launches more sustainable.

• Advanced propulsion systems: Allowing for greater efficiency and higher payload capabilities.

• Modular design: Enabling flexibility to adapt to different mission profiles and payloads.

Q27. Answer: (a) Observe the Sun's outermost layer

The correct answer is Observe the Sun's outermost layer.

Key Points

• Aditya-L1 Mission: The Aditya-L1 mission is India’s first dedicated solar mission, developed by the Indian Space Research Organisation (ISRO). Its primary objective is to study the Sun's outermost layer, known as the corona, and understand solar phenomena.

• Lagrange Point 1: The spacecraft is stationed in a halo orbit around the Lagrange Point 1 (L1), which is approximately 1.5 million kilometers from Earth. This position provides a continuous view of the Sun without the interference of eclipses or occultation.

• Scientific Goals: The mission aims to study solar wind, solar radiation, and magnetic field dynamics, providing crucial insights into the behavior of space weather and its impact on Earth.

• Instruments: Aditya-L1 is equipped with seven payloads, including the Visible Emission Line Coronagraph (VELC) and Solar Ultraviolet Imaging Telescope (SUIT), to observe the Sun's atmosphere and its dynamics.

• Importance: By studying the Sun, ISRO's Aditya-L1 mission contributes to global efforts in understanding solar energy, space weather, and solar storms, which have the potential to affect satellites, communication systems, and power grids.

• Hence, the correct objective of the Aditya-L1 mission is to "Observe the Sun's outermost layer."

Additional Information

• Aditya-L1 Mission Details:

• Aditya-L1 was launched by ISRO aboard the PSLV-C57 in September 2023. It is named after the Sun god Aditya in Indian mythology.

• The spacecraft is equipped with instruments such as the VELC, SUIT, Solar Low Energy X-ray Spectrometer (SoLEXS), and others to observe the Sun's corona, chromosphere, and photosphere.

• Lagrange Point 1 (L1):

• L1 is a position in space where the gravitational forces of the Earth and the Sun balance the orbital motion of a satellite. Aditya-L1's placement here allows uninterrupted observations of the Sun.

• This strategic location enables the spacecraft to collect real-time data on solar activities, such as solar flares and coronal mass ejections, which are crucial for studying space weather.

• Impacts of Solar Studies:

• Understanding solar phenomena helps predict geomagnetic storms and their effects on Earth. These storms can disrupt satellite communications, navigation systems, and even power grids.

• The research will also assist in improving space weather models, ensuring better preparedness for potential disruptions caused by solar activities.

Important Points

• Other Missions for Comparison:

• Mars Orbiter Mission: India's first interplanetary mission launched in 2013 aimed to study Mars' atmosphere, not the Sun.

• Chandrayaan Missions: These missions focus on lunar exploration, including studying the Moon's surface and water presence.

• Deep Space Missions: Missions like NASA's Voyager and ISRO's planned Shukrayaan focus on exploring deep space phenomena, rather than the Sun.

• Significance of Aditya-L1:

• Aditya-L1 is a landmark for India's space program as it marks the nation's first attempt to study the Sun directly and contribute to global solar research.

• The mission is expected to provide valuable data for understanding the Sun's influence on the Earth and its environment.

Q28. Answer: (b) RAM

The correct answer is RAM.

Key Points

• RAM (Random Access Memory) is a type of volatile memory, meaning it loses all stored data when the power is turned off. This is because RAM is designed to store data temporarily for immediate access by the processor.

• RAM is used to store data and instructions that are actively being used or processed by the computer. Once the system is powered down, all data stored in RAM is erased.Hence, RAM loses data when power is turned off.

• ROM (Read-Only Memory), in contrast, is a type of non-volatile memory, meaning data stored within ROM remains intact even when the system is powered off. Hence, ROM does not lose data when power is turned off.

• USB flash drives and hard disk drives are also examples of non-volatile storage devices. They retain data regardless of the power state of the device.Hence, neither USB flash drives nor hard disk drives lose data when power is turned off.

Additional Information

• Characteristics of RAM:

• Volatile Memory: RAM requires continuous power to maintain its data. When the power supply is interrupted, all data stored in RAM is lost.

• Speed: RAM is significantly faster than other types of storage like hard drives or SSDs, making it ideal for temporary storage of active processes.

• Types: Common types of RAM include DRAM (Dynamic RAM) and SRAM (Static RAM). DRAM is widely used for main memory, while SRAM is used for cache memory due to its faster speed.

• Characteristics of ROM:

• Non-Volatile Memory: ROM retains its data even when the system is powered off. It is used to store critical data such as firmware.

• Usage: ROM is commonly used in embedded systems and devices to store software that needs to persist across power cycles, such as the BIOS in computers.

• USB Flash Drive:

• Portable Storage: USB flash drives are non-volatile storage devices used to transfer data between systems or store files externally.
• Durability: Data remains intact even after the device is removed or the power is turned off.
• Hard Disk Drive (HDD):
• Non-Volatile Memory: HDDs are used for long-term storage of data. Data remains intact even when the computer is powered off.
• Storage Capacity: HDDs provide large storage capacity for personal and enterprise use compared to RAM.

Important Points

• Comparison of RAM and ROM:
• RAM: Volatile memory used for temporary storage of active processes. Data is lost when power is turned off.
• ROM: Non-volatile memory used for permanent storage of critical data. Data is retained even when power is turned off.
• Applications of RAM and ROM:
• RAM: Used in computers, laptops, and smartphones to manage active processes and tasks.
• ROM: Used in embedded systems, firmware storage, and devices requiring persistent software.
• Evolution of Storage Devices:
• USB Flash Drives: Portable non-volatile storage devices introduced in the early 2000s.
• HDD: Mechanical storage devices that have been widely used since the mid-20th century for long-term data storage.

Q29. Answer: (d) Deposition by rivers and wave action along the coast

The correct answer is Deposition by rivers and wave action along the coast.

Key Points

• Lagoons are shallow water bodies separated from the main sea by sandbars, barrier islands, or coral reefs. They are commonly found along the Eastern Coastal Plains of India.
• The Eastern Coastal Plains are characterized by their low-lying terrain, which facilitates the accumulation of sediments brought by rivers and waves.
• The process of deposition by rivers involves the movement of sediments like sand and silt from rivers into the coastal areas, which eventually creates sandbars and barriers that form lagoons. Hence, the correct explanation is deposition by rivers and wave action.
• Wave action plays a crucial role in forming lagoons. Waves deposit sediments along the coastline, creating a barrier between the lagoon and the open sea.
• Additionally, lagoons along the eastern coast are more prominent due to the nature of the coastline, which is relatively flat and conducive to sediment accumulation. Hence, the statement explaining deposition by rivers and wave action is correct.

Additional Information

• Formation of Lagoons:
• Wave action: Lagoons are formed when waves deposit sand and other sediments along the coast, creating barriers that isolate small water bodies.
• River deposition: Rivers often carry sediments like sand and silt from their upper courses to the coastal areas. These sediments accumulate over time, forming sandbars that create lagoons.
• Geographical features: Lagoons are typically found in coastal regions with flat terrain and shallow coastlines, as seen along the Eastern Coastal Plains of India.
• Characteristics of Eastern Coastal Plains:
• The Eastern Coastal Plains of India are broader and more fertile compared to the Western Coastal Plains. They extend along the Bay of Bengal.
• Examples: Well-known lagoons in India include the Chilika Lake in Odisha, which is one of the largest lagoons in the world.
• Other factors influencing lagoon formation:
• Tides: Tidal activities play a role in maintaining the water flow in lagoons.
• Human intervention: In some areas, human activities like the construction of dams or embankments have also contributed to the formation of lagoons.

Important Points

• Examples of Lagoons in India:
• Chilika Lake: Located in Odisha, it is the largest coastal lagoon in India and a vital ecosystem supporting diverse flora and fauna.
• Pulicat Lake: Situated on the border of Andhra Pradesh and Tamil Nadu, it is another significant lagoon formed due to deposition by rivers and wave action.

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Q30. Answer: (d) Jyothi

The correct answer is Jyothi.

Key Points

• Jyothi is the name of the scheme launched by the Chief Minister of Kerala in May 2025.

• The scheme aims to provide education to migrant children, ensuring their integration into mainstream education systems.

• This initiative seeks to address the challenges faced by migrant children due to language barriers, cultural differences, and the lack of access to quality education. Hence, statement is correct.

• Jyothi involves setting up specialized learning centers and appointing trained educators who understand the unique needs of migrant children.

• It also includes providing basic facilities like books, uniforms, and digital tools to ensure a conducive learning environment. Hence, the correct answer is Jyothi.

Additional Information

• Challenges faced by migrant children:

• Migrant children often face issues like language barriers, lack of access to schools, and discrimination, which hinder their educational progress.

• Due to frequent relocations, these children struggle to adapt to new academic and social environments, resulting in high dropout rates.

• Government initiatives for education:

• India has various schemes like Samagra Shiksha Abhiyan, aimed at universalizing elementary education.

• Specific programs like Mid-Day Meal Scheme and Right to Education Act focus on retaining students in schools and improving their learning outcomes.

• Jyothi Scheme – Features and Impact:

• The scheme emphasizes inclusive education by addressing the unique needs of migrant children.

• It includes the creation of multilingual teaching aids and appointment of educators proficient in regional languages.

• Through specialized centers, Jyothi aims to reduce dropout rates and foster academic growth among migrant children.

Important Points

• Key objectives of Jyothi Scheme:

• To provide quality education to migrant children and integrate them into the mainstream education system.

• To create a supportive learning environment by addressing language and cultural barriers.

• Additional efforts in Kerala:

• Kerala has been proactive in implementing educational reforms, achieving the highest literacy rate in India.

• The state promotes inclusive policies, focusing on marginalized groups and ensuring access to quality education for all.

Q31. Answer: (d) The Harappans used only gold to make tools, pots and pans.

The correct answer is Option 4.

Key Points

• The Harappans were skilled artisans, particularly in crafting ornaments using materials like carnelian, lapis lazuli, gold, silver, and other semiprecious stones. Beads made of carnelian were among the most favoured ornaments. Hence, statement 1 is correct.

• The Harappans engaged in active trade. They exported ornaments, timber, and various objects of daily use, and imported goods like gold, copper, and other raw materials for their industries. This indicates a well-established trade network. Hence, statement 2 is correct.

• Trade was an integral part of Harappan society, as evident from the discovery of seals, weights, and other trade-related artifacts. Their trade extended to Mesopotamia and other contemporary civilizations. Hence, statement 3 is correct.

• The statement that the Harappans used only gold to make tools, pots, and pans is incorrect. The Harappans were known to use copper, bronze, and stone for making tools and utensils. Gold was primarily reserved for ornaments and jewelry due to its value and soft nature, which made it unsuitable for crafting tools or utilitarian items. Hence, statement 4 is incorrect.

• Thus, the correct answer is Option 4.

Additional Information

• Overview of the Harappan Civilization:

• The Harappan Civilization, also known as the Indus Valley Civilization, flourished between approximately 3300 BCE and 1300 BCE.

• It spanned modern-day Pakistan, India, and parts of Afghanistan, covering an area of about 1.25 million square kilometers.

• The civilization was characterized by advanced urban planning, including the use of grid layouts, drainage systems, and

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granaries.

• Trade and Economy:

• The Harappans traded with Mesopotamia, Central Asia, and other neighboring regions. Trade items included textiles, beads, pottery, and semi-precious stones.

• Artifacts like seals and weights indicate a standardized system for trade and commerce.

• They imported raw materials such as lapis lazuli from Afghanistan, copper from Rajasthan and Oman, and timber from the Himalayas.

• Tools and Materials Used by Harappans:

• The Harappans primarily used copper, bronze, and stone for crafting tools, weapons, and utensils.

• Gold was reserved for making ornaments like necklaces, rings, and other decorative items.

• Other materials like terracotta and shell were used to create figurines and ornaments.

Important Points

• Significance of Carnelian:

• Carnelian, a reddish-brown semi-precious stone, was one of the most popular materials for crafting beads and ornaments in the Harappan civilization.

• It was often polished and shaped using advanced techniques to create intricate designs.

