RRB NTPC (UG) CBT-I Official Paper (Held On: 11 Aug, 2025 Shift 1) (Previous Year Paper)

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

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GENERAL AWARENESS

Q1. Which decommissioned ship of the Indian Navy was announced to be converted into a submerged museum in 2025?

(a) INS Visakhapatnam
(b) INS Nilgiri
(c) INS Kalvari
(d) INS Guldar

Q2. Which of the following is a tribal dance of India?

(a) Ghusadi
(b) Lavani
(c) Bhangra
(d) Kathak

Q3. Which of the following terms is used to refer to certain female devotees who perform the Lai Haraoba dance in Manipur, India?

(a) Jogin
(b) Maiba
(c) Maibi
(d) Pujarin

Q4. Which natural formation in northwest India initiates a low pressure area during the summer months?

(a) Thar Desert
(b) Ganges Basin
(c) Aravalli Hills
(d) Satpura Mountains

Q5. Which three international organizations jointly organized a trilateral cooperation briefing on February 26, 2025 for Geneva-based health, trade and intellectual property (IP) diplomats?

(a) WHO, UNESCO and WTO
(b) WHO, IMF and UNDP
(c) WHO, WIPO and WTO
(d) WHO, WIPO and UNICEF

Q6. Which of the following programmes was launched by the Ministry of Environment, Forest and Climate Change (MoEF&CC) in 2019 to improve air quality in 131 cities (non-attainment cities and million plus cities) across 24 states/UTs?

(a) Swach Bayu Sarvekshan
(b) National Association of Clean Air Agencies
(c) Air Quality Forecasting System
(d) National Clean Air Program

Q7. Which option in the MS Windows desktop interface is primarily used as a system configuration tool rather than a direct visual element?

(a) Recycle bin
(b) Start menu
(c) Control panel
(d) Taskbar

Q8. Cambodia appealed to which international organization to resolve the border dispute with Thailand in 2025?

(a) World Trade Organization
(b) ASEAN Regional Forum
(c) International Court of Justice
(d) United Nations Security Council

Q9. In 2013, Ikea received government approval for its Rs. 10,500 crore FDI proposal to set up 10 stores with connected infrastructure over 10 years. This is a _____.

(a) German company
(b) American company
(c) Swedish company
(d) Chinese company

Q10. Which Indian organization organized the 19th India Digital Summit in January 2025, highlighting the digital ecosystem?

(a) National Association of Software and Service Companies (NASSCOM)
(b) Telecom Regulatory Authority of India (TRAI)
(c) Confederation of Indian Industry (CII)
(d) Internet and Mobile Association of India (IAMAI)

Q11. On May 7, 2025, India conducted Civil Defence mock drills in how many districts across the country to enhance emergency preparedness?

(a) 290
(b) 244
(c) 200
(d) 150

Q12. Which class has the Navy ship 'Tavasya', which was launched in 2025, been included in?

(a) Ballistic submarine
(b) Surveillance ship
(c) Stealth frigate
(d) Corvette

Q13. What is the minimum age to contest in Panchayat elections as per Article 243F?

(a) 25 years
(b) 18 years
(c) 30 years
(d) 21 years

Q14. Direct tax reforms are part of India's revenue consolidation strategy. Which committee recommended simplification of direct taxes in post-liberalization India?

(a) Narasimham Committee
(b) Tarapore Committee
(c) Kelkar Committee
(d) Dutta Committee

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Q15. The Iran stone inscription states that Samudragupta was chosen as king by his father because of his _____.

(a) Wealth and popularity
(b) Age and birthright
(c) Devotion, pious conduct, and heroism
(d) Support from other kings

Q16. Which Indian state has topped the Financial Health Index 2025 published by NITI Aayog?

(a) Gujarat
(b) Karnataka
(c) Odisha
(d) Maharashtra

Q17. Which law allowed Indian members to discuss the budget in the Legislative Council for the first time?

(a) Indian Council Act, 1861
(b) Indian Council Act, 1892
(c) Government of India Act,1858
(d) Indian Council Act, 1909

Q18. Who founded the Servants of India Society to promote national education and social reforms in India?

(a) S. N. Banerjee
(b) Bal Gangadhar Tilak
(c) Gopal Krishna Gokhale
(d) Bipin Chandra Pal

Q19. Which of the following was a military division during the reign of Alauddin Khalji?

(a) Diwan-e-Insha
(b) Diwan-e-Arz
(c) Diwan-e-Wizarat
(d) Diwan-e-Risalat

Q20. In which year was Bank of Madras established as the third Presidency Bank of India?

(a) 1843
(b) 1857
(c) 1863
(d) 1840

Q21. In which state was the 7th Khelo India Youth Games held in 2025?

(a) Maharashtra
(b) Bihar
(c) Haryana
(d) Gujarat

Q22. Amylopectin is a branched-chain polysaccharide composed primarily of glucose units linked by_____.

(a) α -1.4-Glycosidic bond
(b) β-1,4-Glycosidic bond
(c) β-1,6-Glycosidic bond
(d) α -1,2-Glycosidic bond

Q23. What does UDAY stand for in the context of power distribution companies?

(a) Uninterrupted Domestic Assurance Yojana
(b) Utility Development and Assistance Yojana
(c) Ujwal DISCOM Assurance Yojana
(d) Urban Distribution Action Yojana

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Q24. Where is the Tata Aircraft Complex, inaugurated in October 2024 to manufacture C-295 aircraft, located?

(a) Chennai
(b) Hyderabad
(c) Vadodara
(d) Pune

Q25. Which part of the Indian Constitution deals with the economic relations between the Centre and the States?

(a) Part X
(b) Part XI
(c) Part XIII
(d) Part XII

Q26. New Caledonia, which is in the headlines for nickel mining protests and independence debates as of April 2025, is a territory of which country?

(a) Australia
(b) New Zealand
(c) United Kingdom
(d) France

Q27. Life expectancy in India was 58.6 years in 1990, which increased to _____ in 2023, the highest recorded since the inception of this index.

(a) 72 years
(b) 70 years
(c) 65 years
(d) 75 years

Q28. Which option is correct regarding the abbreviation, full form and its primary function?

(a) LAN - Local Area Network connects computers within a limited area.
(b) CD - Central Disk Operating System permanently stores
(c) ASCII - American Standard Communication for Input and Interface used for graphic design -
(d) ASCII - Advanced System for Communication Interface - used in LAN setup

Q29. What is the primary objective of India's 'Bharat 6G Vision', launched in March 2023?

(a) Importing 6G infrastructure from developed countries
(b) Establishing India as a leader in 6G technology by 2030
(c) Commercializing 6G services only in urban areas
(d) Replacing 5G technology by 2025

Q30. For the development of cooperative societies, which part of the Constitution was amended through the 97th Amendment?

(a) Part IXB
(b) Part XII
(c) Part XI
(d) Part IXA

Q31. Which disease is caused by the accumulation of lipids in brain cells due to the deficiency or inactivation of lipid digesting enzymes?

(a) Tay-Sachs disease
(b) Huntington’s disease
(c) Parkinson’s disease
(d) Alzheimer’s disease

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Q32. Who wrote the book 'AI on Trial', published in April 2025?

(a) Himanshu Roy
(b) Sujit Kumar and Tausif Alam
(c) Manohar Lal Khattar and Himanshu Dhulia
(d) Bandaru Dattatreya

Q33. What was the main belief of the moderate Congress leaders regarding the British rule in India?

(a) Violent uprising
(b) Support for British
(c) Immediate independence
(d) Gradual political freedom

Q34. Through which amendment were the words 'socialist' and 'secular' added to the Preamble?

(a) 24th
(b) 42th
(c) 44th
(d) 39th

Q35. According to the data of the Ministry of Coal, which state of India had the highest coal reserves in the financial year 2023-24?

(a) Jharkhand
(b) Telangana
(c) Madhya Pradesh
(d) Odisha

Q36. Why is the biodiversity of the Lakshadweep Islands less than that of the Andaman and Nicobar Islands?

(a) Smaller land area and lack of forest areas
(b) Volcanic eruptions and barren soil
(c) Overpopulation
(d) Higher altitudes and cooler temperatures

Q37. Nepal shares its border with which of the following Indian states?

(a) Bihar
(b) Himachal Pradesh
(c) Odisha
(d) Meghalaya

Q38. What common molecular structure characterizes the class of organic compounds known as diazonium compounds or diazonium salts?

(a) R-CEN
(b) R-N2^+ X^-
(c) R.C=NR'
(d) R-CO-NR'R''

Q39. In June 2025, what event intensified the Israel-Iran conflict?

(a) Israel's first attack on Iran's nuclear facilities
(b) Iranian missile attack on Tel Aviv
(c) Dismantling the Joint Comprehensive Plan of Action (JCPOA)
(d) An Iranian general was killed

Q40. What negative consequences did the Revolt of 1857 create in Indian society?

(a) Mistrust developed between the Hindu and Muslim communities.
(b) There was a decline in Indian handicrafts.
(c) The tribal and peasant movements were weakened.
(d) There was a decline in Indian language and culture.

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MATHEMATICS

Q41. The cost of 2 pens and 19 pencils is Rs. 118. If the cost of a pen decreases by Rs. 5 and the cost of a pencil increases by Rs. 4, then the cost of 5 pens and 8 pencils becomes Rs. 144. Then what is the actual cost of 14 pens and 6 pencils?

(a) Rs. 318
(b) Rs. 314
(c) Rs. 319
(d) Rs. 321

Q42. The HCM and LCM of two numbers are 91 and 546 respectively. If one number is 182, then find the other number.

(a) 273
(b) 91
(c) 364
(d) 182

Q43. If a number is increased by 60%, it becomes 3550. What is the number?

(a) 2218.75
(b) 6656.25
(c) 4437.5
(d) 1109.375

Q44. A dishonest trader claims to sell rice at a profit of 39% but uses a weight of 17% less than the stated value at the time of sale. What is the total percentage profit of the trader? (Round to the nearest whole number)

(a) 66%
(b) 72%
(c) 67%
(d) 69%

Q45. What is the value of $\sqrt{400} + \sqrt{0.0225} - \sqrt{9}$?