• Urban Planning:

• The Harappan cities, such as Harappa and Mohenjo-Daro, showcased remarkable urban planning with well-organized streets, brick houses, and drainage systems.

• These features reflected a high level of engineering and architectural expertise.

• Use of Gold:

• Gold was primarily used for decorative purposes and not for practical tools or utensils due to its softness.

• Examples include gold jewelry excavated from various Harappan sites, indicating its use for aesthetic purposes.

Q32. Answer: (b) Deflation hollow

The correct answer is Deflation hollow.

Key Points

• Deflation hollows are shallow depressions formed in desert landscapes due to wind erosion. Strong winds remove loose particles from the surface, creating depressions over time.

• These hollows are typically found in arid or semi-arid regions where the wind has sufficient force to erode and carry away fine particles such as sand and silt.

• The process of deflation, which refers to the removal of fine soil and sediment by wind, is responsible for the formation of these hollows. Hence, the term "deflation hollow" is appropriate for this feature.

• Deflation hollows vary in size, ranging from small pits to large depressions that can span several kilometers.

• The most significant examples of deflation hollows are found in regions like the Sahara Desert and the Kalahari Desert, where strong winds persist over time. Hence, the correct answer is Deflation hollow.

Additional Information

• Pediment:

• A pediment is a gentle slope or broad, flat area typically found at the base of mountains or hills. It is formed by erosion and deposition, not specifically wind erosion.

• Pediments are generally covered with alluvial deposits and are not considered shallow depressions. Hence, this is not the correct answer.

• Playa:

• A playa is a dry lake bed found in desert areas. It forms when water evaporates, leaving behind salt, clay, and other sediments.

• Unlike deflation hollows, playas are generally flat and expansive, and their formation is more related to evaporation rather than wind erosion. Hence, this is not the correct answer.

• Inselberg:

• An inselberg is an isolated hill or mountain that rises abruptly from a plain. It is formed due to the weathering and erosion of surrounding rock, leaving behind resistant rock.

• Inselbergs are solid rock formations and do not resemble shallow depressions. Examples include Uluru in Australia. Hence, this is not the correct answer.

Important Points

• Deflation Hollow Characteristics:

• The size of deflation hollows depends on the intensity and duration of wind activity. Stronger winds lead to the formation of larger

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hollows.

• Deflation hollows are often found in areas with loose, unconsolidated sediments, such as sand or silt.

• Examples of Deflation Hollows:

• The Qattara Depression in Egypt is one of the largest deflation hollows in the world, spanning over 18,000 square kilometers.

• Other notable examples include the Turpan Depression in China and various hollows in the deserts of North America.

Q33. Answer: (a) operational efficiency and competitiveness

The correct answer is operational efficiency and competitiveness.

Key Points

• Privatisation refers to the transfer of ownership, management, and control of public enterprises to private entities. Its main goal is to improve the operational efficiency and make enterprises more competitive in the market.

• Operational efficiency increases because private entities focus on cost reduction, profit maximization, and resource optimization, which leads to better productivity and service delivery.

• Privatisation reduces bureaucratic control and political influence in decision-making processes. Private management tends to prioritize business goals over political or administrative considerations. Hence, statement 3 and 4 are not the primary aims.

• Competitiveness is enhanced as privatized enterprises need to compete in the market, encouraging innovation, customer satisfaction, and better quality of products or services.

• Privatisation also reduces government expenditure as the financial burden of maintaining public enterprises shifts to private entities, allowing the government to focus resources on other sectors. However, improving government expenditure is not the primary aim.

• The above reasons make the correct answer operational efficiency and competitiveness, which are the core objectives of privatisation.

Additional Information

• Privatisation:

• Privatisation can be implemented through various methods such as disinvestment, outright sale, public-private partnerships (PPP), and outsourcing.

• It aims to bring in private capital, expertise, and management practices to improve efficiency and competitiveness in sectors such as transport, energy, banking, and manufacturing.

• Advantages of Privatisation:

• Increased efficiency: Private enterprises typically operate with a goal to maximize profits, which drives operational efficiency and innovation.

• Competitiveness: It fosters competition, leading to better products and services for consumers.

• Reduces financial burden: The government can allocate funds to crucial areas such as education, healthcare, and infrastructure.

• Disadvantages of Privatisation:

• Social inequality: Privatised enterprises may prioritize profit over social welfare, leading to disparities in access to essential services.

• Job insecurity: Privatisation often leads to workforce downsizing as private entities aim to reduce operational costs.

Important Points

• Examples of Privatisation:

• The disinvestment of companies such as Air India and Bharat Petroleum Corporation Limited (BPCL) are examples of privatisation in India.

• Privatisation of Indian Railways: Initiatives like private trains such as Tejas Express are steps towards introducing private players in rail transportation.

• Global Examples:

• In the United Kingdom, privatisation efforts include the sale of British Telecom, British Airways, and British Gas under Margaret Thatcher.

• Privatisation in the United States: The US has privatized sectors like telecommunications, railways, and energy, leading to improved market dynamics.

Q34. Answer: (b) Sonebhadra

The correct answer is Sonebhadra.

Key Points

• Rihand Hydroelectric Project: The Rihand Dam, also known as the Govind Ballabh Pant Sagar, is located in the district of Sonebhadra in the state of Uttar Pradesh. It is one of the most significant hydroelectric projects in the region.

• Location: The dam is built across the Rihand River, which is a tributary of the Son River. This region is known for its significant

contributions to energy production in India.

• Hydroelectric Power Generation: The Rihand Hydroelectric Project plays a vital role in generating electricity and providing power to nearby regions. The project has helped meet the increasing energy demands of Uttar Pradesh and its neighboring states.

• Reservoir: The dam creates a reservoir known as Govind Ballabh Pant Sagar, which is the largest artificial lake in India. It is an essential water source for irrigation and supports the livelihoods of farmers in the area.

• Economic Importance: The region around the Rihand Dam is rich in natural resources, including coal, which has led to the establishment of several power plants and industries in Sonebhadra.

• Tourism Potential: The Rihand Dam and its surrounding areas have become a popular destination for tourists due to their scenic beauty and the vast expanse of the reservoir.

• Environment: While the dam has brought significant benefits, it has also impacted the environment, including the displacement of people during its construction and changes to the local ecosystem.

Additional Information

• Sonebhadra District:

• Location: Sonebhadra is situated in the southeastern part of Uttar Pradesh. It shares borders with Madhya Pradesh, Chhattisgarh, Jharkhand, and Bihar.

• Natural Resources: Sonebhadra is rich in resources like coal, limestone, and bauxite. It is referred to as the "Energy Capital of India" due to its numerous power plants.

• Power Plants: The district houses several thermal and hydroelectric power plants, which contribute significantly to India's energy production.

• Rihand River:

• Tributary: The Rihand River is a tributary of the Son River, which further joins the Ganga River. It originates in Madhya Pradesh and flows through Uttar Pradesh.

• Significance: The river supports irrigation, drinking water supply, and industrial activities in the region.

• Govind Ballabh Pant Sagar:

• Largest Reservoir: It is the largest artificial lake in India, with a catchment area of about 37,583 square kilometers.

• Uses: The reservoir is used for irrigation, drinking water, fisheries, and recreational activities.

Important Points

• Historical Context:

• Construction: The Rihand Dam was constructed in the late 1950s and was inaugurated in 1962.

• Purpose: The primary objective of the dam was to provide irrigation facilities and generate hydroelectric power for the region.

• Challenges:

• Environmental Impact: The construction of the dam led to the submergence of villages, displacement of people, and changes to the local flora and fauna.

• Rehabilitation: Efforts were made to rehabilitate the displaced communities, but challenges remain in ensuring their livelihoods and social integration.

Q35. Answer: (b) Sikhs from Pakistan

The correct answer is Sikhs from Pakistan.

Key Points

• The Citizenship (Amendment) Act, 2019 provides expedited citizenship for members of specific religious communities persecuted in neighboring countries such as Pakistan, Afghanistan, and Bangladesh.

• The Act reduced the residency requirement for citizenship from 12 years to 6 years for certain groups. These groups include Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians fleeing religious persecution in the aforementioned countries.

• It specifically mentions communities such as Sikhs from Pakistan, Hindus from Bangladesh, Buddhists from Afghanistan, etc., as eligible for accelerated citizenship. Hence, Sikhs from Pakistan are eligible.

• The Act does not cover Jews from Israel or Buddhists from Nepal, as it focuses on religious minorities persecuted in specific neighboring countries. Hence, statements regarding Buddhists from Nepal and Jews from Israel are incorrect.

• Similarly, Hindus from Sri Lanka do not fall under the purview of this Act, as Sri Lanka is not one of the countries mentioned in the Act. Hence, this statement is incorrect.

• Hence, the correct answer is Sikhs from Pakistan.

Additional Information

• Citizenship (Amendment) Act, 2019:

• This Act amends the Citizenship Act, 1955 to allow members of certain persecuted religious communities from Pakistan, Bangladesh, and Afghanistan to obtain citizenship faster.

• It applies to Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians who entered India before 31st December 2014 due to

religious persecution.

• Key Provisions:

• The Act reduces the residency requirement for citizenship via naturalization from 12 years to 6 years for eligible communities.

• It excludes certain areas such as tribal areas of Assam, Meghalaya, Mizoram, and Tripura, as well as areas under the Sixth Schedule and states protected by the Inner Line Permit (ILP).

• Exclusions from the Act:

• The Act does not cover Muslims from Pakistan, Bangladesh, or Afghanistan, as the focus is on religious minorities facing persecution in these countries.

• It also does not apply to refugees from other countries like Myanmar, Sri Lanka, or Nepal.

• The Act has sparked debates and protests regarding its constitutionality and alleged discrimination based on religion.

Important Points

• Legal Challenges:

• The Act has faced criticism for allegedly violating the secular principles enshrined in the Indian Constitution. Critics argue that it excludes Muslims and focuses solely on specific religious groups.

• Supporters of the Act argue that it provides much-needed relief to minorities fleeing persecution and aligns with India's historic role as a refuge for oppressed communities.

• Historical Context:

• India has historically provided asylum to persecuted communities, such as the Parsis fleeing Iran and Tibetan Buddhists escaping Chinese oppression.

• The Partition of India in 1947 led to mass migrations and significant challenges for religious minorities in Pakistan and Bangladesh.

• The Act seeks to address these historical injustices faced by religious minorities in neighboring countries.

Q36. Answer: (b) Dehradun

The correct answer is Dehradun.

Key Points

• Dehradun is the capital of Uttarakhand, a state in northern India. It is known for its picturesque landscapes, educational institutions, and historical significance.

• The opening ceremony of the 2025 National Games is scheduled to be hosted in Dehradun, highlighting the city's capability to organize large-scale national events.

• The city has been chosen due to its modern infrastructure, connectivity, and ability to accommodate a large number of participants and spectators. Hence, Dehradun is the correct option.

• The National Games is an important sporting event in India that aims to promote athletic talent and encourage sports culture across the country.

• Dehradun's geographical location, being surrounded by the foothills of the Himalayas, makes it an attractive venue for such prestigious events.

Additional Information

• Dehradun's Significance:

• Dehradun is located in the Doon Valley, at the foothills of the Himalayas, between the Ganga and Yamuna rivers. Its natural beauty and favorable climate make it a popular tourist destination.

• The city is home to several prestigious institutions, including the Indian Military Academy (IMA), Forest Research Institute (FRI), and Doon School, which contribute to its reputation as a hub of education and training.

• National Games:

• The National Games is a multi-sport event held in India to showcase and promote athletic talent across various disciplines.

• The event has its roots in the Indian Olympic Games, which were first held in 1924.

• The Games provide a platform for athletes to prepare for international competitions, including the Olympics and Asian Games.

• Other Cities Mentioned:

• Haridwar: A religious city in Uttarakhand, known for the Kumbh Mela and the Ganga Aarti. It is not typically used for sporting events due to its focus on spiritual tourism.

• Patna: The capital of Bihar, known for its historical and cultural significance, but lacks the infrastructure required for hosting an event like the National Games.

• Nainital: A hill station in Uttarakhand famous for its natural beauty, but its geographical constraints make it unsuitable for large-scale events.

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Q37. Answer: (a) Vatican City

The correct answer is Vatican City.

Key Points

• Vatican City is the correct answer because it is the official residence of the Pope, the spiritual leader of the Catholic Church.

• When a Pope passes away, his funeral is traditionally held in Vatican City, which is the sovereign city-state within Rome, Italy.

• President Murmu, representing India at the funeral of Pope Francis, would naturally visit Vatican City, as it is the central hub of the Catholic Church and the site of the funeral. Hence, Vatican City is the correct answer.

• The other options like Italy, France, or Germany are incorrect because while Vatican City is geographically surrounded by Italy, it is an independent city-state and not part of Italy.

• Pope Francis has been the head of the Catholic Church and sovereign of the Vatican City State since March 13, 2013. His funeral would be held in Vatican City as per tradition. Hence, Vatican City is the correct answer.

Additional Information

• Vatican City:

• Vatican City is the smallest independent state in the world, both by area and population. It covers an area of about 44 hectares (110 acres).

• It is located within the city of Rome, Italy, but operates as an independent sovereign entity.

• The Pope resides in Vatican City, specifically at the Apostolic Palace, and the city is governed by the Holy See.

• Pope Francis:

• Pope Francis, born Jorge Mario Bergoglio, became the Pope on March 13, 2013. He is the first Pope from the Americas and the first Jesuit Pope.

• He is widely recognized for his humility, emphasis on mercy, and focus on issues such as poverty, environmental conservation, and social justice.

• Funeral of a Pope:

• A Pope's funeral is traditionally held in St. Peter's Basilica or St. Peter's Square, located in Vatican City.

• The ceremony involves a period of mourning, followed by a public Mass attended by world leaders, religious figures, and the faithful.

• After the funeral, the Pope is buried in the crypt beneath St. Peter's Basilica.

Important Points

• Protocol for World Leaders:

• When a significant religious leader like the Pope passes away, it is customary for heads of states and governments to attend the funeral.

• This attendance represents respect for the institution, the leader, and the followers of the religion.

• Significance of Vatican City:

• As the spiritual center of the Catholic Church, Vatican City holds tremendous religious and historical importance. It is home to St. Peter's Basilica, the Sistine Chapel, and the Vatican Museums.

• It also serves as the administrative center for the global Catholic Church.

Q38. Answer: (b) Public education

The correct answer is Public education.

Key Points

• Soft infrastructure refers to the institutions, services, and frameworks that support the functioning of a society and economy. These elements often focus on human capital and social systems rather than physical structures.

• Public education is an example of soft infrastructure because it involves systems and institutions that deliver educational services, contributing to the development of human capital. It fosters intellectual growth, skill development, and social cohesion among citizens.

• Soft infrastructure includes aspects like healthcare systems, financial frameworks, governance mechanisms, and educational institutions. Hence, the correct answer is Public education.

• Options such as water pipelines, bridges, and airports represent examples of hard infrastructure. Hard infrastructure refers to the physical systems required for the operation of a society, like transportation, energy, and water supply.

• While hard infrastructure focuses on tangible assets, soft infrastructure ensures the seamless functioning of societal frameworks. Public education builds the knowledge base and skill sets essential for societal progress. Hence, the correct answer is Public education.

Additional Information

• Soft Infrastructure:

• Soft infrastructure encompasses the services, programs, and institutions that support societal and economic functioning.

Examples include education systems, healthcare frameworks, law enforcement bodies, and governance mechanisms.

• Unlike hard infrastructure, soft infrastructure builds intellectual, social, and economic capital. It focuses on intangible assets that underpin the functioning of a nation.

• Characteristics of Hard Infrastructure:

• Hard infrastructure refers to physical assets like roads, bridges, railways, airports, and pipelines.

• It provides the backbone for transportation, energy, communication, and water supply systems, ensuring the physical connectivity and operational efficiency of a society.

• Example: Bridges facilitate the movement of goods and people, while water pipelines ensure the distribution of water resources.

• Importance of Public Education:

• Public education contributes to the development of human capital, which is vital for economic growth and societal progress.

• It ensures equal access to knowledge and skills, fostering social equity and inclusiveness.

• Example: Public schools and universities play a pivotal role in shaping the workforce and fostering innovation in various fields.

Important Points

• Distinction between Soft and Hard Infrastructure:

• Hard infrastructure is tangible and includes physical structures and facilities essential for operational efficiency.

• Soft infrastructure is intangible and focuses on societal systems, institutions, and services that enhance human capital and social welfare.

• Example: Healthcare systems (soft infrastructure) complement hospital buildings (hard infrastructure) by delivering services.

• Global Examples:

• Finland's public education system is globally renowned for its emphasis on equity and quality.

• Japan's hard infrastructure includes advanced railways like the Shinkansen, while its soft infrastructure ensures efficient governance and societal frameworks.

Q39. Answer: (a) The colonial government never made any sincere attempt to estimate India’s national and per capita income.

The correct answer is The colonial government never made any sincere attempt to estimate India's national and per capita income..

Key Points

• The colonial government showed very little interest in understanding the economic conditions of India. They were more focused on exploiting resources and maintaining control rather than conducting comprehensive studies on India's economic data.

• There was no systematic or sincere effort to estimate India's national income or per capita income. Most of the work done on these topics was initiated by Indian economists and scholars during the late colonial period.

• Indian economists like Dadabhai Naoroji made efforts to calculate India's national income during colonial rule. His work, though pioneering, was not supported by the colonial government. Hence, the colonial government did not estimate India's income sincerely.

• Statement 2 is incorrect because the colonial government never undertook annual calculations of India's national and per capita income.

• Statement 3 is incorrect as the colonial government did not focus on estimating per capita income, either. The economic well-being of the Indian population was not among their priorities.

• Statement 4 is also incorrect because neither the national income nor the per capita income of India was systematically estimated by the colonial government.

• Hence, the correct answer is The colonial government never made any sincere attempt to estimate India's national and per capita income..

Additional Information

• Economic Exploitation during Colonial Rule:

• The British colonial government prioritized resource extraction and economic exploitation over addressing the welfare of the Indian population.

• India's wealth was systematically drained through policies like the Drain Theory, elaborated by Dadabhai Naoroji in his book "Poverty and Un-British Rule in India".

• Efforts by Indian Economists:

• Indian economists like Dadabhai Naoroji, R.C. Desai, and William Digby made attempts to estimate India's income during colonial rule.

• Dadabhai Naoroji used available data to calculate India's national income and highlighted the impoverishment caused by British policies.

• Impact of British Policies:

• The lack of income data made it difficult to assess the true impact of British policies, but the visible effects included widespread poverty, famine, and economic stagnation.

• The absence of reliable income statistics also hindered efforts to plan for economic recovery post-Independence.

Important Points

• Key Characteristics of Colonial Economic Policies:

• Focus on resource extraction, such as raw materials for British industries (e.g., cotton, jute).

• Neglect of infrastructure development for Indian welfare, with investments mainly for British commercial interests (railways, ports).

• Significance of National Income Estimation:

• Estimation of national and per capita income is crucial for understanding the economic health of a country and planning policies for development.

• Post-Independence, India began systematic efforts to estimate national income through organizations like the National Sample Survey Office (NSSO) and Central Statistical Organization (CSO).

Q40. Answer: (d) If there is at least one Scheduled Tribe

The correct answer is If there is at least one Scheduled Tribe.

Key Points

• A Tribal Advisory Council (TAC) is established in states as per the provisions of the Fifth Schedule of the Indian Constitution.

• The purpose of the TAC is to advise on welfare and advancement matters related to Scheduled Tribes.

• As per the Constitution, TACs are mandatory in states that have Scheduled Areas and substantial tribal populations. Hence, option 4 is correct.

• The council consists of up to 20 members, with three-fourths of them being representatives of Scheduled Tribes in the Legislative Assembly.

• The Governor of the state plays a significant role in establishing the TAC and can consult it for recommendations regarding Scheduled Tribes' welfare. Hence, option 4 is the correct condition.

• Options 1, 2, and 3 (tribal population exceeding 10% or 50%, or states having forest areas) are not relevant as the Constitution explicitly mentions the presence of Scheduled Tribes as the deciding factor. Hence, these options are incorrect.

Additional Information

• Tribal Advisory Council (TAC):

• TAC is constituted under the Fifth Schedule of the Constitution to provide advice on matters concerning the welfare and development of Scheduled Tribes.

• It provides recommendations related to the implementation of tribal welfare programs, protection of tribal rights, and socio-economic development.

• Fifth Schedule of the Constitution:

• The Fifth Schedule applies to states with Scheduled Areas and focuses on the protection and development of Scheduled Tribes.

• It empowers the Governor to regulate the transfer of land in Scheduled Areas and ensure that tribal interests are safeguarded.

• The Governor can also make regulations to prohibit or restrict the alienation of tribal land and consult the TAC for advice.

• Scheduled Areas:

• Scheduled Areas are regions identified under the Constitution where tribal populations are predominant and need special attention for development and welfare.

• These areas are declared by the President of India and are governed under special provisions to protect tribal rights and culture.

Important Points

• Role of the Governor:

• The Governor of a state with Scheduled Areas has the authority to establish a Tribal Advisory Council and consult it for advice.

• The Governor can also modify or amend laws applicable to Scheduled Areas to protect tribal interests.

• States with Scheduled Areas:

• Examples include Chhattisgarh, Jharkhand, Odisha, Madhya Pradesh, Maharashtra, and Andhra Pradesh, among others.

• These states have substantial tribal populations and require special provisions for tribal welfare.

Q41. Answer: (c) 28, 29

Shortcut Trick

We can solve this directly using the given options.

Check the sum: All given options sum to 57.

Check the LCM for Option 3: 28 and 29 are consecutive numbers, meaning they are co-prime.

The L.C.M. of co-prime numbers is simply their product: 28 × 29 = 812.

Since this perfectly matches the given condition, we do not need to check further.

Therefore The correct answer is 28, 29.

Alternate Method

Given:

Sum of two numbers = 57

L.C.M. of the two numbers = 812

Concept Used:

Let the HCF of the numbers be h. The numbers can be written as hx and hy, where x and y are co-prime.

Sum = h(x + y) and L.C.M. = hxy

Calculations:

=> h(x + y) = 57

=> hxy = 812

=> To find the HCF (h), we check the common factors of 57 (which are 1, 3, 19, 57) and 812.

=> Since 812 is not divisible by 3, 19, or 57, the highest common factor h must be 1.

=> Therefore, the two numbers are co-prime, meaning x + y = 57 and xy = 812.

=> Substituting y = 57 − x into the product equation gives:

=> $x(57 - x) = 812$

=> $x^2 - 57x + 812 = 0$

=> Factorising the quadratic equation: $x^2 - 28x - 29x + 812 = 0$

=> $x(x - 28) - 29(x - 28) = 0$

=> $(x - 28)(x - 29) = 0$

=> The roots of the quadratic equation are x = 28 and x = 29.

Therefore The correct answer is 28, 29.

Additional Information

Product of Numbers Rule

For any two given numbers, the product of the numbers is always equal to the product of their HCF and LCM (First Number × Second Number = HCF × LCM).

Co-prime Numbers

Two numbers are called co-prime if their HCF is 1. The LCM of two co-prime numbers is easily found by multiplying them together.

Consecutive Numbers Concept

Any two consecutive natural numbers (like 28 and 29) are always co-prime, meaning they will not share any common factors other than 1.

Q42. Answer: (d) 41

Shortcut Trick

Subtract the given remainders from the respective numbers: 131 − 8 = 123, 91 − 9 = 82, and 215 − 10 = 205.

To find the HCF quickly, take the difference of the two closest numbers: 123 − 82 = 41.

The greatest common divisor must be a factor of this difference.

Since 41 exactly divides all three numbers (123, 82, 205) and is a prime number, it is the required HCF.

Therefore The correct answer is 41.

Alternate Method

Given:

Numbers: 131, 91, and 215

Remainders: 8, 9, and 10 respectively

Method Used:

Required Number = HCF of (Number1 − Remainder1), (Number2 − Remainder2), and (Number3 − Remainder3)

Calculations:

=> First number = 131 − 8 = 123

=> Second number = 91 − 9 = 82

=> Third number = 215 − 10 = 205

=> Now, we find the Highest Common Factor (HCF) of 123, 82, and 205.