(a) 1.54
(b) 14.54
(c) 12.19
(d) 17.15

Q46. By which largest number will 527 and 632 be divided so that the remainders are 7 and 8 respectively?

(a) 102
(b) 104
(c) 112
(d) 98

Q47. Rs. 74,000 is divided among A, B and C in such a way that 9 times A = 3 times B = 7 times C. Then what is the share received by A?

(a) Rs. 14,194
(b) Rs. 13,816
(c) Rs. 14,000
(d) Rs. 13,865

Q48. Simplify.

$x(6x - 3) + 5(x^2 - 4) + 18$

(a) $-11x^2 - 3x + 2$
(b) $11x^2 - 3x - 2$
(c) $11x^2 - 3x + 2$
(d) $-11x^2 - 3x - 2$

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Q49. How many prime numbers are there between 466 and 476 (include both numbers)?

(a) 1
(b) 2
(c) 3
(d) 5

Q50. 79 plates were purchased at Rs. 79 and 13 plates were broken during transportation. The trader sells the remaining plates at Rs. 5.90 each. Then, find the trader's profit.

(a) Rs. 314.90
(b) Rs. 305.40
(c) Rs. 316.40
(d) Rs. 310.40

Q51. A woman travels 282 km at a speed of 47 km/hr, the next 120 km at a speed of 20 km/hr and the next 496 km at a speed of 62 km/hr. What is her average speed (in km/hr) during the entire journey?

(a) 52.2
(b) 44.9
(c) 53.6
(d) 46.7

Q52. Find the volume of a sphere with a diameter of 30 cm. ($\pi = 3.14$)

(a) 14,130 cm3
(b) 14,230 cm3
(c) 15,230 cm3
(d) 15,130 cm3

Q53. ABCD is a trapezium where BC || AD and AC = CD. If angle ABC = 54° and angle BAC = 60°, what is the measure (in degrees) of angle ACD?

(a) 184
(b) 48
(c) 171
(d) 181

Q54. By which number 740705 is divisible?

(a) 12
(b) 4
(c) 5
(d) 9

Q55. Ritu, Sameer and Isha started a business by investing Rs. 1,350, Rs. 1,470 and Rs. 1,380 respectively. If the total profit at the end of the year is Rs. 1,330, what will be Isha's share in the profit received?

(a) Rs. 439
(b) Rs. 435
(c) Rs. 437
(d) Rs. 438

Q56. A batsman's average runs in 23 matches is 41 and in the next 10 matches he scored at an average of 14 runs. What is his average runs (rounded to two decimal places) in a total of 33 matches?

(a) 34.82
(b) 33.82
(c) 31.82
(d) 32.82

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Q57. What will be the simple interest (in Rs.) for 3 months on Rs. 1,200 at a monthly interest rate of 4%?

(a) Rs. 12
(b) Rs. 32
(c) Rs. 24
(d) Rs. 144

Q58. If 39% of the first number is equal to eight-ninths of the second number, then what is the ratio of the first number to the second number?

(a) 805 : 353
(b) 800 : 351
(c) 804 : 348
(d) 796 : 347

Q59. A flagpole is placed on the roof of a house. If the angle of elevation of the top of the flagpole from a point 30 m away from the base of the house is 60° and the angle of elevation of the roof of the house is 30°, what is the height of the flagpole in meters?

(a) $60\sqrt{3}$
(b) $20\sqrt{3}$
(c) $40\sqrt{3}$
(d) $30\sqrt{3}$

Q60. Find the value.

$16 + 12 \div 6 - 2 \times 4$

(a) 9
(b) 13
(c) 12
(d) 10

Q61. The printed price of a shirt is 800 and it is sold at a discount of 25%. Find the selling price of the shirt.

(a) Rs. 680
(b) Rs. 600
(c) Rs. 640
(d) Rs. 620

Q62. A can do a piece of work in 13 days and B can do the same piece of work in 24 days. If they work together for 5 days, how much of the work will be left?

(a) 133/312
(b) 129/312
(c) 127/312
(d) 137/312

Q63. A wholesaler offers a trade discount of 20% on a product priced at Rs. 10,000. On the discounted price, a scheme discount of 10% is given. However, if the customer pays in cash, an additional 5% discount is given on the final price after both discounts. How much will the customer have to pay as the final price?

(a) Rs. 6,800
(b) Rs. 7,000
(c) Rs. 6,940
(d) Rs. 6,840

Q64. There are 359000 people in a district out of which 179000 are males. If 22% of the total population is literate and 22% of males are literate, then what is the percentage literacy rate of females?

(a) 19%
(b) 24%
(c) 22%
(d) 20%

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Q65. Find the perimeter (in m) of the largest circle that can be drawn inside a rectangle with dimensions 249 m and 217 m. (π=22/7)

(a) 679
(b) 676
(c) 682
(d) 690

Q66. Pipe P can fill 3/4 part of a tank in 15 hours, and pipe Q can fill 5/6 part of the same tank in 25 hours. Both P and Q were kept open for 2 hours, then both were closed. Pipe R alone was then opened and it emptied the water in the tank in 5 hours. Pipes P, Q and R together can fill the empty tank in:

(a) 17 hours
(b) 22 hours
(c) 31 hours
(d) 20 hours

Q67. When 5 times the son's age is added to his father's age, the sum is 79 years. When 2.5 times the father's age is added to the son's age, the sum is 94 years. So, what is the father's age (in years)?

(a) 34
(b) 37
(c) 38
(d) 30

Q68. If the average price of three pieces of furniture is Rs. 15,990 and the ratio of their prices is 3:5:7, what is the price of the cheapest piece of furniture (at Rs.)?

(a) 7,462
(b) 9,594
(c) 3,198
(d) 1,066

Q69. At an interest rate of 7.7% per annum, the simple interest on a certain sum of money for 26/7 years is Rs. 1,188. At an interest rate of 8.5% per annum, how much will be paid in total in 4 5/9 years for that sum of money?

(a) Rs. 7,491
(b) Rs. 7,489
(c) Rs. 7,484
(d) Rs. 7,504

Q70. A person crosses a bridge in 5.4 minutes while driving at a speed of 42 km/h. What is the length of the bridge?

(a) 3.51 km
(b) 3.42 km
(c) 4.38 km
(d) 3.78 km

GENERAL INTELLIGENCE AND REASONING

Q71. If 'A' means '÷', 'B' means '×', 'C' means '+' and 'D' means '-', then what will come in place of the question mark (?) in the given equation?

9 B 5 D 12 A 2 C 11 = ?

(a) 50
(b) 43
(c) 32
(d) 38

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Q72. What would come in place of the question mark (?) in the given sequence according to the English alphabet?

XZR UWO RTL OQI ?

(a) LNE
(b) LME
(c) LNF
(d) LMF

Q73. Rajesh ranks 25th from the first and 35th from the last in his class. How many students are there in his class?

(a) 59
(b) 58
(c) 57
(d) 60

Q74. What would come in place of the question mark (?) in the given sequence according to the English alphabet?

EHR LOY SVF ZCM?

(a) GJT
(b) GRF
(c) GTJ
(d) GFR

Q75. Each of the following triples follows a specific logic and is related to the next one. Choose the triple that follows the same logic from the given options.

SKIP - KSPI - PIKS

MEND - EMDN - DNEM

(a) KITE - IKET - ETIK
(b) PLUM-PULM - MULP
(c) FOIL-LIFO - FOLI
(d) HEAL-AHEL - LAEH

Q76. Which number will replace the question mark (?) in the given sequence?

13 31 40 76 94 148 ?

(a) 157
(b) 202
(c) 175
(d) 220

Q77. Seven persons L, M, N, O, P, Q and R are sitting in a row facing north.

Only two are sitting to the right of N. Only two are sitting between N and R. Only two are sitting between L and Q. Q is sitting to the immediate left of N. O is sitting to the immediate right of P.

Who is sitting third from the left in the row?

(a) L
(b) M
(c) O
(d) R

Q78. In a certain code language, 'month owl row' is written as 'eg kv oc' and 'vex row virus' is written as 'jl vf eg'. How is 'row' written in the given code language?

(a) ji
(b) oc
(c) kv
(d) eg

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Q79. Which number from the given options will replace the question mark (?) in the following sequence?

44 55 68 83 100?

(a) 108
(b) 124
(c) 119
(d) 112

Q80. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

All watches are belts.

No belt is a tie.

Conclusions (I): Some watches are ties.

Conclusions (II): All ties are belts.

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

Q81. Which number will replace the question mark (?) in the given sequence?

49, 81, 121, 169, ?, 289

(a) 225
(b) 256
(c) 245
(d) 196

Q82. If '+' and '-' interchange their places and '×' and '÷' interchange their places, similarly, then what number will replace the question mark (?) in the following equation?

24 + 86 × 2 - 15 ÷ 4 = ?

(a) 32
(b) 58
(c) 49
(d) 41

Q83. Choose the alternative set whose numbers are related in the same way as the numbers in the set given below.

(Note: The entire operation has to be performed on the whole number itself, without dividing the numbers into their components. For example, in the case of 13, all the operations have to be performed on 13 itself. That is, addition/subtraction/multiplication etc. have to be done with 13 but 13 has to be divided into its components 1 and 0 and then no mathematical operations can be performed on 1 and 0.)

(384, 32, 6)

(408, 68, 3)

(a) (280, 38, 5)
(b) (416, 52, 4)
(c) (394, 48, 4)
(d) (348, 41, 4)

Q84. Vijay is ranked 12th from the first and 34th from the last in his class. How many students are there in his class?

(a) 44
(b) 46
(c) 45
(d) 47

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Q85. Look at the sequence of numbers and symbols and answer the following questions. Count only from left to right.

(Left) 7 @ > 5#?+*2>?>$4%% $742 (Right)

How many symbols are there in the above sequence, each of which is immediately preceded by another symbol and immediately followed by a number?

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

Q86. In the order of the English alphabet, three of the following four letter-cluster pairs are similar in certain ways and thus form a group. Which letter-cluster pair does not belong to that group?

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

(a) NI-MO
(b) TO-SV
(c) QL-PS
(d) KF-JM

Q87. Seven persons A, B, C, T, U, V and W are sitting in a row facing north. Only three persons are sitting between V and T. U is sitting to the immediate left of T. No one is sitting to the right of C. Only two persons are sitting between C and U. W is sitting to the immediate right of A. How many persons are sitting between B and W?