=> Prime factorization of 123 = 3 × 41

=> Prime factorization of 82 = 2 × 41

=> Prime factorization of 205 = 5 × 41

=> The highest common factor present in all three numbers is 41.

=> HCF(123, 82, 205) = 41

Therefore The correct answer is 41.

Additional Information

HCF with different remainders

If a number divides x, y, and z leaving remainders a, b, and c respectively, the greatest such number is the HCF of (x−a), (y−b), and (z−c).

HCF with same remainder

If a number divides x, y, and z leaving the same remainder 'r' in each case without given value, the greatest such number is the HCF of |x−y|, |y−z|, and |z−x|.

LCM with same remainder

The smallest number which when divided by x, y, and z leaves the same remainder 'r' is given by [LCM of (x, y, z)] + r.

LCM with different remainders

If divided by x, y, z leaving remainders a, b, c respectively where (x−a) = (y−b) = (z−c) = k, the smallest number is [LCM of (x, y, z)] − k.

Q43. Answer: (c) 55.4%

Shortcut Trick

Let the actual selling price be SP and cost price be CP.

Selling at 2/5 of SP means 0.4 SP, which results in a 26% loss.

0.4 SP = 0.74 CP => SP = 1.85 CP

New Selling Price = 0.84 SP = 0.84 × 1.85 CP = 1.554 CP

Profit % = (1.554 − 1) × 100 = 55.4%

Therefore The correct answer is 55.4%.

Alternate Method

Given:

Loss = 26% when SP1 = 2/5 × Actual SP

New Selling Price SP2 = 84% × Actual SP

SP1

0.4 SP

(74% CP)

Cost Price

1.0 CP

(100% CP)

SP2

0.84 SP

(155.4% CP)

Actual SP

1.0 SP

(185% CP)

← 26% Loss

55.4% Profit →

Calculations:

=> Let the Actual SP be 100x.

=> SP1 = (2/5) × 100x = 40x

=> Since selling at 40x incurs a 26% loss, the Cost Price (CP) will be calculated as:

=> CP × (100 − 26)% = 40x

=> CP × 0.74 = 40x

=> CP = 40x / 0.74 = 4000x / 74 = 2000x / 37

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=> Now, the new selling price SP2 = 84% of Actual SP = 84x

=> Profit = SP2 − CP = 84x − (2000x / 37)

=> Profit = (3108x − 2000x) / 37 = 1108x / 37

=> Profit % = (Profit / CP) × 100

=> Profit % = [(1108x / 37) / (2000x / 37)] × 100

=> Profit % = (1108 / 2000) × 100

=> Profit % = 1108 / 20 = 55.4%

Therefore The correct answer is 55.4%.

Additional Information

Profit & Loss Percentage

Profit % = (Profit / CP) × 100 and Loss % = (Loss / CP) × 100. Both are always calculated on the Cost Price (CP) unless stated otherwise.

Marked Price & Discount

Discount is always offered on the Marked Price (MP). SP = MP × (100 − Discount%) / 100.

Successive Discounts

If two successive discounts of a% and b% are given, the equivalent single discount is calculated as (a + b − ab / 100)%.

Q44. Answer: (b) 60

Shortcut Trick

When the same distance is covered at speeds S1 and S2, the average speed formula is:

=> Average Speed = (2 × S1 × S2) ÷ (S1 + S2)

=> Average Speed = (2 × 55 × 66) ÷ (55 + 66)

=> Average Speed = (7260) ÷ 121

=> Average Speed = 60 km/hr

Therefore The correct answer is 60 km/hr.

Alternate Method

Given:

=> Speed of onward journey (S1) = 55 km/hr

=> Speed of return journey (S2) = 66 km/hr

=> Let the uniform distance between Visakhapatnam and Nagpur be D km.

Visakhapatnam

Nagpur

Distance = D

Speed = 55 km/hr

Speed = 66 km/hr

Formula Used:

=> Average Speed = Total Distance ÷ Total Time

=> Time = Distance ÷ Speed

Calculations:

=> Total Distance = D + D = 2D km

=> Time taken for onward journey = D ÷ 55 hours

=> Time taken for return journey = D ÷ 66 hours

=> Total Time = (D ÷ 55) + (D ÷ 66)

=> Total Time = (6D + 5D) ÷ 330 = 11D ÷ 330 = D ÷ 30 hours

=> Average Speed = 2D ÷ (D ÷ 30)

=> Average Speed = 2 × 30 = 60 km/hr

Therefore The correct answer is 60 km/hr.

Additional Information

Average Speed for 3 Equal Distances

If three equal distances are covered at speeds x, y, and z respectively, then Average Speed = (3 × x × y × z) ÷ (xy + yz + zx).

Conversion of Units

To convert km/hr to m/s, multiply the value by (5 ÷ 18). Conversely, to convert m/s to km/hr, multiply the value by (18 ÷ 5).

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Relative Speed

If two objects move in the same direction at speeds S1 and S2 (where S1 > S2), their Relative Speed = S1 − S2. If they move in opposite directions, their Relative Speed = S1 + S2.

Q45. Answer: (d) 197

Shortcut Trick

Sum of the remaining two numbers = Total sum − (Sum of first two + Third number)

Sum of the remaining two = 655 − (2 × 80 + 101) = 655 − 261 = 394

Average of remaining two numbers = 394 ÷ 2 = 197

Therefore The correct answer is 197.

Alternate Method

Given:

Total sum of 5 numbers = 655

Average of first 2 numbers = 80

Third number = 101

Sum = 160

101

Remaining Sum = 394

First 2 numbers

3rd num

Remaining 2 numbers

Total Sum = 655

Avg = 394 ÷ 2

Avg = 197

Formula Used:

Sum of observations = Average × Number of observations

Calculations:

=> Sum of first 2 numbers = 80 × 2 = 160

=> Sum of first 3 numbers = 160 + 101 = 261

=> Sum of remaining 2 numbers = Total sum − Sum of first 3 numbers

=> Sum of remaining 2 numbers = 655 − 261 = 394

=> Average of remaining 2 numbers = 394 ÷ 2

=> Average = 197

Therefore The correct answer is 197.

Additional Information

Combined Average

When two groups of sizes n1 and n2 have averages A1 and A2, the overall average is (n1A1 + n2A2) ÷ (n1 + n2).

Sum and Average Relation

The sum of a dataset is always directly proportional to its average. If a number is removed, the new average depends on whether the removed number is greater or smaller than the old average.

Net Deviation Method

Instead of calculating total sums, one can assume an average and find the net sum of deviations. If the net deviation is zero, the assumed average is the true average.

Q46. Answer: (d) 15.8

Shortcut Trick

Express x and y as powers of the same base and substitute them directly into the equation.

=> (580.5)z = (580.79)10

=> 580.5z = 587.9

=> 0.5z = 7.9 => z = 15.8

Therefore The correct answer is 15.8.

Alternate Method

Given:

x = 580.5
y = 580.79
xz = y10
Formula Used:
(am)n = amn
If am = an, then m = n (for a > 0, a ≠ 1)
Calculations:
Substitute the given values of x and y into the equation xz = y10:
=> (580.5)z = (580.79)10
Apply the power of a power rule to both sides:
=> 580.5 × z = 580.79 × 10
=> 580.5z = 587.9
Since the bases are equal on both sides, we can equate the exponents:
=> 0.5z = 7.9
=> z = 7.9 ÷ 0.5
=> z = 7.9 × 2
=> z = 15.8
Therefore The correct answer is 15.8.
Additional Information
Power of a Power Rule
When raising a base with a power to another power, you multiply the exponents: (am)n = amn.
Equating Exponents
If two powers with the same positive base (other than 1) are equal, then their exponents must be equal. If am = an, then m = n.
Product Rule of Exponents
When multiplying two expressions with the same base, you add the exponents: am × an = am+n.
Division Rule of Exponents
When dividing two expressions with the same base, you subtract the exponents: am ÷ an = am−n.

Q47. Answer: (d) 550/21 % loss

Shortcut Trick
Total CP = 740 + 16 = Rs. 756 and SP = Rs. 558
Ratio of SP to CP = 558 : 756 = 31 : 42
Loss in ratio units = 42 − 31 = 11 units.
Loss % = (11 ÷ 42) × 100 = 550/21 %.
Since SP is less than CP, there is a loss of 550/21%.
Therefore The correct answer is 550/21% loss.
Alternate Method
Given:
Cost price of the toy = Rs. 740
Decoration cost (Overhead expenses) = Rs. 16
Selling price (SP) of the toy = Rs. 558
Formula Used:
Total CP = Initial CP + Overhead expenses
Loss = Total CP − SP
Loss % = (Loss ÷ Total CP) × 100
CP: Rs. 740
• Rs. 16
Total CP: Rs. 756
Sold
SP: Rs. 558
Loss = Rs. 198
Calculations:

=> Total CP = 740 + 16 = Rs. 756

=> Loss = 756 − 558 = Rs. 198

=> Loss % = (198 ÷ 756) × 100

=> Loss % = (11 ÷ 42) × 100

=> Loss % = 1100 ÷ 42 = 550/21 %

Therefore The correct answer is 550/21% loss.

Additional Information

Overhead Expenses

Costs such as repairs, transportation, and decoration incurred after purchasing an item are always added to the initial cost price to arrive at the Total Cost Price.

Profit & Loss Base

Profit and loss percentage calculations are always evaluated against the Total Cost Price (CP) as the base, not the Selling Price (SP), unless specifically mentioned.

Q48. Answer: (c) 1550

Shortcut Trick

Fraction value of 80% = 4/5

Original number = 5 units, Increase = 4 units

New number = 5 + 4 = 9 units

9 units = 2790 => 1 unit = 310

Original number = 5 units = 5 × 310 = 1550

Therefore The correct answer is 1550.

Alternate Method

Given:

A number when increased by 80% gives 2790.

Original Number (100%)

• 80% Increase

180% = 2790

Formula Used:

Final Value = Initial Value × (1 + Percentage Increase ÷ 100)

Calculations:

=> Let the original number be x.

=> x + 80% of x = 2790

=> x + 0.8x = 2790

=> 1.8x = 2790

=> x = 2790 ÷ 1.8

=> x = 27900 ÷ 18

=> x = 1550

Therefore The correct answer is 1550.

Additional Information

Percentage Increase

The formula to calculate percentage increase is: % Increase = (Final Value − Initial Value) ÷ Initial Value × 100.

Base Value Concept

In percentage problems, the initial or original quantity is always considered as the base value or 100% unless otherwise specified.

Successive Percentage

When a number is increased by a% and then by b%, the net percentage increase is given by (a + b + (a × b) ÷ 100)%.

Q49. Answer: (d) Rs. 630

Shortcut Trick

The net price is the remaining value after deducting the discount percentage from the listed price.

Net Price = Listed Price × (100% − Discount%)

Net Price = 900 × (100% − 30%)

Net Price = 900 × 70% = 630

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Therefore The correct answer is Rs. 630.

Alternate Method

Given:

Listed Price (MP) = Rs. 900

Trade Discount = 30%

Formula Used:

Discount Amount = MP × (Discount% ÷ 100)

Net Price = MP − Discount Amount

MP = Rs. 900

−30% Discount

Net Price = ?

Net Price = 900 − 270 = Rs. 630

Calculations:

=> Discount Amount = 900 × (30 ÷ 100)

=> Discount Amount = 900 × 0.30

=> Discount Amount = Rs. 270

=> Net Price = 900 − 270

=> Net Price = Rs. 630

Therefore The correct answer is Rs. 630.

Additional Information

Marked Price and Discount

Discount is always calculated on the Marked Price (MP) or Listed Price of an article. Net Price or Selling Price (SP) = MP − Discount.

Successive Discounts

If two successive discounts of a% and b% are given on an item, the equivalent single discount is given by the formula: (a + b − ab ÷ 100)%.

Profit and Loss Calculation

Unlike discounts which are evaluated on the Marked Price, Profit or Loss is always calculated on the Cost Price (CP). Profit% = (Profit ÷ CP) × 100.