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

Q88. Each of the digits in the number 6317458 is arranged in descending order from left to right. What will be the sum of the digits which are third from the left and second from the right in the new number thus formed?

(a) 10
(b) 9
(c) 12
(d) 11

Q89. If 'A' means '÷', 'B' means '×', 'C' means '+' and 'D' means '-', then what will replace the question mark (?) in the following equation?

100 A 5 C 14 D 5 B 3=?

(a) 23
(b) 15
(c) 27
(d) 19

Q90. In the following triads, each letter group is related to the next letter group by following a specific logic. From the given options, choose the letter group that follows the same logic.

SONG - OSNG - GNOS

HEAT - EHAT - TAEH

(a) BUYS - UBYS - UYSB
(b) UNIT - NUIT - TNIU
(c) TONG - TNOG - GNOT
(d) FUSE - UFSE - ESUF

Q91. Three of the four letter pairs given below in the order of the English alphabet are similar in certain ways and therefore form a group. Determine which letter pair does not belong to that group.

(Note: The exceptional option is not based on the number of consonants/vowels or their position in the letter pair.)

(a) MP - LO

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(b) KR - GT
(c) EH - DG
(d) GJ - FI

Q92. Rosie starts from point A and drives 7 km towards the west. Then she turns left, drives 5 km, turns left again, drives 12 km, then turns right and drives 9 km. She turns right for the last time, drives 5 km and stops at point P. How far (minimum distance) does she have to travel to reach point A again and in which direction should she drive? (All turns are assumed to be 90° unless otherwise specified)

(a) 16 km East
(b) 14 km North
(c) 14 km South
(d) 16 km West

Q93. Aman starts walking from point A and runs 10 m towards north. Then he turns right and walks 5 m, then turns right again and walks 6 m and turns right again and walks 12 m. Now he turns left for the last time and walks 4 m and stops. How far (minimum) and in which direction does he have to walk to reach the starting point? (All turns are assumed to be 90° unless otherwise stated.)

(a) 8 m West
(b) 7m North
(c) 8 m South
(d) 7 m East

Q94. 30 students are standing in a row facing north. Deepa is standing 9th from the left, and Savita is standing 11th from the right. How many students are standing between Deepa and Savita?

(a) 10
(b) 11
(c) 8
(d) 9

Q95. GT 23 is related to FP 6 in a certain way. HP 21 is related to GL 4 in a similar way. Following a similar method, OL 15 is related to which option?

(a) MI 4
(b) NH 2
(c) MH 2
(d) NI 4

Q96. Look at the sequence of numbers and symbols below and answer the question. Count only from left to right.

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

How many symbols are there that have a number immediately before each one and another number immediately after each one?

(a) More than two
(b) one
(c) two
(d) None

Q97. Three of the four letter pairs given below in the order of the English alphabet are similar in certain ways and therefore form a group. Determine which letter pair does not belong to that group.

(Note: The exceptional option is not based on the number of consonants/vowels or their position in the letter pair.)

(a) UY-PS
(b) LP-GJ
(c) SW-NQ
(d) GK-BF

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Q98. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements: All hands are legs.

Some legs are faces.

Conclusions: (I) All legs are hands.

(II) All faces are legs.

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

Q99. In a certain code language,

'A $ B' means 'A is B's daughter'

'A + B' means 'A is B's brother'

'A @ B' means 'A is B's wife'

'A ÷ B' means 'A is B's father'

If 'E @ F + G $ M ÷ N', then according to the above condition, how is E related to N?

(a) Nephew's daughter
(b) Wife
(c) Daughter
(d) Brother's wife

Q100. In a certain code language, 'LOSE' is coded as '9432' and 'LOST' is coded as '9364'.

What is the code for 'T' in the given code language?

(a) 3
(b) 9
(c) 6
(d) 4

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) INS Guldar

The correct answer is INS Guldar.

Key Points

• INS Guldar is a decommissioned ship of the Indian Navy that is set to be converted into a submerged museum. This decision aims to preserve its historical significance and contribute to maritime tourism.

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• The conversion of decommissioned ships into museums is a common practice to retain the legacy of the nation's naval history while promoting awareness and education about maritime heritage.

• The announcement of converting INS Guldar into a submerged museum was made in 2025, recognizing its historical importance and potential contribution to naval history.

• The initiative of converting decommissioned ships into museums reflects the nation's commitment to honoring its maritime achievements and educating citizens and tourists about naval history and defense mechanisms.

• This museum will serve as a means of preserving the ship's legacy while offering visitors a unique experience to explore its history and contribution to national defense.

• The project aligns with similar initiatives globally, where historic naval vessels are transformed into museums to promote public engagement and preserve naval heritage.

Additional Information

• INS Guldar:

• INS Guldar was a prominent vessel of the Indian Navy, playing a significant role in safeguarding maritime borders during its operational years.

• Decommissioned after decades of service, the ship represents an integral part of India's naval history and achievements.

• The initiative of transforming it into a submerged museum will help preserve its history and showcase it to the public, ensuring that its legacy is not forgotten.

• Other Decommissioned Ships of the Indian Navy:

• INS Vikrant: India's first aircraft carrier, which was decommissioned in 1997 and later turned into a museum ship. It played a critical role in the 1971 Indo-Pak War.

• INS Viraat: Another aircraft carrier decommissioned in 2017, with plans to convert it into a museum ship, although these plans have faced challenges.

• INS Khukri: A warship lost during the 1971 war, which has been memorialized as a museum in Diu.

• Significance of Naval Museums:

• Naval museums serve as an educational tool, providing insights into the nation's maritime history, technology, and naval defense systems.

• Such museums also contribute to tourism and cultural preservation, attracting visitors interested in historical and military exhibits.

• Countries like the United States, Russia, and the United Kingdom have also converted decommissioned warships into museums, highlighting the global significance of such practices.

Important Points

• Key Features of Submerged Museums:

• Submerged museums are designed to provide an underwater experience, allowing visitors to explore the ship's interiors through special equipment or guided tours.

• These museums highlight the architecture, design, and operational history of decommissioned vessels.

• They also serve as artificial reefs, contributing to marine biodiversity and promoting environmental sustainability.

• Global Examples of Submerged Museums:

• USS Arizona Memorial: Located in Pearl Harbor, this submerged museum commemorates the lives lost during the World War II attack.

• HMAS Sydney: An Australian warship wreck converted into a heritage site and museum.

• HMS Belfast: A British naval ship preserved as a museum on the River Thames in London.

Q2. Answer: (a) Ghusadi

The correct answer is Ghusadi.

Key Points

• Ghusadi is a traditional tribal dance that originates from the tribal communities of India, particularly the Gond and Kolam tribes in regions like Maharashtra and Telangana.

• The Ghusadi dance is performed during festivals, especially during the harvest season, as a form of celebration and thanksgiving to nature for bountiful crops. Hence, it is a tribal dance of India.

• The performers wear traditional attire, often adorned with colorful ornaments and headgear made of peacock feathers and beads, which adds a unique aesthetic to the dance. This emphasizes its tribal roots.

• The dance is accompanied by folk music played on traditional instruments like the dhol and shehnai, which creates a vibrant atmosphere for the performance.

• Being a community-based dance, Ghusadi reflects the culture, traditions, and social life of the tribal communities, and it is a medium to pass their heritage to the next generation. This makes it an essential part of India's tribal heritage.

• Hence, the correct answer is Ghusadi.

Additional Information

• Lavani:

• Lavani is a traditional folk dance of Maharashtra, known for its graceful movements and expressive storytelling.

• It is performed to the beats of the dholki and is known for its erotic and rhythmic elements. It is not a tribal dance but rather a folk dance.

• Bhangra:

• Bhangra is a popular folk dance from the Punjab region, performed during the harvest season and festive occasions.

• It is characterized by energetic moves and the use of instruments like the dhol. However, it is also not a tribal dance but a regional folk dance.

• Kathak:

• Kathak is one of the eight major forms of classical dance in India. It originated in northern India and is known for its intricate footwork and expressive gestures.

• It primarily narrates stories from Indian epics and mythology and is not considered a tribal or folk dance.

Important Points

• Tribal Dances in India:

• India is home to a variety of tribal communities, each with its unique dance forms that reflect their cultural heritage, beliefs, and way of life.

• Some well-known tribal dances include Santhal from Jharkhand, Bihu from Assam (although it is also considered a folk dance), and Ghoomar from Rajasthan.

• Significance of Tribal Dances:

• Tribal dances are often associated with rituals, festivals, and celebrations of life events such as harvests, weddings, and religious ceremonies.

• They serve as a means of storytelling, conveying myths, legends, and the history of the community from one generation to the next.

• Tribal dances are also a way to express gratitude to nature and celebrate the harmony of human life with the environment.

Q3. Answer: (c) Maibi

The correct answer is Maibi.

Key Points

• Maibi refers to certain female devotees of Manipur who perform the Lai Haraoba dance, a traditional dance form celebrated in the region.

• The term Maibi is associated with the Meitei community of Manipur, which follows indigenous religious and cultural practices.

• Lai Haraoba is a significant ritualistic festival in Manipur, honoring Umang Lai (forest deities) and showcasing the relationship between humans and nature.

• The dance performed by the Maibis represents the creation of the universe and depicts various stages of human life, such as birth, growth, and death.

• The Maibis play a critical role in preserving the traditions and cultural heritage of Manipur, ensuring the festival remains an integral part of the region's identity.

• The term Maibi is distinct from other terms such as Jogin, Maiba, and Pujarin, which are unrelated to the specific dance and rituals of Lai Haraoba.

• Hence, the correct answer is Maibi.

Additional Information

• Lai Haraoba Festival:

• Lai Haraoba is celebrated in honor of the Umang Lai (forest deities), who are revered in the traditional Meitei religion of Manipur.

• The festival features ritualistic performances, including dances, songs, and offerings, and is considered an essential aspect of the Meitei cultural heritage.

• The Maibis (priestesses) play a central role in conducting rituals and performing dances during the festival.

• Role of Maibis:

• Maibis are regarded as spiritual and cultural custodians of the Meitei community. They are trained in traditional practices and rituals.

• They interpret the connection between humans, the environment, and the divine through their dances and performances.

• Other Terms Mentioned:

• Jogin: Refers to female ascetics or devotees in some Indian traditions, but not specifically related to the Lai Haraoba dance.

• Maiba: Refers to male priests in the Meitei community; distinct from Maibi, who are female priestesses.

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• Pujarin: A general term for a female priestess in Hindu traditions, not specific to the Lai Haraoba festival.

Important Points

• Lai Haraoba is not only a festival but also a representation of the cosmic creation, as depicted in the performances of the Maibis.

• The presence of Maibis in the festival highlights the role of women as spiritual leaders and preservers of tradition in the Meitei community.

• Understanding the terms such as Maibi and Maiba is crucial to appreciating the cultural significance of the rituals and traditions of Manipur.

Q4. Answer: (a) Thar Desert

The correct answer is Thar Desert.

Key Points

• The Thar Desert, also known as the Great Indian Desert, is located in the northwestern part of India, primarily in the state of Rajasthan, and extends into parts of Gujarat, Punjab, and Haryana.

• During the summer months, the Thar Desert experiences high temperatures, often exceeding 50°C. This intense heat causes the air above the desert to expand and rise, leading to the formation of a low-pressure area.

• The low-pressure area formed in the Thar Desert plays a significant role in influencing the Indian monsoon. It acts as a major driver that attracts moisture-laden winds from the southwest, facilitating the onset of monsoon rains in India.

• The rising hot air in the Thar Desert leads to the creation of a pressure gradient, which is instrumental in pulling in the moist winds from the Arabian Sea, thereby contributing to monsoon rainfall across the Indian subcontinent.

• The formation of a low-pressure zone in this region is a result of its geographical location, arid nature, and climatic conditions. Hence, the correct answer is Thar Desert.

Additional Information

• Thar Desert:

• The Thar Desert spans approximately 200,000 square kilometers, making it the 17th largest desert in the world.

• It is primarily located in India but extends into southeastern Pakistan.

• It is characterized by extreme temperatures and sandy terrain, which makes it one of the most arid regions in the country.

• Low-Pressure Formation and Monsoon:

• Low-pressure areas form when the air heats up, expands, and rises, leaving a void that creates a pressure difference.

• These low-pressure areas are critical for the Indian monsoon, as they pull in moist winds from the Indian Ocean, leading to rainfall over the Indian subcontinent.

• Other Options:

• Ganges Basin: The Ganges Basin is a fertile region in northern India but does not contribute significantly to the formation of low-pressure areas during summer.

• Aravalli Hills: The Aravalli Hills are a mountain range in northwestern India. They play a minor role in influencing the climate of the region but do not directly cause low-pressure areas.

• Satpura Mountains: The Satpura Range is located in central India and does not contribute to the low-pressure area formation in the northwest during summer.

Important Points

• Role of the Monsoon:

• The Indian monsoon is a result of a complex interaction between the land, sea, and atmosphere. The low-pressure area over the Thar Desert is one of the key factors driving this annual phenomenon.

• The monsoon rains are vital for agriculture in India, as a significant portion of the country's population depends on farming for their livelihood.

• Climatic Zones of India:

• India has a diverse range of climatic zones, including tropical wet, tropical dry, subtropical humid, and mountainous climates.

• The unique geographical features, such as the Himalayas, Thar Desert, and the Indian Ocean, significantly influence the country's climate.

Q5. Answer: (c) WHO, WIPO and WTO

The correct answer is WHO, WIPO and WTO.

Key Points

• World Health Organization (WHO): WHO is a specialized agency of the United Nations (UN) responsible for international public health. It plays a critical role in global health initiatives, including combating diseases, promoting healthy lifestyles, and ensuring equitable access to healthcare worldwide.

• World Intellectual Property Organization (WIPO): WIPO is a global forum for intellectual property (IP) services, policy,

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cooperation, and information. It works to develop a balanced and accessible international IP system, fostering innovation and creativity globally.

• World Trade Organization (WTO): WTO is an intergovernmental organization that regulates international trade. It ensures smooth trade flows, resolves trade disputes, and facilitates negotiations to ensure fair trading practices globally.

• On February 26, 2025, these three organizations jointly organized a trilateral cooperation briefing for Geneva-based diplomats. This initiative aimed to address critical intersections between health, trade, and intellectual property, ensuring sustainable solutions to global challenges.

• The trilateral cooperation briefing was specifically targeted at diplomats dealing with health, trade, and intellectual property issues. The goal was to strengthen collaboration among these domains, ensuring equitable healthcare access, balanced trade policies, and effective intellectual property management.

• This collaboration highlights the growing intersection between public health, international trade, and intellectual property. Issues like vaccine distribution, pharmaceutical patents, and equitable trade policies were among the key topics discussed.

• The engagement of WHO, WIPO, and WTO underscores their shared commitment to fostering global cooperation and addressing pressing challenges in these interconnected fields. Hence, this statement is correct.

• Hence, the correct answer is WHO, WIPO, and WTO.

Additional Information

• World Health Organization (WHO):

• Founded in 1948, WHO is headquartered in Geneva, Switzerland. It plays a vital role in addressing global health issues, including disease outbreaks, vaccine development, and healthcare accessibility.

• WHO's initiatives include combating diseases like COVID-19, malaria, tuberculosis, and HIV/AIDS while promoting universal health coverage.

• World Intellectual Property Organization (WIPO):

• Established in 1967, WIPO is headquartered in Geneva, Switzerland. It administers treaties and provides a platform for cooperation on intellectual property issues globally.

• Key functions of WIPO include facilitating registration of patents, trademarks, and copyrights, and promoting IP protection to encourage innovation.

• World Trade Organization (WTO):

• Created in 1995, WTO is headquartered in Geneva, Switzerland. It replaced the General Agreement on Tariffs and Trade (GATT), focusing on global trade facilitation.

• WTO works to promote free trade, resolve trade disputes, and facilitate negotiations for equitable trade practices.

Important Points

• Trilateral Cooperation:

• The briefing emphasized the critical need for collaboration in addressing global health challenges, ensuring equitable vaccine distribution, and resolving IP-related disputes.

• It focused on balancing intellectual property protection with public health priorities, especially for developing countries.

• Significance of Geneva:

• Geneva serves as the hub for international diplomacy, hosting organizations like WHO, WIPO, and WTO. It is a critical location for fostering cooperation among nations and institutions.

• The city's diplomatic infrastructure facilitates high-level discussions and agreements on global challenges, including health, trade, and IP.

• Global Health and Trade Issues:

• Key topics include equitable vaccine distribution, addressing patent barriers, and ensuring that trade policies support public health efforts globally.

• These issues are vital for ensuring sustainable and inclusive growth in international healthcare and trade practices.

Q6. Answer: (d) National Clean Air Program

The correct answer is National Clean Air Program.

Key Points

• National Clean Air Program (NCAP):

• The Ministry of Environment, Forest and Climate Change (MoEF&CC) launched the National Clean Air Program in 2019.

• The program aims to improve air quality across 131 cities, known as non-attainment cities and million-plus cities, in 24 states and UTs.

• Non-attainment cities are those that do not meet the prescribed national ambient air quality standards (NAAQS).

• The NCAP provides a time-bound plan to reduce pollution levels by 20-30% by 2024, compared to 2017 levels.

• Focus areas include reducing pollution from sectors like transportation, industries, waste management, construction, and

biomass burning.

• The program emphasizes capacity building, monitoring networks, community participation, and technology interventions.

• The NCAP also promotes collaboration with state governments, local bodies, and relevant stakeholders.

• The goal is to ensure better air quality management and create awareness among citizens regarding air pollution.

• This initiative is aligned with India's commitment to reduce emissions under the Paris Agreement.

• Hence, the correct answer is National Clean Air Program.

Additional Information

• Other Options in the Question:

• Swach Bayu Sarvekshan:

• Not an actual program launched by the government, but could refer to any survey aimed at measuring cleanliness or air quality.

• This option is incorrect as it does not align with the 2019 initiative by MoEF&CC.

• National Association of Clean Air Agencies:

• This is an organization based in the United States that focuses on air pollution control.

• Since it is not an Indian initiative, this option is incorrect.

• Air Quality Forecasting System:

• This refers to systems designed to predict air quality levels, but it is not a specific program launched by MoEF&CC in 2019.

• It is a part of air pollution control measures but does not represent the National Clean Air Program.

• Air Pollution in India:

• Air pollution is a significant challenge in India, with major cities like Delhi, Mumbai, Kolkata, and Chennai often exceeding NAAQS limits.

• Sources include vehicular emissions, industrial discharge, construction activities, waste burning, and natural factors.

• Efforts like the NCAP aim to address these issues comprehensively.

Important Points

• Implementation:

• The NCAP involves the Central Pollution Control Board (CPCB) and state pollution control boards for monitoring and implementation.

• It prioritizes cities with high pollution levels to ensure targeted action.

• Monitoring stations have been increased across the country for better data collection and analysis.

• International Comparisons:

• Similar programs exist globally, such as China's Blue Sky Action Plan and the Clean Air Act in the USA.

• These efforts highlight the global nature of tackling air pollution and its importance for public health.

• Health Impact:

• Air pollution contributes to respiratory diseases like asthma, bronchitis, and cardiovascular issues.

• Reducing pollution has direct benefits for improving public health and life expectancy.

Q7. Answer: (c) Control panel

The correct answer is Control panel.

Key Points

• The Control Panel in Microsoft Windows is a system configuration tool that allows users to manage and modify the computer's settings and configurations. It is primarily used for administrative and customization purposes rather than being a direct visual element like the Recycle Bin or Taskbar.

• The Control Panel provides access to a variety of system settings, including hardware configuration, user accounts, network settings, security settings, and more.

• Unlike the Start menu or Taskbar, which are designed for quick access to applications and running programs, the Control Panel is a back-end tool for system customization. Hence, the correct answer is Control Panel.

• The Control Panel is essential for tasks like adding or removing programs, managing devices, configuring displays, and setting up parental controls. It is not directly related to day-to-day visual interactions with the desktop interface.