Q50. Answer: (b) 7.29

Shortcut Trick

For a cylinder, Radius (r) = CSA ÷ (2 × π × h)

=> r = (3300 × 7) ÷ (2 × 22 × 72)

=> r = 23100 ÷ 3168

=> r = 175 ÷ 24 = 7.2916... cm

Therefore The correct answer is 7.29 cm.

Alternate Method

Given:

Curved Surface Area (CSA) = 3300 cm^2

Length or Height (h) = 72 cm

Formula Used:

CSA of a Cylinder = 2 × π × r × h

r = ?

h = 72 cm

CSA = 3300 sq. cm

Calculations:

=> 3300 = 2 × (22 ÷ 7) × r × 72

=> r = (3300 × 7) ÷ (2 × 22 × 72)

=> r = (150 × 7) ÷ (2 × 72)

=> r = (75 × 7) ÷ 72

=> r = 525 ÷ 72

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=> r = 175 ÷ 24
=> r = 7.2916...
=> r ≈ 7.29 cm
Therefore The correct answer is 7.29 cm.
Additional Information
Total Surface Area of a Cylinder
The TSA includes the curved surface and both circular bases. Formula: TSA = 2 × π × r × (r + h).
Volume of a Cylinder
The capacity or three-dimensional space enclosed by a cylinder. Formula: V = π × r² × h.
Curved Surface Area of a Cone
The outer surface area excluding the circular base. Formula: CSA = π × r × l, where l is the slant height (√(r² + h²)).

Q51. Answer: (c) 5

Shortcut Trick
The given number is 481355.
By simply observing the unit digit, which is 5, we can determine its divisibility instantly.
Any number ending in 0 or 5 is exactly divisible by 5.
Therefore The correct answer is 5.
Alternate Method
Given:
Number = 481355
Method Used:
Application of standard divisibility rules for 3, 5, 6, and 15.
Calculations:
=> Divisibility by 3: Sum of digits = 4 + 8 + 1 + 3 + 5 + 5 = 26.
=> Since 26 is not perfectly divisible by 3, the number 481355 is not divisible by 3.
=> Divisibility by 6: The number must be divisible by both 2 and 3.
=> Since the number ends in 5 (which makes it an odd number), it is not divisible by 2, and hence cannot be divisible by 6.
=> Divisibility by 15: The number must be divisible by both 3 and 5.
=> As proven above, it is not divisible by 3, so it is not divisible by 15.
=> Divisibility by 5: The unit digit of the number is 5.
=> Therefore, the number is perfectly divisible by 5.
Therefore The correct answer is 5.
Additional Information
Divisibility Rule of 3
A number is divisible by 3 if the sum of all its individual digits is exactly divisible by 3.
Divisibility Rule of 5
A number is divisible by 5 if its last digit (unit digit) is either 0 or 5.
Divisibility Rule of 6
A number is divisible by 6 if it is divisible by both 2 (meaning it is an even number) and 3.
Divisibility Rule of 15
A number is divisible by 15 if it is perfectly divisible by both of its coprime factors, which are 3 and 5.

Q52. Answer: (a) 168°

Shortcut Trick
For any regular polygon, the exterior angle is directly related to the number of sides by a simple ratio.
=> Exterior Angle = 360° ÷ n
=> Exterior Angle = 360° ÷ 30 = 12°
Since the interior and exterior angles always form a straight line (180°):
=> Interior Angle = 180° − 12° = 168°
Therefore The correct answer is 168°.
Alternate Method

Given:
Number of sides of the regular polygon (n) = 30
Formula Used:
Sum of interior angles of a regular polygon = (n − 2) × 180°
Measure of one interior angle = [(n − 2) × 180°] ÷ n
168°
12°
Interior Angle
Exterior Angle
Polygon Side
Extended Line
Interior Angle + Exterior Angle = 180°
Calculations:
=> Sum of interior angles = (30 − 2) × 180°
=> Sum of interior angles = 28 × 180° = 5040°
=> Measure of each interior angle = 5040° ÷ 30
=> Measure of each interior angle = 168°
Therefore The correct answer is 168°.
Additional Information
Sum of Exterior Angles
For any convex polygon, regardless of the number of sides, the sum of all its exterior angles is always exactly 360°.
Number of Diagonals
The total number of diagonals in a polygon with n sides can be quickly calculated using the formula: n(n − 3) ÷ 2.
Regular vs Irregular Polygons
A regular polygon is both equilateral (all sides equal) and equiangular (all angles equal). An irregular polygon lacks one or both of these properties.

Q53. Answer: (b) 8%

Shortcut Trick
Selling Price after 1st discount = 1400 × (100 − 12) ÷ 100 = Rs. 1232
Second discount amount = 1232 − 1133.44 = Rs. 98.56
Second discount % = (98.56 ÷ 1232) × 100 = 8%
Therefore The correct answer is 8%.
Alternate Method
Given:
Marked Price (MP) = Rs. 1400
Final Selling Price (SP) = Rs. 1133.44
First discount (D1) = 12%
Let the second discount be D2%.
Formula Used:
SP = MP × (1 − D1/100) × (1 − D2/100)
Rs. 1400Marked Price−12%Rs. 1232After 1st Discount−8%Rs. 1133.44Final PriceDiscount = Rs. 98.56
Calculation:
=> Price after 1st discount = 1400 − (12% of 1400)
=> Price after 1st discount = 1400 − 168 = Rs. 1232
=> Final SP after 2nd discount = Rs. 1133.44
=> Second discount amount = 1232 − 1133.44 = Rs. 98.56
=> D2 = (98.56 ÷ 1232) × 100
=> D2 = 8%
Therefore The correct answer is 8%.
Additional Information
Successive Discounts

When two discounts D1% and D2% are given successively, the effective discount percentage is equivalent to (D1 + D2 − (D1 × D2) ÷ 100)%.

Marked Price & Selling Price Relationship

Selling Price (SP) is obtained after deducting the total discount from the Marked Price (MP). The direct multiplier formula is SP = MP × (100 − Discount%) ÷ 100.

Markup and Discount

The relationship between Cost Price, Markup Percentage (M%), and Discount Percentage (D%) to find Profit Percentage (P%) is given by: P% = M% − D% − (M% × D%) ÷ 100.

Q54. Answer: (c) −cos y

Shortcut Trick

Put x = 90° and y = 0° in the given expression:

=> sin(90° − 90°) cos(180° − (90° − 0°)) + cos(90° − 90°) sin(180° − (0° − 90°))

=> sin(0°) cos(90°) + cos(0°) sin(270°)

=> 0 × 0 + 1 × (−1) = −1

Substituting y = 0° in the options, only Option 3 (−cos y) gives −1.

Therefore The correct answer is −cos y.

Alternate Method

Given:

sin(90° − x) cos(180° − (x − y)) + cos(90° − x) sin(180° − (y − x))

Formula Used:

sin(90° − θ) = cos θ

cos(90° − θ) = sin θ

cos(180° − θ) = −cos θ

sin(180° − θ) = sin θ

sin(−θ) = −sin θ

cos(A − B) = cos A cos B + sin A sin B

Calculations:

=> sin(90° − x) = cos x

=> cos(180° − (x − y)) = −cos(x − y)

=> cos(90° − x) = sin x

=> sin(180° − (y − x)) = sin(y − x) = −sin(x − y)

Substituting these values into the given expression:

=> (cos x) × (−cos(x − y)) + (sin x) × (−sin(x − y))

=> −cos x cos(x − y) − sin x sin(x − y)

=> −[cos x cos(x − y) + sin x sin(x − y)]

Using the identity cos(A − B) = cos A cos B + sin A sin B:

=> −[cos(x − (x − y))]

=> −cos(x − x + y)

=> −cos y

Therefore The correct answer is −cos y.

Additional Information

Trigonometric Signs by Quadrant (ASTC Rule)

1st Quadrant: All positive | 2nd Quadrant: Sine & Cosec positive | 3rd Quadrant: Tan & Cot positive | 4th Quadrant: Cos & Sec positive.

Compound Angle Identities

sin(A + B) = sin A cos B + cos A sin B

cos(A + B) = cos A cos B − sin A sin B

Complementary & Supplementary Angles

Angles that sum to 90° are complementary (sin(90°−θ) = cos θ). Angles summing to 180° are supplementary (cos(180°−θ) = −cos θ).

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Q55. Answer: (b) 9

Shortcut Trick

The third proportional of two numbers a and b is given by $b^2 \div a$.

Here, a = 81 and b = 27.

=> Third proportional = (27 × 27) ÷ 81

=> Third proportional = 729 ÷ 81 = 9

Therefore The correct answer is 9.

Alternate Method

Given:

First number (a) = 81

Second number (b) = 27

Let the third proportional be x.

Formula Used:

If three numbers a, b, and c are in continued proportion, then a : b :: b : c

=> Product of Extremes = Product of Means

=> a × c = b × b

81

:

27

::

27

:

x

Product of Means

Product of Extremes

Calculations:

=> 81 × x = 27 × 27

=> 81x = 729

=> x = 729 ÷ 81

=> x = 9

Therefore The correct answer is 9.

Additional Information

Continued Proportion

If three quantities a, b, and c are such that a : b = b : c, they are said to be in continued proportion where b is the mean proportional.

Mean Proportional

The mean proportional between two numbers a and c is represented by $b = \sqrt{(a \times c)}$.

Fourth Proportional

If four terms a, b, c, and d are in proportion (a : b = c : d), then d is called the fourth proportional. It is evaluated as d = (b × c) ÷ a.

Compounded Ratio

The compounded ratio of two distinct ratios a : b and c : d is the product of their corresponding terms, yielding ac : bd.

Q56. Answer: (a) 12,014

Shortcut Trick

Convert percentage changes into fraction multipliers:

=> +25% = +1/4 → Multiplier = 5/4

=> +60% = +3/5 → Multiplier = 8/5

=> −50% = −1/2 → Multiplier = 1/2

=> Net effect = 5/4 × 8/5 × 1/2 = 40/40 = 1

Therefore The correct answer is 12,014.

Alternate Method

Given:

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Initial population of the town = 12,014

Successive changes in 3 years = +25%, +60%, and −50%

Formula Used:

Final Value = Initial Value × (1 ± R1/100) × (1 ± R2/100) × (1 ± R3/100)

12,014

Initial

+25%

×5/4

15,017.5

+60%

×8/5

24,028

−50%

×1/2

12,014

Final

Net Multiplier = 5/4 × 8/5 × 1/2 = 1

Calculations:

=> Multiplier for Year 1 = (1 + 25/100) = 125/100 = 5/4

=> Multiplier for Year 2 = (1 + 60/100) = 160/100 = 8/5

=> Multiplier for Year 3 = (1 − 50/100) = 50/100 = 1/2

=> Final population = 12,014 × (5/4) × (8/5) × (1/2)

=> Final population = 12,014 × (40/40)

=> Final population = 12,014 × 1 = 12,014

Therefore The correct answer is 12,014.

Additional Information

Successive Percentage Change

When a value is successively changed by x% and y%, the net percentage change can also be found using the formula: Net % Change = x + y + (xy / 100). This method is useful for consecutive years but can become complex for more than two variables.

Fraction Equivalents

Converting standard percentages to fractions significantly boosts calculation speed. Standard fractions include 25% = 1/4, 60% = 3/5, and 50% = 1/2. The new value multiplier is simply (1 + fraction) for an increase or (1 − fraction) for a decrease.

Base Independence

In a chain of successive percentage changes, the final result is independent of the order in which the changes occur due to the commutative property of multiplication. An increase followed by a decrease produces the exact same outcome if reversed.

Q57. Answer: (b) -33

Shortcut Trick

Apply the BODMAS rule directly to the expression (Division → Multiplication → Subtraction):

=> (−9) − (−60) ÷ (−10) + (−3) × 6

=> −9 − (6) − 18

=> −15 − 18 = −33

Therefore The correct answer is −33.

Alternate Method

Given:

(−9) − (−60) ÷ (−10) + (−3) × 6

Formula Used:

BODMAS Rule: Brackets, Orders, Division, Multiplication, Addition, Subtraction.

Calculation:

=> (−9) − [(−60) ÷ (−10)] + [(−3) × 6]

First, perform the division part:

=> (−60) ÷ (−10) = 6

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Substitute this value back into the original expression:

=> (−9) − 6 + (−3) × 6

Next, perform the multiplication part:

=> (−3) × 6 = −18

Substitute this value back into the expression:

=> (−9) − 6 + (−18)

Finally, perform the addition and subtraction from left to right:

=> −15 − 18

=> −33

Therefore The correct answer is −33.

Additional Information

BODMAS Rule

It defines the correct order of operations to solve an expression: Brackets first, then Orders (powers/roots), followed by Division and Multiplication (evaluated left to right), and finally Addition and Subtraction (evaluated left to right).

Sign Rules for Multiplication and Division

Multiplying or dividing two numbers with the same sign always gives a positive result (− × − = +). Conversely, multiplying or dividing numbers with different signs always gives a negative result (+ × − = −).

Sign Rules for Addition and Subtraction

When combining two negative numbers, you add their absolute values and retain the negative sign (e.g., −9 − 6 = −15). When signs are different, subtract the smaller number from the larger and keep the sign of the larger absolute number.

Q58. Answer: (b) Rs. 44,640

Shortcut Trick

Profit ratio of Ritik to Sanjay = (16500 − 3600) : 3600 = 12900 : 3600 = 43 : 12

Investment ratio is the same as the profit ratio = 43 : 12 (since time is constant).

Difference in ratio parts = 43 − 12 = 31 parts, and total = 55 parts.

Investment difference = (31 ÷ 55) × 79200 = 31 × 1440 = 44640

Therefore The correct answer is Rs. 44,640.

Alternate Method

Given:

=> Total investment = Rs. 79,200

=> Total profit = Rs. 16,500

=> Sanjay's profit = Rs. 3,600

=> Ritik's profit = Rs. 16,500 − Rs. 3,600 = Rs. 12,900

Formula Used:

=> Profit Ratio = Investment Ratio (when the time period is constant)

=> Required Value = (Ratio Difference ÷ Total Ratio) × Total Value

Total Investment = Rs. 79,200 (55 Ratio Parts)

Ritik: Rs. 12,900 Profit (43 parts)

S: 12 parts

Investment Difference = 31 Ratio Parts

31 × (79200 ÷ 55) = Rs. 44,640

Calculations:

=> Profit ratio (Ritik : Sanjay) = 12900 : 3600

=> Profit ratio simplified = 129 : 36 = 43 : 12

=> Sum of ratio parts = 43 + 12 = 55

=> Value of 55 parts = Rs. 79,200

=> Value of 1 part = 79200 ÷ 55 = Rs. 1,440

=> Difference in parts = 43 − 12 = 31

=> Difference in investment = 31 × 1440

=> Difference in investment = Rs. 44,640

Therefore The correct answer is Rs. 44,640.

Additional Information

Partnership for Same Time Period

When investments are made for the exact same duration, the total profit is distributed exactly in the ratio of their capital investments. Profit Ratio = Investment Ratio.

Partnership for Different Time Periods

When time periods differ, profit is distributed based on the product of investment and time. Profit Ratio = (Capital1 × Time1) : (Capital2 × Time2).

Active and Sleeping Partners

An active partner is paid a fixed salary or commission from the total profit for managing the business. The remaining profit is then divided according to their equivalent investment ratios.

Q59. Answer: (c) 51

Shortcut Trick

Weight of Mohan = (Sum of first two + Sum of last two) − Sum of all three

Weight of Mohan = (2 × 43 + 2 × 50) − (3 × 45)

Weight of Mohan = (86 + 100) − 135

Weight of Mohan = 186 − 135 = 51

Therefore The correct answer is 51 kg.

Alternate Method

Given:

Average weight of Vipul, Mohan, and Mohammad = 45 kg

Average weight of Vipul and Mohan = 43 kg

Average weight of Mohan and Mohammad = 50 kg

Formula Used:

Total Weight = Average Weight × Number of Persons

Calculation:

Total = 135 kg

Vipul + Mohan = 86 kg

Mohan + Mohammad = 100 kg

Overlap = Mohan

Mohan = 86 + 100 − 135 = 51 kg

=> Total weight of Vipul, Mohan, and Mohammad = 45 × 3 = 135 kg

=> Total weight of Vipul and Mohan = 43 × 2 = 86 kg

=> Total weight of Mohan and Mohammad = 50 × 2 = 100 kg

=> Total of the two pairs = (Vipul + Mohan) + (Mohan + Mohammad) = 86 + 100 = 186 kg

=> The sum of the pairs includes Mohan's weight exactly twice.

=> Weight of Mohan = Sum of the two pairs − Total weight of all three

=> Weight of Mohan = 186 − 135 = 51 kg

Therefore The correct answer is 51 kg.

Additional Information

Combined Average

When two groups of sizes n1 and n2 have averages A1 and A2 respectively, the combined average is calculated as (n1A1 + n2A2) ÷ (n1 + n2).

Deviation Method in Averages

The sum of deviations of all observations from their respective average is always zero. This property can be used as a shortcut to quickly find missing variables without large multiplications.

Replacement Method

If a new item replaces an old item and the average increases, the value of the new item is equal to the value of the old item plus the product of total members and the net increase in the average.

Q60. Answer: (d) 12

Shortcut Trick

Relative speed of Train 1 w.r.t man = 195 ÷ 13 = 15 m/s = (15 × 18/5) = 54 km/hr.

Since both are moving in the same direction, actual speed of Train 1 = 54 + 5 = 59 km/hr.
Relative speed of the two trains (moving in opposite directions) = 59 + 76 = 135 km/hr.
Converting relative speed to m/s = 135 × (5/18) = 37.5 m/s.
Time required to completely cross = (195 + 255) ÷ 37.5 = 450 ÷ 37.5 = 12 seconds.
Therefore The correct answer is 12 seconds.
Alternate Method
Given:
Length of Train 1 (L1) = 195 m
Speed of the man (v_m) = 5 km/hr
Time taken to overtake the man (t1) = 13 seconds
Length of Train 2 (L2) = 255 m
Speed of Train 2 (v2) = 76 km/hr
Formula Used:
Time = Total Distance ÷ Relative Speed
Relative Speed (same direction) = v1 − v2
Relative Speed (opposite direction) = v1 + v2
Train 1 : 195 m
v1 = 59 km/hr
Train 2 : 255 m
v2 = 76 km/hr
Relative Speed = 59 + 76 = 135 km/hr = 37.5 m/s
Total Distance = 195 + 255 = 450 m
Time = 450 ÷ 37.5 = 12 seconds
Calculations:
=> Relative speed of Train 1 w.r.t the man = L1 ÷ t1 = 195 ÷ 13 = 15 m/s
=> Convert relative speed into km/hr = 15 × (18/5) = 54 km/hr
=> Since the man is moving in the same direction, relative speed = v1 − 5
=> v1 − 5 = 54
=> Speed of Train 1 (v1) = 59 km/hr
=> When crossing Train 2, total distance to cover = L1 + L2 = 195 + 255 = 450 m
=> Relative speed (opposite direction) = v1 + v2 = 59 + 76 = 135 km/hr
=> Convert this relative speed into m/s = 135 × (5/18) = 37.5 m/s
=> Time required to cross Train 2 = Total Distance ÷ Relative Speed
=> Time = 450 ÷ 37.5 = 12 seconds
Therefore The correct answer is 12 seconds.
Additional Information
Relative Speed Concepts
When two objects move in the same direction, relative speed = |S1 − S2|. When moving in opposite directions, relative speed = (S1 + S2).
Trains Crossing Point Objects
When a train crosses a stationary man, pole, or tree, the distance covered is exactly equal to the length of the train itself.
Unit Conversion Rule
To convert km/hr to m/s, multiply by 5/18. To convert m/s to km/hr, multiply by 18/5.

Q61. Answer: (b) Rs. 396

Shortcut Trick
Total interest percentage = 3% × 11 = 33%.
Directly calculate 33% of the principal to get the simple interest.
Simple Interest = 33% of 1200 = (33 × 1200) ÷ 100
Simple Interest = 33 × 12 = 396
Therefore The correct answer is Rs. 396.
Alternate Method

Start

P = Rs. 1200

11 Months

SI = ?

Rate = 3% per month

Total Rate = 11 × 3% = 33%

Given:

Principal (P) = Rs. 1200

Rate of Interest (R) = 3% per month

Time (T) = 11 months

Formula Used:

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

Calculation:

Since the rate is given per month and the time is given in months, we do not need to convert the time into years.

=> SI = (1200 × 3 × 11) ÷ 100

=> SI = 12 × 3 × 11

=> SI = 36 × 11

=> SI = 396

Therefore The correct answer is Rs. 396.

Additional Information

Simple vs Compound Interest

Simple Interest is calculated only on the initial principal amount, making it uniform. Compound Interest is calculated on both the principal and the accumulated interest of previous periods.

Rate and Time Consistency

Always ensure the time unit matches the rate unit. If the rate is per annum (p.a.) but time is in months, convert time to years using T = (months ÷ 12).

Total Amount Formula

The total amount at the end of the time period is the sum of Principal and Interest: A = P + SI = P[1 + (R × T) ÷ 100].

Q62. Answer: (d) 28

Shortcut Trick

The sum of squares of the two consecutive odd numbers is 394, so their average square is 394 ÷ 2 = 197.

The perfect squares of odd numbers closest to 197 are 169 (which is 13^2) and 225 (which is 15^2).

Verifying their sum: 169 + 225 = 394.

Thus, the two consecutive odd natural numbers are 13 and 15.

Required sum = 13 + 15 = 28.

Therefore The correct answer is 28.

Alternate Method

Given:

The sum of the squares of two consecutive odd natural numbers is 394.

Formula Used:

$(a - b)^2 + (a + b)^2 = 2(a^2 + b^2)$

Calculation:

Let the two consecutive odd natural numbers be represented as (2n − 1) and (2n + 1).

=> $(2n - 1)^2 + (2n + 1)^2 = 394$

=> $2[(2n)^2 + 1^2] = 394$

=> $4n^2 + 1 = 197$

=> $4n^2 = 196$

=> $n^2 = 49$

=> n = 7 (Since the numbers are natural numbers, n must be positive)

The sum of the two numbers is: (2n − 1) + (2n + 1) = 4n

=> Sum = 4 × 7 = 28

Therefore The correct answer is 28.

Additional Information

Consecutive Odd and Even Numbers

Consecutive odd or even numbers always differ by 2. Symmetrically, they can be represented as (2n − 1) and (2n + 1) for odds, and (2n − 2), 2n, (2n + 2) for evens to simplify calculations.

Important Algebraic Identity

The algebraic identity $(a + b)^2 + (a − b)^2 = 2(a^2 + b^2)$ is highly useful for rapidly simplifying problems that involve the sum of squares of terms differing by a constant value.

Quadratic Roots Nature

When a word problem on natural numbers reduces to a quadratic equation $ax^2 + bx + c = 0$, the discriminant $D = b^2 − 4ac$ must be a perfect square, and negative roots are rejected.

Q63. Answer: (a) 210 hours

Shortcut Trick

Time to fill tank: P = 30 × 7/5 = 42 hours, Q = 28 × 5/2 = 70 hours.

Total capacity = LCM(42, 70) = 210 units => P's efficiency = 5 units/hr, Q's efficiency = 3 units/hr.

Volume filled by P and Q in 7 hours = (5 + 3) × 7 = 56 units.

R empties 56 units in 8 hours => R's efficiency = −56 ÷ 8 = −7 units/hr.

Time taken by P, Q, and R together = 210 ÷ (5 + 3 − 7) = 210 ÷ 1 = 210 hours.

Therefore The correct answer is 210 hours.

Alternate Method

Given:

Pipe P can fill 5/7 part of a tank in 30 hours.

Pipe Q can fill 2/5 part of the same tank in 28 hours.

Both P and Q were kept open for 7 hours, then closed.

Pipe R empties the filled water in 8 hours.

Calculations:

=> Total time taken by P to fill the complete tank = 30 × (7/5) = 42 hours.

=> Total time taken by Q to fill the complete tank = 28 × (5/2) = 70 hours.