• The Recycle Bin, Start menu, and Taskbar are primarily designed for user interaction and do not serve as system configuration tools. This emphasizes the unique role of the Control Panel as a configuration utility.

Additional Information

• Control Panel Features:

• The Control Panel contains various tools and options, such as Device Manager, Network and Sharing Center, Windows Firewall, and System and Security, which help manage the computer's hardware and software configurations.

• It is categorized into sections like Appearance and Personalization, Hardware and Sound, and Programs to streamline user navigation and management.

• Comparison of Options:

• Recycle Bin: Used to store deleted files temporarily. Users can either restore deleted files or permanently delete them. It is not a configuration tool.

• Start Menu: Provides access to installed applications and system tools. It is a visual interface element, not a configuration utility.

• Taskbar: Used to display running applications, quick launch icons, and the system clock. It serves as a navigation and notification tool, not a configuration utility.

• Evolution of Control Panel:

• The Control Panel has been a staple feature of the Windows operating system since its early versions. In recent versions like Windows 10, it is complemented by the Settings app, which provides a more modern interface.

• Despite the introduction of the Settings app, the Control Panel remains an essential tool for advanced configuration and administrative tasks.

Important Points

• Accessing the Control Panel:

• The Control Panel can be accessed through the Start menu or by searching for it in the search bar in modern Windows versions.

• It can also be accessed by typing "Control Panel" in the Run dialog box (Windows + R).

• Modern Alternatives:

• In Windows 10 and Windows 11, many settings have been moved to the Settings app. However, the Control Panel is still available for more advanced and detailed configurations.

• For example, advanced network configurations and hardware management tasks are still performed through the Control Panel.

Q8. Answer: (c) International Court of Justice

The correct answer is International Court of Justice.

Key Points

• The International Court of Justice (ICJ) is the principal judicial organ of the United Nations (UN). It settles disputes between states and provides advisory opinions on legal questions referred by authorized international organs and agencies.

• Cambodia appealed to the ICJ regarding its border dispute with Thailand. The ICJ is often approached in cases of territorial disputes as it has jurisdiction over issues concerning international law.

• This specific dispute between Cambodia and Thailand primarily revolves around the Preah Vihear Temple, a historic site near the border. The ICJ had already ruled on the ownership of the temple in 1962, awarding it to Cambodia, but the surrounding border area remained contentious. Hence, the correct answer is International Court of Justice.

• Cambodia's appeal to the ICJ in 2025 is a continuation of its efforts to resolve the prolonged dispute diplomatically and legally, ensuring international mediation and impartiality.

Additional Information

• International Court of Justice (ICJ):

• The ICJ was established in 1945 by the Charter of the United Nations, and it is based in The Hague, Netherlands.

• It has two main roles: settling legal disputes submitted by states and providing advisory opinions on legal questions referred to it by UN bodies and specialized agencies.

• The ICJ consists of 15 judges elected to nine-year terms by the UN General Assembly and Security Council.

• Preah Vihear Temple Dispute:

• The Preah Vihear Temple is an ancient Hindu temple located on the border between Cambodia and Thailand. It has been a source of tension between the two countries.

• In 1962, the ICJ ruled that the temple belonged to Cambodia, but the surrounding territory's ownership remained unresolved.

• In recent years, clashes and military confrontations have occurred in the disputed area, necessitating further legal and diplomatic resolutions.

• Border Dispute Resolution:

• The ICJ plays a critical role in resolving border disputes to maintain peace and order between countries.

• Countries often seek ICJ intervention as its rulings are binding, unlike other international organizations like the ASEAN Regional Forum or United Nations Security Council, which may only provide recommendations or mediate.

Important Points

• ASEAN Regional Forum (ARF):

• The ARF was established in 1994 and focuses on security issues in the Asia-Pacific region.

• It promotes dialogue and cooperation among its members but does not have a judicial mechanism to resolve disputes like the ICJ.

• United Nations Security Council (UNSC):

• The UNSC is one of the six principal organs of the UN, responsible for maintaining international peace and security.

• It can mediate or impose sanctions but does not primarily act as a judicial body for resolving disputes.

• World Trade Organization (WTO):

• The WTO deals with global rules of trade between nations and resolves trade disputes. It does not address territorial or border conflicts.

Q9. Answer: (c) Swedish company

The correct answer is Swedish company.

Key Points

• Ikea is a multinational company that originated from Sweden. It was founded in 1943 by Ingvar Kamprad in the town of Älmhult, Sweden.

• The company is well-known for its ready-to-assemble furniture, home appliances, and other household goods.

• In 2013, Ikea received approval from the Indian government for a Rs. 10,500 crore Foreign Direct Investment (FDI) proposal to establish 10 stores over the next 10 years. This statement is correct.

• The approval allowed Ikea to set up stores with connected infrastructure, emphasizing its commitment to the Indian retail market.

• Ikea's entry into India marked a significant step in the liberalization of the Indian retail sector, allowing 100% FDI in single-brand retail under specific guidelines. This statement is correct.

• The company's strategy focuses on providing affordable, functional, and stylish furniture, targeting middle-class consumers in India.

• Ikea's Swedish roots are reflected in its minimalist designs and commitment to sustainability. Hence, the correct answer is Swedish company.

Additional Information

• About Ikea:

• Ikea operates in over 50 countries and has more than 400 stores globally. It is a leader in the field of furniture retail.

• The name Ikea is derived from the initials of its founder (Ingvar Kamprad), his family farm (Elmtaryd), and his hometown (Agunnaryd).

• Ikea places a strong emphasis on environmental sustainability, aiming to use renewable or recycled materials in its products.

• FDI in India:

• The Indian government allows 100% FDI in single-brand retail under certain conditions, such as sourcing a specific percentage of goods locally.

• Ikea’s investment is one of the largest in the Indian retail sector, symbolizing the country's growing economic openness.

• The approval of Ikea’s FDI proposal in 2013 was a significant milestone in attracting global retail giants to India.

• Global Presence:

• Ikea is present in various markets across Europe, North America, Asia, and the Middle East, demonstrating its global reach.

• It caters to diverse customer needs with products that are affordable and environmentally friendly.

Important Points

• Swedish Design Philosophy:

• Ikea’s designs are inspired by the Swedish principle of “lagom”, meaning “just the right amount.”

• Products are created to maximize functionality while minimizing environmental impact.

• Impact on Indian Market:

• Ikea’s entry into India has increased competition in the organized retail furniture sector.

• It has also contributed to job creation and the development of local supply chains.

Q10. Answer: (d) Internet and Mobile Association of India (IAMAI)

The correct answer is Internet and Mobile Association of India (IAMAI).

Key Points

• The 19th India Digital Summit was organized by the Internet and Mobile Association of India (IAMAI) in January 2025. This summit is one of the largest events in the digital industry in India.

• IAMAI is a non-profit organization that represents the digital services industry in India. It was established in 2004 and plays a significant role in shaping policies and promoting the growth of the digital economy.

• The summit is a platform that brings together industry leaders, government officials, startups, and other stakeholders to discuss the latest trends, challenges, and opportunities in the digital ecosystem. Hence, this statement is correct.

• The event also highlights innovations in areas like technology, e-commerce, fintech, digital payments, and internet services,

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making it a key event for the sector.

• The 19th edition of the India Digital Summit focused on the theme of digital transformation, which is a critical aspect of India's growing economy. Hence, this statement is correct.

Additional Information

• About the Internet and Mobile Association of India (IAMAI):

• IAMAI was founded in 2004 and is headquartered in Mumbai, India.

• It aims to expand and enhance the online and mobile value-added services sectors.

• IAMAI represents a range of industries, including online and mobile content providers, e-commerce platforms, digital advertising firms, fintech companies, and cloud computing services.

• Other Relevant Organizations:

• National Association of Software and Service Companies (NASSCOM): Established in 1988, NASSCOM is a trade association of the Indian Information Technology (IT) and Business Process Outsourcing (BPO) industry.

• Telecom Regulatory Authority of India (TRAI): Founded in 1997, TRAI regulates the telecommunications sector in India, ensuring transparency and fair competition.

• Confederation of Indian Industry (CII): Established in 1895, CII is a non-government, non-profit organization that works to create a conducive environment for the growth of industry in India.

Important Points

• Significance of Digital Summits:

• Digital summits like the India Digital Summit play a crucial role in bringing together key stakeholders in the technology and digital sectors to discuss industry trends, challenges, and future prospects.

• These events also provide a platform for showcasing innovations and developments, fostering collaborations, and influencing policy decisions in favor of the industry.

• India's Digital Transformation:

• India has been making significant strides in digital transformation, with initiatives like Digital India aimed at improving online infrastructure and increasing internet connectivity to make the country digitally empowered.

• The rapid growth of smartphone penetration and internet usage in India has created a massive opportunity for businesses in sectors like e-commerce, digital payments, and technology.

Q11. Answer: (b) 244

The correct answer is 244 districts.

Key Points

• Objective of mock drills: The Civil Defence mock drills were conducted across India on May 7, 2025, to enhance emergency preparedness. Mock drills are designed to test and prepare the ability of local authorities and citizens to respond to various emergencies such as natural disasters, man-made hazards, and accidents. These drills ensure effective coordination among different agencies.

• Number of districts: The drills covered 244 districts across the country. This indicates the widespread initiative undertaken by the government to ensure readiness and awareness at the grassroots level in case of emergencies. Hence, this statement is correct.

• Importance of Civil Defence: Civil Defence plays a vital role in disaster management by preparing individuals and communities to handle emergencies effectively. It involves training, awareness creation, and coordination between local authorities, state governments, and disaster management organizations.

• Significance of conducting mock drills: Mock drills are essential for testing preparedness and identifying gaps in the existing emergency response system. They include simulations of various scenarios like fire outbreaks, earthquakes, floods, and other emergencies, helping authorities to evaluate their strategies and improve response mechanisms. Hence, this statement is correct.

• The drills also aim to educate citizens about the do's and don'ts during emergencies, ensuring that they are well-equipped to protect themselves and assist others.

Additional Information

• Role of Civil Defence in India:

• Civil Defence operates under the Ministry of Home Affairs, Government of India. It is governed by the Civil Defence Act, 1968. The primary aim is to ensure the protection of life and property during emergencies.

• It focuses on creating a trained volunteer force to assist in disaster management, rescue operations, and post-disaster rehabilitation.

• Example: Civil Defence personnel played a crucial role in managing the aftermath of disasters like the Uttarakhand floods (2013) and the Bihar floods (2017).

• Training and Education:

• Civil Defence training includes techniques for firefighting, first aid, evacuation procedures, crowd control, and communication during emergencies.

• Awareness campaigns are conducted to educate citizens about disaster preparedness and response.

• Global Context:

• Countries like Japan and the United States have advanced Civil Defence systems. For example, Japan conducts regular drills for earthquakes and tsunamis, ensuring the safety of its citizens.

• The Federal Emergency Management Agency (FEMA) in the United States offers training programs and resources to prepare communities for various disasters.

Important Points

• Emergency Preparedness:

• Mock drills help identify vulnerabilities in the existing systems and provide an opportunity to rectify these gaps effectively.

• They also establish a clear communication framework among various stakeholders like government agencies, non-government organizations (NGOs), and local communities.

• Impact on Disaster Management:

• Continuous training and drills enhance the capacity of responders and ensure the deployment of resources in the most effective manner during actual emergencies.

• The drills foster community participation and create a sense of collective responsibility in managing disasters.

• India’s focus on disaster management is aligned with global efforts under the Sendai Framework for Disaster Risk Reduction, which emphasizes preparedness and resilience.

Q12. Answer: (c) Stealth frigate

The correct answer is Stealth frigate.

Key Points

• Navy ship 'Tavasya' has been included in the category of stealth frigates. Stealth frigates are a class of warships designed with advanced technologies to minimize their radar, infrared, acoustic, and magnetic signatures, which makes them less detectable to enemy forces.

• The stealth frigate class is known for its cutting-edge design, which incorporates angled surfaces, radar-absorbing materials, and special coatings to reduce the visibility of the ship to radar systems. These features enhance its stealth capabilities.

• Stealth frigates are equipped with advanced weaponry and sensor systems that allow them to perform a variety of missions, including anti-submarine warfare, air defense, and surface warfare.

• The stealth frigate class is typically used for coastal and open sea operations, as well as in sensitive or hostile waters. Their stealth features allow them to conduct operations with a lower risk of detection.

• The inclusion of 'Tavasya' in the stealth frigate class indicates that it is likely a highly modernized and technologically advanced warship that will play a significant role in enhancing the operational capabilities of the Navy.

Additional Information

• Characteristics of Stealth Frigates:

• Stealth frigates are characterized by their ability to operate in stealth mode, which allows them to remain undetected by enemy radar systems. This is achieved through special hull designs and radar-absorbent materials.

• They are equipped with advanced technologies for anti-submarine warfare, air defense, and surface warfare, making them versatile and effective naval assets.

• Stealth frigates are designed to operate in a variety of maritime environments, including open oceans and coastal waters. They are an important asset for countries aiming to protect their maritime boundaries and assert naval dominance.

• Other Ship Classes:

• Ballistic Submarines: These are submarines designed to launch ballistic missiles. They are primarily used for nuclear deterrence and are not categorized as surface ships like frigates.

• Surveillance Ships: These ships are specialized for intelligence gathering, surveillance, and reconnaissance. They are equipped with sensors and communication equipment rather than combat capabilities.

• Corvettes: Corvettes are smaller than frigates and are primarily used for patrolling coastal areas. They are not typically equipped with the advanced stealth capabilities of modern stealth frigates.

• Examples of Stealth Frigates:

• INS Shivalik: An Indian Navy stealth frigate and the lead ship of the Shivalik-class frigates. It features stealth technology and advanced weapons systems.

• Admiral Gorshkov-class: A Russian Navy class of stealth frigates known for their advanced combat systems and stealth features.

Important Points

• Stealth Technology:

• Stealth ships are designed to minimize their radar, infrared, acoustic, and magnetic signatures, making them harder to detect by enemy forces. These features are critical for modern naval warfare.

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• The stealth technology includes the use of angled surfaces, radar-absorbent materials, and reduced thermal emissions.

• Role of Stealth Frigates:

• Stealth frigates play a crucial role in naval operations, including escorting larger ships, engaging in anti-submarine warfare, and providing air defense for naval fleets.

• They are often deployed in high-risk areas where their stealth capabilities allow them to operate with a higher degree of safety and effectiveness.

Q13. Answer: (d) 21 years

The correct answer is 21 years.

Key Points

• As per Article 243F of the Constitution of India, the minimum age required to contest in Panchayat elections is 21 years.

• This provision ensures that individuals contesting elections have attained a reasonable level of maturity and understanding to take on responsibilities in governance.

• The age limit is applicable uniformly across all states for Panchayat elections. Hence, 21 years is the correct minimum age.

• Individuals below 21 years are ineligible to stand for election in Panchayats, as per the guidelines established by Article 243F. This eligibility criterion is crucial to maintaining the sanctity of decentralized governance.

• The minimum age requirement aligns with the need for candidates to be capable of taking informed decisions and fulfilling administrative duties effectively. Hence, option 4 is correct.

• Thus, the correct minimum age to contest Panchayat elections is 21 years.

Additional Information

• Article 243F of the Constitution:

• Article 243F provides details regarding disqualifications for membership in Panchayats. It specifies the eligibility criteria, including the minimum age required for candidates contesting elections.

• The article also includes provisions for other disqualifications as determined by the state legislature or specified in relevant laws.

• Importance of Age Criterion:

• The age criterion ensures that candidates possess the maturity required for administrative functions and decision-making.

• It is part of the broader framework of decentralized governance, where elected representatives are entrusted with responsibilities for local administration.

• Example: A candidate must be at least 21 years old to contest in Panchayat elections in states like Uttar Pradesh, Bihar, and Karnataka, as per their state laws aligned with Article 243F.

• Role of Panchayats:

• Panchayats are the foundation of local self-governance in India, established under the 73rd Constitutional Amendment Act, 1992.

• They play a crucial role in rural development by implementing schemes related to agriculture, health, education, and infrastructure.

• The elected representatives of Panchayats are responsible for policy implementation at the grassroots level. Therefore, the age limit ensures that representatives are capable of handling these responsibilities effectively.

Important Points

• Age Criteria in Other Elections:

• For Lok Sabha elections, the minimum age to contest is 25 years, as per Article 84 of the Constitution.

• For State Legislative Assembly elections, the minimum age is also 25 years, as per Article 173.

• For Municipal elections, the minimum age varies between states but is generally 21 years, similar to Panchayat elections.

• Significance of 73rd Amendment:

• The 73rd Constitutional Amendment Act, 1992 established the Panchayati Raj system and mandated elections at the village, intermediate, and district levels.

• It empowers rural communities to participate in governance and decision-making processes, ensuring local development and welfare.

• The amendment also provides for the inclusion of women and marginalized sections of society in governance through reservation policies.

Q14. Answer: (c) Kelkar Committee

The correct answer is Kelkar Committee.

Key Points

• The Kelkar Committee was established in 2002 under the chairmanship of Dr. Vijay Kelkar. It was tasked with providing recommendations for simplifying and modernizing India's direct tax system.

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• The committee aimed to streamline the tax structure, reduce exemptions, and ensure better compliance. Hence, the statement is correct.

• It proposed measures to promote transparency, reduce tax evasion, and increase revenue collection through reforms in direct taxation.

• The Kelkar Committee suggested implementing modern tax administration practices, such as e-filing and e-payment, to make the system more efficient.

• The committee also recommended the removal of certain exemptions to simplify the tax structure, which would lead to broadening the tax base.

• One of its key suggestions was the adoption of a Goods and Services Tax (GST), which was eventually implemented in India in 2017.

• The recommendations of the Kelkar Committee were instrumental in shaping India's tax reforms, particularly in the post-liberalization era.

• Hence, the correct answer is Kelkar Committee.

Additional Information

• Narasimham Committee:

• The Narasimham Committee, set up in 1991 and 1998, focused primarily on banking sector reforms in India.

• It recommended measures such as reducing government stake in banks, improving the capital adequacy ratio, and introducing asset reconstruction companies. This committee did not focus on direct tax reforms.

• Tarapore Committee:

• The Tarapore Committee was constituted in 1997 to recommend measures for capital account convertibility in India.

• Its recommendations were aimed at financial liberalization, but it did not deal with direct tax simplification.

• Dutta Committee:

• The Dutta Committee, headed by R.K. Dutta, focused on reforms in public sector enterprises and their management. It was not involved in direct tax reform recommendations.

• Direct Tax Reforms:

• Direct taxes include income tax, corporate tax, and property tax. Simplifying these taxes ensures better compliance and improved revenue collection.

• India has implemented multiple direct tax reforms, such as e-filing of returns, reduction in corporate tax rates, and introduction of faceless assessment.

Important Points

• Legacy of the Kelkar Committee:

• The Kelkar Committee's recommendations laid the foundation for India’s modern tax reforms, including the implementation of GST and advancement in direct tax compliance measures.

• The committee emphasized the importance of minimizing tax exemptions and ensuring equity in taxation to promote economic growth.

• Evolution of Tax Reforms:

• India has continually reformed its tax structure to align with global practices, improve compliance, and reduce the burden on taxpayers.

• Tax reforms like Digital India initiatives and faceless assessment reflect the modernization suggested by earlier committees like Kelkar.

Q15. Answer: (c) Devotion, pious conduct, and heroism

The correct answer is Devotion, pious conduct, and heroism.

Key Points

• The Iran stone inscription is a historical record that describes the accomplishments and characteristics of Samudragupta, one of the greatest rulers of the Gupta Empire.

• This inscription highlights that Samudragupta was chosen as the king by his father, Chandragupta I, not based on wealth, age, or support from other kings, but due to his devotion, pious conduct, and heroism.

• These qualities were considered essential for a ruler in ancient India, as they symbolized strength, moral character, and dedication to duty. Hence, the correct answer is "Devotion, pious conduct, and heroism."

• The Gupta period is known as the Golden Age of India, and rulers like Samudragupta contributed significantly to this era's advancements in art, culture, and governance.

• The inscription also portrays Samudragupta as a capable and just ruler who upheld Dharma (righteousness) and was revered for his military prowess and administrative skills.