Pipe	Hours	Total Work	Efficiency
P	42	210	210 ÷ 42 = 5
Q	70	210 ÷ 70 = 3	

=> Work done by Pipe P and Pipe Q together in 7 hours = (5 + 3) × 7 = 8 × 7 = 56 units.

=> The tank has 56 units of water when P and Q are closed.

=> Pipe R alone empties these 56 units in 8 hours.

=> Efficiency of Pipe R = −56 ÷ 8 = −7 units/hour.

=> Net efficiency when Pipes P, Q, and R are opened together = 5 + 3 − 7 = 1 unit/hour.

=> Time taken by P, Q, and R together to fill the empty tank = Total Work ÷ Net efficiency.

=> Time taken = 210 ÷ 1 = 210 hours.

Therefore The correct answer is 210 hours.

Additional Information

Pipes and Cisterns Efficiency Rule

When a pipe fills a tank, its efficiency is taken as positive. When a pipe (or leak) empties a tank, its efficiency is taken as negative.

LCM Method

The total capacity of the tank is assumed to be the LCM of the time taken by individual pipes to fill or empty the tank completely. Efficiency = Total Capacity ÷ Time Taken.

Combined Work

If multiple pipes are operating together, their combined net efficiency is the algebraic sum of their individual efficiencies: Combined Efficiency = E1 + E2 − E3.

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Q64. Answer: (c) 1/10

Shortcut Trick

Total work = LCM(10, 20) = 20 units.

Combined efficiency of A and B = 2 + 1 = 3 units/day.

Work done in 6 days = 6 × 3 = 18 units.

Fraction of work done = 18 ÷ 20 = 9/10.

Remaining work = 1 − 9/10 = 1/10.

Therefore The correct answer is 1/10.

Alternate Method

Given:

Time taken by A = 10 days

Time taken by B = 20 days

Number of days worked together = 6 days

Calculations:

Person	Days	Total Work	Efficiency
A	10	20	2
B	20	1	

=> Total efficiency of A and B = 2 + 1 = 3 units/day.

=> Work done by A and B together in 6 days = 6 × 3 = 18 units.

=> Remaining work = Total work − Work done = 20 − 18 = 2 units.

=> Fraction of work left = Remaining work ÷ Total work

=> Fraction of work left = 2 ÷ 20 = 1/10.

Therefore The correct answer is 1/10.

Additional Information

Pipes & Cisterns

This concept follows the same LCM efficiency logic as Time & Work, where an inlet pipe does positive work (+ efficiency) and an outlet pipe does negative work (− efficiency).

Work & Wages

Wages are always distributed in the ratio of the actual work done by each individual. If they work for the same duration, wages are distributed in the ratio of their efficiencies.

Alternate Day Work

When individuals work on alternate days, find the work done in a complete cycle (e.g., 2 days) and then multiply to get as close to total work as possible before adding the remaining work individually.

Q65. Answer: (d) Rs. 2,160

Shortcut Trick

Since the investment time is equal for all, Profit Ratio = Investment Ratio.

Sum of profit ratio = 34 + 75 + 6 = 115 units.

Value of 115 units = Rs. 3,600 => 1 unit = 3600 ÷ 115 = 720 ÷ 23.

Difference between Q and R's shares = 75 − 6 = 69 units.

Required difference = 69 × (720 ÷ 23) = 3 × 720 = Rs. 2,160.

Therefore The correct answer is Rs. 2,160.

Alternate Method

Profit Ratio = 34 : 75 : 6 (Total 115 units = Rs. 3600)

P

Q

R

34 units

Difference = 69 units

6 units

Given:

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Investment ratio of P, Q, and R = 34 : 75 : 6

Total Profit at the end of the year = Rs. 3,600

Formula Used:

Profit Ratio = Investment Ratio (when the time period is identical for all partners)

Calculations:

=> Profit ratio of P : Q : R = 34 : 75 : 6

=> Total profit units = 34 + 75 + 6 = 115 units

=> 115 units = Rs. 3,600

=> 1 unit = 3600 ÷ 115 = 720 ÷ 23

=> Difference in ratio between Q and R = 75 − 6 = 69 units

=> Difference in their profit shares = 69 units × (720 ÷ 23)

=> Difference = 3 × 720

=> Difference = Rs. 2,160

Therefore The correct answer is Rs. 2,160.

Additional Information

Simple Partnership

When all the partners invest their capitals for the same time period, it is called a simple partnership. The profit is distributed exactly in the ratio of their invested capitals.

Compound Partnership

When partners invest for different time periods, the profit ratio is calculated by multiplying the capital invested by the time period of investment for each partner (Profit prop. to Capital × Time).

Working vs Sleeping Partner

A working partner receives a fixed salary or a specific percentage of the total profit for managing the business. The remaining profit is then divided among all partners based on their investments.

Q66. Answer: (d) 3

Shortcut Trick

The difference between two people's ages remains constant over time.

From the future condition: 6(Q + 8) = 6(P + 8) − 24

Dividing by 6 gives: Q + 8 = P + 8 − 4 => P − Q = 4

We are given the present age condition: 7P − Q = 46

Subtracting (P − Q = 4) from (7P − Q = 46) gives: 6P = 42 => P = 7

Substituting P gives: Q = 7 − 4 = 3 years.

Therefore The correct answer is 3 years.

Alternate Method

Given:

Seven times the present age of P exceeds Q's present age by 46 years.

After 8 years, 6 times Q's age is 24 years less than 6 times P's age.

Present AgeP = P yearsQ = Q yearsAfter 8 YearsP' = P + 8Q' = Q + 8+ 8 yearsRelations: 7P - Q = 46 | 6(Q+8) = 6(P+8) - 24

Calculations:

Let the present ages of P and Q be P and Q respectively.

=> 7P − Q = 46 --- (Equation 1)

According to the condition after 8 years:

=> 6(Q + 8) = 6(P + 8) − 24

Dividing the entire equation by 6:

=> Q + 8 = P + 8 − 4

=> Q = P − 4

=> P − Q = 4 --- (Equation 2)

Now, substitute Q = P − 4 in Equation 1:

=> 7P − (P − 4) = 46

=> 6P + 4 = 46

=> 6P = 42

=> P = 7 years

Substitute the value of P back in Equation 2:

=> 7 − Q = 4

=> Q = 3 years

Therefore The correct answer is 3 years.

Additional Information

Constant Age Difference

The difference in ages between any two individuals always remains constant over time. If P is 4 years older than Q today, P will always be 4 years older than Q regardless of the years passed.

Ratio of Ages

While the absolute difference remains constant, the ratio of their ages changes continuously. As they grow older, the ratio of their ages approaches 1:1.

Average Age Concept

If the average age of a group is A today, then after N years, their new average age will simply be A + N years, assuming no new members are added or removed.

Q67. Answer: (b) 180 cm

Shortcut Trick

The ratio of the sides is 5 : 12 : 13, which forms a Pythagorean triplet indicating it is a right-angled triangle.

Area = ½ × base × height = ½ × 5x × 12x = $30x^2$

Given area = 1080 => $30x^2 = 1080$ => $x^2 = 36$ => x = 6

Perimeter = 5x + 12x + 13x = 30x = 30 × 6 = 180 cm.

Therefore The correct answer is 180 cm.

Alternate Method

Given:

Ratio of sides = 5 : 12 : 13

Area of the triangle = 1080 cm^2

Formula Used:

For a triangle with sides a, b, c, semi-perimeter s = (a + b + c) ÷ 2

Area by Heron's formula = √[s(s − a)(s − b)(s − c)]

5x (30 cm)

12x (72 cm)

13x (78 cm)

Area = 1080 cm^2

Calculations:

=> Let the sides of the triangle be 5x, 12x, and 13x.

=> Semi-perimeter, s = (5x + 12x + 13x) ÷ 2 = 30x ÷ 2 = 15x

=> Area = √[15x(15x − 5x)(15x − 12x)(15x − 13x)]

=> 1080 = √[15x × 10x × 3x × 2x]

=> 1080 = √[900x^4]

=> $1080 = 30x^2$

=> $x^2 = 1080 ÷ 30$

=> $x^2 = 36$

=> x = 6

=> Perimeter of the triangle = 5x + 12x + 13x = 30x

=> Perimeter = 30 × 6 = 180 cm

Therefore The correct answer is 180 cm.

Additional Information

Pythagorean Triplets

A set of three positive integers a, b, c that satisfy $a^2 + b^2 = c^2$. Common examples include (3, 4, 5), (5, 12, 13), (8, 15, 17), and (7, 24, 25). Identifying these can instantly simplify right-angled triangle problems and skip complex formulas.

Heron's Formula

Used to calculate the area of any triangle when all three side lengths are known: Area = √[s(s − a)(s − b)(s − c)], where s is the semi-perimeter.

Right-Angled Triangle Area

For a right-angled triangle, the area can be directly calculated as ½ × base × perpendicular height, bypassing the need for semi-perimeters entirely.

Q68. Answer: (d) Rs. 45

Shortcut Trick

Total time = 7 days (Feb) + 31 days (Mar) + 23 days (Apr) = 61 days.

Since 2024 is a leap year (366 days), Time (T) = 61 ÷ 366 = 1/6 years.

SI = (P × R × T) ÷ 100

SI = 4000 × (6.75 ÷ 100) × (1 ÷ 6) = 45

Therefore The correct answer is Rs. 45.

Alternate Method

Given:

Principal (P) = Rs. 4000

Rate of Interest (R) = 6.75% per annum

Time period: Deposited on 22 February 2024, Withdrawn on 23 April 2024

Formula Used:

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

Principal = Rs. 4000 | Rate = 6.75% p.a.

22 Feb

29 Feb

31 Mar

23 Apr

7 days

31 days

23 days

Total = 61 days

Simple Interest = (P × R × T) ÷ 100

Calculations:

=> 2024 is a leap year, so February has 29 days.

=> Number of days in Feb = 29 − 22 = 7 days (excluding the deposit day)

=> Number of days in Mar = 31 days

=> Number of days in Apr = 23 days (including the withdrawal day)

=> Total duration (T) = 7 + 31 + 23 = 61 days

=> Converting days to years: T = 61 ÷ 366 = 1/6 year

=> SI = (4000 × 6.75 × 1) ÷ (100 × 6)

=> SI = (40 × 6.75) ÷ 6

=> SI = 270 ÷ 6 = 45

Therefore The correct answer is Rs. 45.

Additional Information

Day Counting Rule

When calculating interest for a specific timeline, it is an international banking standard to count either the day of deposit or the day of withdrawal, but not both.

Leap Year Conversion

A leap year has 366 days and occurs in years divisible by 4. To convert days into years during a leap year, divide the total calculated days by 366 instead of 365.

Simple Interest vs Compound Interest

Simple Interest is charged only on the original principal, whereas Compound Interest accrues on both the principal and the accumulated interest from previous periods.

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Q69. Answer: (b) $8x^2 - 5x + 1$

Shortcut Trick

Directly expand the brackets and combine the like terms together.

=> $3x^2 - 5x + 5x^2 - 15 + 16$

=> $(3 + 5)x^2 - 5x + (16 - 15)$

=> $8x^2 - 5x + 1$

Therefore The correct answer is $8x^2 - 5x + 1$.

Alternate Method

Given:

Expression: $x(3x - 5) + 5(x^2 - 3) + 16$

Calculation:

=> Expand the first term: $x \times 3x - x \times 5 = 3x^2 - 5x$

=> Expand the second term: $5 \times x^2 - 5 \times 3 = 5x^2 - 15$

=> Substitute the expanded values back into the expression:

=> $3x^2 - 5x + 5x^2 - 15 + 16$

=> Group the like terms (terms with x^2, terms with x, and constant terms):

=> $(3x^2 + 5x^2) - 5x + (-15 + 16)$

=> $8x^2 - 5x + 1$

Therefore The correct answer is $8x^2 - 5x + 1$.

Additional Information

Distributive Property

The distributive property states that multiplying a sum by a number gives the same result as multiplying each addend by the number and then adding the products together: $a(b + c) = a \times b + a \times c$.