Additional Information

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• Samudragupta:

• Samudragupta (reigned circa 335–380 CE) was the son of Chandragupta I and is often referred to as the Napoleon of India due to his military conquests.

• He expanded the Gupta Empire significantly through numerous campaigns and is credited with bringing much of northern and central India under Gupta rule.

• Apart from being a military genius, Samudragupta was also a great patron of art and culture, as evident from his support for music and poetry.

• The Gupta Empire:

• The Gupta Empire (circa 320–550 CE) is often referred to as the Golden Age of India, characterized by significant progress in science, mathematics, astronomy, art, and literature.

• It was during this period that Aryabhata, a prominent mathematician and astronomer, made groundbreaking contributions.

• Iran Stone Inscription:

• The inscription is a primary source of information about the Gupta dynasty and its rulers, providing insights into their administration, conquests, and personal qualities.

• It celebrates the virtues and military victories of Samudragupta, portraying him as an ideal king.

Important Points

• Key Features of Samudragupta's Rule:

• Samudragupta is known for his military campaigns, which are described in the Allahabad Pillar inscription. He conquered several kingdoms in northern and southern India.

• He was a patron of scholars, poets, and musicians, and he himself was a skilled poet and musician, often depicted with a veena in his hands.

• His reign was marked by political stability, economic prosperity, and cultural achievements, making the Gupta period a hallmark of Indian civilization.

• Legacy:

• Samudragupta's achievements laid the foundation for the Gupta Empire's dominance in the Indian subcontinent, which continued under his successors like Chandragupta II.

• The Gupta rulers' administrative and military policies were instrumental in unifying diverse regions of India under a single political framework.

Q16. Answer: (c) Odisha

The correct answer is Odisha.

Key Points

• Odisha has emerged as the top-performing state in the Financial Health Index 2025, published by the NITI Aayog. This recognition highlights Odisha's strong financial management practices.

• The Financial Health Index evaluates states based on parameters such as revenue generation, expenditure efficiency, debt management, and economic growth. Odisha excelled in these criteria.

• Odisha's government has been actively implementing policies to strengthen fiscal discipline and ensure sustainable economic growth. Hence, Odisha is the top state.

• NITI Aayog, the policy think tank of the Government of India, publishes such indices to encourage states to focus on improving governance and financial health.

• Apart from Odisha, states like Gujarat, Karnataka, and Maharashtra also performed well on the index but fell short of Odisha's overall score. Hence, the correct answer is Odisha.

Additional Information

• Financial Health Index:

• The Financial Health Index is designed to assess the financial stability and efficiency of Indian states. It evaluates performance based on revenue generation, expenditure patterns, and sustainable debt management.

• The index encourages states to adopt best practices in fiscal policies and governance to ensure economic sustainability.

• Odisha's Achievement:

• Odisha has implemented strong fiscal reforms, including effective tax collection mechanisms and prudent public expenditure strategies.

• The state has also focused on promoting industries such as mining, steel production, and agriculture, which contribute significantly to its revenue.

• Social welfare programs in Odisha have been implemented efficiently, ensuring that public funds are utilized for developmental purposes.

• NITI Aayog:

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• NITI Aayog, established in 2015, replaced the Planning Commission as the policy think tank of the Government of India.

• It aims to foster cooperative federalism and promote sustainable development across states.

• Through indices like the Financial Health Index, NITI Aayog provides a framework for states to benchmark their performance and identify areas for improvement.

Important Points

• Key Highlights of Financial Health Index:

• The index provides a comprehensive analysis of state finances and governance, focusing on revenue collection, expenditure on public welfare, and debt sustainability.

• It encourages states to improve governance, reduce fiscal deficits, and focus on inclusive growth strategies.

• Examples of Other High Performing States:

• Gujarat: Known for its industrial growth and business-friendly environment, contributing to strong economic performance.

• Karnataka: A leader in the IT sector and innovation, boosting its revenue generation and economic growth.

• Maharashtra: India's financial capital, with robust industrial and service sectors, ensuring substantial revenue generation.

Q17. Answer: (b) Indian Council Act, 1892

The correct answer is Indian Council Act, 1892.

Key Points

• The Indian Council Act, 1892 marked a significant development in colonial India by introducing reforms to the legislative structure.

• For the first time, it allowed Indian representatives in the Legislative Council to discuss the budget and raise questions about public administration. This was a major step in the political empowerment of Indians during British rule.

• It expanded the number of members in the Legislative Councils at both the central and provincial levels, providing greater representation to Indians.

• The Act introduced the principle of indirect election for selecting Indian representatives to the Council. Though indirect, it allowed Indians to have a say in their governance. Hence, the correct answer is Indian Council Act, 1892.

Additional Information

• Indian Council Act, 1861:

• This Act established the Legislative Councils in India for the first time, but it did not allow Indian members to discuss the budget or public matters.

• The Act marked the beginning of the legislative process in India under British rule by creating legislative bodies, but Indians had very limited roles.

• Government of India Act, 1858:

• This Act transferred the administration of India from the East India Company to the British Crown following the Revolt of 1857.

• It created the office of the Secretary of State for India to oversee Indian affairs but did not address legislative representation or discussions in councils.

• Indian Council Act, 1909:

• Also known as the Morley-Minto Reforms, this Act introduced communal representation by reserving separate electorates for Muslims.

• It significantly expanded Indian representation but came much later than the 1892 Act and was focused more on communal issues rather than budget discussions.

Important Points

• Key Features of Indian Council Act, 1892:

• It laid the foundation for legislative reforms by introducing discussion of financial matters for Indian members in councils.

• Although Indians were not directly elected, the Act introduced the concept of indirect elections, paving the way for future democratic reforms.

• Impact of the Act:

• The Act marked a shift in British policy towards recognizing the importance of Indian political participation.

• It sowed the seeds for subsequent reforms, including the Indian Council Act, 1909 and the eventual Government of India Act, 1935.

Q18. Answer: (c) Gopal Krishna Gokhale

The correct answer is Gopal Krishna Gokhale.

Key Points

• Gopal Krishna Gokhale was a prominent leader of the Indian freedom struggle and a key figure in the early 20th century Indian political landscape.

• He founded the Servants of India Society in 1905 with the aim of promoting education, social reform, and the upliftment of Indian society.

• The society's key objectives included training Indians to work for the betterment of the country and addressing issues like poverty, illiteracy, and social discrimination. Hence, the correct answer is Gopal Krishna Gokhale.

• Gopal Krishna Gokhale was also a mentor to Mahatma Gandhi, who considered him a guide and inspiration in his early political career.

• The Servants of India Society emphasized selfless service and dedication to the nation, which was reflected in its members' commitment to work for the underprivileged.

Additional Information

• Gopal Krishna Gokhale:

• He was born on May 9, 1866, in Ratnagiri district, Maharashtra.

• He was a moderate leader in the Indian National Congress, advocating constitutional methods and dialogue with the British to achieve reforms.

• He served as the president of the Indian National Congress in 1905.

• Gokhale was an advocate of social reform, particularly in the areas of education, public health, and the removal of untouchability.

• Servants of India Society:

• The society was headquartered in Pune, Maharashtra.

• Its members were required to take a vow of lifelong dedication to the service of India.

• The organization focused on educating the masses, promoting Indian self-reliance, and addressing social inequalities.

• It also provided a platform for training and nurturing leaders for the Indian freedom movement.

• Other leaders mentioned in the options:

• S. N. Banerjee: He was a prominent nationalist leader and one of the founders of the Indian National Association, but he did not establish the Servants of India Society.

• Bal Gangadhar Tilak: Known as the "Father of Indian Unrest," Tilak was a radical leader in the freedom movement and focused on Swaraj (self-rule), but he was not related to the Servants of India Society.

• Bipin Chandra Pal: A key leader of the extremist faction in the Indian National Congress, Pal advocated for complete independence but was not associated with the Servants of India Society.

Important Points

• Objectives of the Servants of India Society:

• To provide education and improve literacy rates among Indians to empower them for self-governance.

• To work for the eradication of social evils like untouchability and caste discrimination.

• To promote public health and hygiene through awareness campaigns and services.

• To encourage Indians to work selflessly for the progress of the country.

• Significance of Gokhale's Leadership:

• Gokhale's moderate approach laid the foundation for constitutional reforms like the Indian Councils Act of 1909 (Morley-Minto Reforms).

• He inspired future leaders like Mahatma Gandhi to adopt non-violent means for achieving freedom.

Q19. Answer: (b) Diwan-e-Arz

The correct answer is Diwan-e-Arz.

Key Points

• The Diwan-e-Arz was a significant department introduced during the reign of Alauddin Khalji, a ruler of the Delhi Sultanate. It was primarily established to oversee and manage all military affairs of the Sultanate.

• The department ensured the proper functioning of the army, including recruitment, training, and payment of soldiers, as well as the maintenance of military equipment and resources.

• The Diwan-e-Arz was headed by an officer known as the Ariz-i-Mamalik, who was responsible for reviewing and organizing the army, ensuring its efficiency and readiness for wars and expeditions.

• This department was crucial during Alauddin Khalji's reign as he focused on military expansion and strengthening the defense system of his empire. Hence, the statement is correct.

• Other departments like Diwan-e-Insha, Diwan-e-Wizarat, and Diwan-e-Risalat dealt with administration, finance, and religious affairs, respectively, and were not directly related to military functions. Thus, these options are incorrect.

Additional Information

• Diwan-e-Arz:

• This department played a significant role in maintaining the Sultanate's military strength and ensuring order among the soldiers.

• The Ariz-i-Mamalik, who was the head of the department, had the authority to inspect the army and ensure the soldiers were properly equipped and disciplined.

• The department supervised the payment of salaries to soldiers and maintained a record of their service to prevent corruption and irregularities.

• Other Departments:

• Diwan-e-Insha: This department handled the royal correspondence and communication. It was responsible for drafting and recording royal decrees and letters.

• Diwan-e-Wizarat: Also known as the finance department, this department was responsible for managing the state's revenues, collecting taxes, and maintaining records of income and expenditure.

• Diwan-e-Risalat: This department dealt with religious and diplomatic affairs. It was responsible for maintaining relations with foreign states and looking after religious endowments.