Like Terms in Algebra

Like terms are terms that have the exact same variables and exponents. Only like terms can be added or subtracted to simplify algebraic expressions. For example, $3x^2$ and $5x^2$ are like terms and can be added to get $8x^2$.

BODMAS Rule

BODMAS stands for Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction. It determines the correct sequence of operations when simplifying a mathematical expression.

Q70. Answer: (c) 23

Shortcut Trick

A number divisible by 88 must be divisible by both 8 and 11.

By adding the options to 91673, only adding 23 yields a number that satisfies the divisibility rule for 8.

91673 + 23 = 91696

The last 3 digits (696) are divisible by 8 (696 ÷ 8 = 87). Also, difference of alternate sums (9+6+6) − (1+9) = 11.

Therefore The correct answer is 23.

Alternate Method

Given:

Number = 91673

Divisor = 88

Formula Used:

Smallest number to be added = Divisor − Remainder

Calculations:

=> Divide 91673 by 88 to find the remainder.

=> 91673 = (88 × 1041) + 65

=> The remainder is 65.

=> Number to be added = 88 − 65

=> Number to be added = 23

Therefore The correct answer is 23.

Additional Information

Divisibility Rule for 88

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A number is divisible by 88 if it is completely divisible by both of its co-prime factors, 8 and 11.

Divisibility Rule for 8

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

Divisibility Rule for 11

A number is divisible by 11 if the difference between the sum of its digits at odd places and the sum of its digits at even places is either 0 or a multiple of 11.

Finding the Number to be Added

The smallest number to be added to a given number to make it completely divisible by a divisor is given by: Divisor − Remainder.

Q71. Answer: (b) 19

BODMAS Rule:

According to the question, the signs are interchanged as follows:

Original Symbol	**•**	**−**	**×**	**÷**
New Symbol	−	×	÷	•

Now, given the equation: 12 + 105 × 3 ÷ 14 − 3 = ?

After interchanging the specified signs, the new equation is:

12 − 105 ÷ 3 + 14 × 3 = ?

Perform operations according to BODMAS:

=> 12 − 105 ÷ 3 + 14 × 3

=> 12 − 35 + 42

=> −23 + 42

=> 19

Hence, the correct answer is "Option 2".

Q72. Answer: (b) 8

Calculation:

"PEST' is coded as '6324'

'PENS' is coded as '8634'

PEST => 6324

PENS => 8634

Since P, E, and S are common to these two words. Similarly, common numbers are 6, 3 and 4

So,

code of T → 2

code of N → 8

So, 8 is the code for 'N' in the given code language.

Hence, the correct answer is "Option 2".

Q73. Answer: (d) NIGK

The logic followed here is:

For, LGEI is related to RMKO

For, JECG is related to PKIM

Similarly, for HCAE

So, 'HCAE will be related to 'NIGK

Hence, the correct answer is "Option 4".

Q74. Answer: (c) TPS

The logic followed here is:

Option 1) NJL

Option 2) LHJ

Option 3) TPS

Option 4) QMO

Here, 'TPS' is odd among the given options.

Hence, the correct answer is "Option 3".

Q75. Answer: (b) 445

The logic followed here is:

Thus, 445 will come in place of question mark.

Hence, the correct answer is 'Option 2'.

Q76. Answer: (d) Neither conclusion (I) nor (II) follows.

Given Statements:

Some woods are chisels.

Some chisels are graphs.

The least possible Venn diagram for the given statement is:

Conclusions:

(I) Some woods are graphs:

It is possible that some Woods are Graphs, but it is not necessary (i.e., not a definite conclusion). There are possible Venn diagram arrangements where Woods and Graphs do not overlap.

Therefore, conclusion (I) does not logically follow.

(II) All graphs are chisels:

The relationship is only a 'Some' relationship (a partial overlap).

A 'Some' relationship does not imply an 'All' relationship (where the entire set of Graphs is contained within Chisels).

Therefore, conclusion (II) does not logically follow.

So, Neither conclusion (I) nor (II) follows.

Hence, the correct answer is "Option 4".

Q77. Answer: (c) Neither conclusion (I) nor (II) follows.

Given Statements:

Some nuts are berries.

All fruits are berries.

The least possible Venn diagram for the given statement is:

Conclusions:

(I) Some nuts are fruits:

From the statements, we know Nuts overlap Berries, and Fruits are inside Berries. The statements do not provide any definite link between Nuts and Fruits. The overlap is a possibility, but not a certainty.

Conclusion (I) does not follow definitively.

(II) All berries are fruits:

The statement says "All fruits are berries" (Fruits subset of Berries), which means Berries is the larger set, containing Fruits. The conclusion attempts to reverse this relationship.

Conclusion (II) does not follow.

So, Neither conclusion (I) nor (II) follows.

Hence, the correct answer is "Option 3".

Q78. Answer: (b) 24 km towards the west

Given:

Binoy starts from Point Y and drives 16 km towards the north.

He then takes a right turn and drives 43 km,

then turns right and drives 38 km.

He then takes a right turn and drives 19 km.

He takes a final right turn, drives 22 km and stops at Point Z.

So, He should drive 24 km towards the west i in order to reach Point Y again.

Hence, the correct answer is 'Option 2'.

Q79. Answer: (b) 3

The given coded language is:

Therefore, the code for ‘T’ is 3.

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Hence, the correct answer is "Option 2".

Q80. Answer: (d) BIKP

The logic followed here is:
For, DUMB is related to TMCT
For, POYV is related to FGON
Similarly, for LQUX
So, 'LQUX' will be related to 'BIKP'
Hence, the correct answer is "Option 4".

Q81. Answer: (d) Four

Given: Seven boxes F, G, H, M, N, O and P are kept one over the other but not necessarily in the same order.
1) Only two boxes are kept below O.
2) Only one box is kept above N.
3) Only one box is kept between N and H.
4) G is kept immediately above M.
5) F is kept at some place below P.

P
N
F
H
O
G
M

So, there are 'Four' boxes are kept between P and G.
Hence, the correct answer is "Option 4".

Q82. Answer: (c) TP – ZD

The letter-cluster that DOES NOT belong to the group is POT.
The logic followed here is:
Option 1) BX – HK
Option 2) GC – MP
Option 3) TP – ZD
Option 4) XT – DG
Thus, the letter-cluster that DOES NOT belong to that group is TP – ZD.
Hence, the correct answer is "Option 3".

Q83. Answer: (d) KPI69

The logic followed here is:
Thus, the missing term in the series is KPI69.
Hence, the correct answer is "Option 4".

Q84. Answer: (a) Three

Given: L, M, N, O, Q, R and S are sitting around a circular table facing the centre of the table.
1) Only one person sits between N and Q when counted from the left of Q.
2) S sits third to the right of R.
3) L sits third to the left of M.
4) S sits to the immediate right of L.
5) O is not an immediate neighbour of L.
Thus, Three people sit between O and Q when counted from the right of O.
Hence, the correct answer is "Option 1".

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Q85. Answer: (b) 160, 32

The logic followed here is:

Logic: Divide the first number by 5 to get the second number.

130, 26

130 ÷ 5 = 26

225, 45

225 ÷ 5 = 45

Now, checking the options:

Option 1) 155, 30

155 ÷ 5 = 31. (31 ≠ 30) - Incorrect

Option 2) 160, 32

160 ÷ 5 = 32. (32 = 32) - Correct

Option 3) 200, 42

200 ÷ 5 = 40. (40 ≠ 42) - Incorrect

Option 4) 185, 36

185 ÷ 5 = 37. (37 ≠ 36) - Incorrect

Hence, the correct option is "Option 2"

Q86. Answer: (b) PJK 112

The logic followed here is:

So, 'PJK 112' will replace the question mark in the given series.

Hence, the correct answer is "Option 2".

Q87. Answer: (a) D

Given: Five people (A, B, C, D and E) are sitting in a straight line. They all are facing towards the north.

1) B is sitting immediately between C and E.

2) A is sitting third to the left of E..

3) C is sitting second to the right of D.

So, D is sitting at the extreme left end of line.

Hence, the correct answer is "Option 1".

Q88. Answer: (c) 1

Given series:

(Left) £ $ 7 1 1 @ @ 2 © 5 $ & @ £ % # 7 € © @ 8 $ (Right)

Condition to be checked:

Number → Number → Symbol

£ $ 7 1 1 @ @ 2 © 5 $ & @ £ % # 7 € © @ 8 $

There is only one such number that meets the criteria: 1 (in the sequence 1 1 @).

Hence, the correct answer is "Option 3".

Q89. Answer: (d) Three

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

1) Only four boxes are kept between A and E.

2) Only G is kept above A.

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

4) D is kept immediately above F.

5) C is not kept immediately above D.

G
A
B
D

F
C
E

So, there are Three boxes are kept above D.
Hence, the correct answer is "Option 4".

Q90. Answer: (b) 5^(th)

Given:
Total students in the row = 47.
Shivangi's position = 21st from the Left end
Ankit's position is 22nd to the Right of Shivangi.
Since Ankit is to the right of Shivangi,
A = Shivangi + 22
= 21 + 22
= 43rd from the Left end.
Ankit position from right
=> Total students - Ankit from left end + 1
= 47 - 43 + 1
= 4 + 1
= 5th from the Right end.
Hence, the correct answer is "Option 2".

Q91. Answer: (c) 95

The logic followed here is:
Thus, the missing number in the series is 95.
Hence, the correct answer is "Option 3".

Q92. Answer: (d) 3

Given series:
(Left) % 6 @ 9 * 3 $ 7 8 ? 1 Ω 2 £ 5 # 4 & (Right)
Symbols and even numbers are dropped from the series, which of the following will be fourth from the right end
New series. 9 3 7 1 5
So, The 4th element from the right end is 3.
Hence, the correct answer is "Option 4".

Q93. Answer: (d) None

Given:
The original number is 8123457.
The digits, when arranged in ascending order from left to right, form the number: 1234578.

Position	1st	2nd	3rd	4th	5th	6th	7th
Original Digit	8	1	2	3	4	5	7
Arranged Digit	1	2	3	4	5	7	8

Thus, the position of zero digits remains unchanged.
Hence, the correct answer is "Option 4."

Q94. Answer: (d) ZWJO

The logic followed here is:
For, BGLY is related to EIOA
For, NOXG is related to QQAI
Similarly, for WUGM
So, 'WUGM will be related to ZWJO

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Hence, the correct answer is "Option 4".

Q95. Answer: (b) 248

The logic followed here is:

Thus, the missing number in the series is 248.

Hence, the correct answer is "Option 2".

Q96. Answer: (c) POT

The letter-cluster that DOES NOT belong to the group is POT.

The logic followed here is:

Option 1) 'DGF':

Pattern: (+3, -1).

Option 2) 'ORQ':

Pattern: (+3, -1).

Option 3) POT

Pattern: (-1, +5). (does not follow same pattern)

Option 4) 'FIH':

Pattern: (+3, -1).

Thus, the letter-cluster that DOES NOT belong to that group is POT.

Hence, the correct answer is "Option 3".

Q97. Answer: (a) 3 km to South

Given:

Himank starts from Point A and drives 13 km towards West.

He then takes a left turn, drives 3 km, turns left and drives 16 km.

He then takes a left turn and drives 6 km.

He takes a final left turn, drives 3 km and stops at Point P.

So, He should drive 3 km to South in order to reach Point A again.

Hence, the correct answer is "Option 1".

Q98. Answer: (c) 6

Given numbers: 5672493

If 2 is added to each even digit and 1 is subtracted from each odd digit in the number

The new number is 4864682

So, The third digit from the left is 6.

Hence, the correct answer is 'Option 3'

Q99. Answer: (d) 8

Given numbers: 29134576

If 2 is added to each even digit and 1 is subtracted from each odd digit in the number

The new number is 4 8 0 2 6 4 6 8

Greatest digit = 8

Smallest digit = 0

Difference = 8 − 0 = 8

Hence, the correct answer is 'Option 3'

Q100. Answer: (a) Mother's brother

Decoding symbols for Family Tree:

Given:

K is the son of I.

I is the father of L.

L is the mother of O.

O is the brother of S.

K is the brother of L.

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Thus, K is the Mother's brother of O.
Hence, the correct answer is "Option 1".

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