Important Points

• Military Reforms Under Alauddin Khalji:

• Alauddin Khalji introduced several reforms to strengthen the military system of the Delhi Sultanate. He established a permanent standing army and made significant efforts to control the feudal lords.

• The salaries of soldiers were paid in cash, and a system of branding horses and maintaining descriptive rolls of soldiers, known as dagh and chehra, was introduced to prevent corruption.

• He also ensured that the prices of essential commodities were kept low to enable soldiers to sustain themselves with their salaries.

• Significance of the Military:

• The military was a cornerstone of Alauddin Khalji's administration and played a critical role in expanding and maintaining his empire. The introduction of the Diwan-e-Arz ensured that the military functioned efficiently and effectively.

• The emphasis on military reforms and administrative efficiency helped Alauddin Khalji consolidate his power and defend his empire against external threats, including the Mongols.

Q20. Answer: (a) 1843

The correct answer is 1843.

Key Points

• The Bank of Madras was established in the year 1843, making it the third Presidency Bank in India after the Bank of Calcutta (1806) and the Bank of Bombay (1840).

• The establishment of the Bank of Madras was part of the British colonial efforts to introduce organized banking in India to facilitate trade and economic activities. Hence, the year 1843 is correct.

• The Presidency Banks were formed to cater to the financial needs of the British East India Company and to promote economic development in their respective regions.

• The Bank of Madras was later merged with the Bank of Calcutta and the Bank of Bombay in 1921 to form the Imperial Bank of India, which eventually became the State Bank of India in 1955.

• This timeline highlights the evolution of modern banking in India under British rule and the eventual consolidation of banking institutions. Hence, the establishment year of 1843 is accurate.

Additional Information

• Presidency Banks in India:

• The Presidency Banks were the first banks established in India under British rule to facilitate trade and financial transactions.

• The three Presidency Banks were:

• The Bank of Calcutta (later renamed the Bank of Bengal), established in 1806.

• The Bank of Bombay, established in 1840.

• The Bank of Madras, established in 1843.

• Merger of Presidency Banks:

• In 1921, the three Presidency Banks were merged to form the Imperial Bank of India.

• The Imperial Bank of India was later nationalized and became the State Bank of India in 1955.

• Importance of Presidency Banks:

• These banks were instrumental in financing trade, infrastructure, and other economic activities during British rule.

• They laid the foundation for modern banking in India and introduced several banking practices that are still in use today.

Important Points

• Bank of Madras:

• The Bank of Madras primarily served the southern regions of India, catering to the financial needs of British merchants, traders, and the East India Company.

• It issued banknotes, provided loans, and facilitated trade in the Madras Presidency.

• Legacy:

• The Bank of Madras, along with the other Presidency Banks, played a crucial role in shaping the financial system of colonial India.

• Their merger and transformation into the State Bank of India marked a significant step in the evolution of Indian banking.

Q21. Answer: (b) Bihar

The correct answer is Bihar.

Key Points

• The 7th Khelo India Youth Games in 2025 were held in the state of Bihar, marking a significant event for promoting sports and athletic development in the region.

• The Khelo India initiative aims to encourage participation in sports among youth and foster a culture of fitness and physical activity across the country.

• The choice of Bihar as the host state highlights the government's focus on expanding sports facilities and opportunities in eastern India.

• The event was organized by the Ministry of Youth Affairs and Sports, which collaborates with state governments to host the games effectively. Hence, Bihar was the correct answer.

• The Khelo India Youth Games provide a platform for young athletes to showcase their talent and receive support to excel at national and international levels.

Additional Information

• About Khelo India Youth Games:

• The Khelo India programme was launched in 2018 to promote sports at the grassroots level and identify young talent for advanced training.

• The Youth Games focus on athletes under the age of 17 years and provide them with exposure to competitive sports.

• Previous host states for the games have included Maharashtra, Haryana, Karnataka, and Madhya Pradesh, showcasing the initiative's reach across India.

• Sports in Bihar:

• Bihar has been working to improve its sports infrastructure to encourage local talent and boost sports culture in the state.

• Hosting events like the Khelo India Youth Games provides an opportunity to showcase Bihar's advancements in sports facilities.

• Impact of Khelo India:

• The initiative has successfully fostered a sports culture in India, with thousands of athletes benefiting from scholarships and training programs.

• It has also helped in improving sports infrastructure in various states, making sports accessible to youth across the country.

Important Points

• Key Features of Khelo India:

• The programme includes initiatives like scholarship schemes, talent identification, and sports infrastructure development.

• It emphasizes increasing participation in sports and nurturing future stars for Olympic-level competitions.

• Significant Developments:

• Maharashtra hosted the inaugural edition of the games in 2018, setting the stage for subsequent events.

• Haryana hosted the games in 2021, showcasing its strong sports culture and infrastructure.

• The 7th edition in Bihar demonstrated the government's efforts to promote sports in less-represented regions.

Q22. Answer: (a) α -1.4-Glycosidic bond

The correct answer is α-1,4-Glycosidic bond.

Key Points

• Amylopectin is a highly branched polysaccharide primarily composed of glucose units. It is one of the two main components of starch, the other being amylose.

• Amylopectin primarily consists of glucose units linked by α-1,4-Glycosidic bonds in the linear chains. These bonds occur between the first carbon of one glucose molecule and the fourth carbon of the next molecule.

• In addition to α-1,4-Glycosidic bonds, amylopectin has branching points formed by α-1,6-Glycosidic bonds. These branches occur roughly every 24–30 glucose units. However, the correct answer specifically refers to the primary linkage, which is the α-1,4-Glycosidic bond.

• Amylopectin is insoluble in water compared to amylose, and its branched structure makes it easier to break down during digestion. This is due to the accessibility of enzymes like amylase to the branching points.

• Hence, the correct answer is α-1,4-Glycosidic bond.

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Additional Information

• Structure of Amylopectin:

• Amylopectin is a branched polymer of glucose and constitutes approximately 70–80% of starch.

• The branches in amylopectin are created by α-1,6-Glycosidic bonds, which contribute to its highly branched structure.

• The linear chains of glucose are connected by α-1,4-Glycosidic bonds, forming the backbone of the molecule.

• Function and Importance:

• Amylopectin serves as an energy storage molecule in plants. When starch is broken down, glucose units are released for metabolic processes.

• Enzymatic digestion: Amylopectin is hydrolyzed by enzymes such as amylase, which target the α-1,4 and α-1,6 linkages.

• The branched structure of amylopectin allows rapid mobilization of glucose during metabolic needs.

• Comparison with Amylose:

• Amylose consists of linear chains of glucose molecules linked by α-1,4-Glycosidic bonds. It is less branched and more compact compared to amylopectin.

• Amylose is more resistant to digestion due to its linear structure, whereas amylopectin is more easily digested.

Important Points

• α-1,4-Glycosidic Bond:

• This bond is a type of covalent bond formed between the first carbon atom (C1) of one glucose molecule and the fourth carbon atom (C4) of another glucose molecule.

• It is crucial for the formation of polysaccharides like amylopectin and amylose.

• α-1,6-Glycosidic Bond:

• This bond forms the branching points in amylopectin. These branches allow enzymes to act more efficiently, aiding in digestion and energy release.

• Applications:

• Amylopectin is widely used in food industries for its thickening and stabilizing properties.

• It also plays a role in the production of bioethanol and other biochemicals due to its glucose content.

Q23. Answer: (c) Ujwal DISCOM Assurance Yojana

The correct answer is Ujwal DISCOM Assurance Yojana.

Key Points

• Ujwal DISCOM Assurance Yojana (UDAY) is a flagship scheme launched by the Government of India in November 2015.

• The primary aim of the scheme is to provide financial turnaround and revival of electricity distribution companies (DISCOMs), which were facing severe financial and operational challenges.

• It was initiated under the Ministry of Power to ensure a sustainable solution to the financial distress faced by DISCOMs.

• The key objectives of UDAY are to achieve operational efficiency improvement, reduce the cost of electricity, and improve financial health.

• Under this scheme, state governments were allowed to take over 75% of the debt of DISCOMs and issue bonds to pay off the liabilities.

• The remaining 25% of the debt would be restructured by the banks, offering better repayment terms to the DISCOMs.

• UDAY also focuses on reducing Aggregate Technical and Commercial (AT&C) losses, which are a major reason for financial stress in DISCOMs.

• The scheme aims to improve operational efficiency through initiatives such as improving billing efficiency, metering, and reducing power theft.

• Another major focus of UDAY is to promote the use of renewable energy and reduce the dependency on costly power sources, hence reducing the average cost of power supply.

• The scheme also encourages states to take measures to improve demand-side management by promoting energy-efficient appliances and technologies such as LED bulbs and smart meters.

• States and DISCOMs that perform well in achieving the targets under UDAY are incentivized through additional funding and financial assistance from the central government. This motivates them to work efficiently.

Additional Information

• Impact of UDAY:

• The scheme has resulted in significant improvements in the financial performance of DISCOMs in several states, reducing their losses and improving their debt profiles.

• UDAY contributed to improving energy efficiency through widespread distribution and adoption of energy-efficient LED bulbs.

• It also helped in increasing electricity access, especially in rural areas, by ensuring the financial viability of DISCOMs.

• Challenges Faced:

• Despite its success in improving financial conditions, some states and DISCOMs have failed to meet the operational efficiency targets under UDAY.

• The scheme's reliance on state governments to take over debt has sometimes resulted in increased financial burden on state governments.

• Other Related Initiatives:

• Saubhagya Yojana: Launched in 2017, it aims to achieve universal household electrification in India.

• Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY): Focuses on rural electrification and strengthening the rural power distribution infrastructure.

Important Points

• Aggregate Technical and Commercial (AT&C) Losses: These include both technical losses during power transmission and distribution and commercial losses such as theft and unmetered supply. UDAY aims to reduce these losses to 15%.

• Power Purchase Costs: DISCOMs often face challenges due to high power purchase costs. UDAY works to rationalize these costs through transparent power purchase agreements and promoting cheaper renewable energy sources.

• Debt Restructuring: The scheme allows states to issue UDAY bonds at a lower interest rate to refinance the existing high-cost debt of DISCOMs, reducing their financial burden.

• Performance Metrics: UDAY monitors and evaluates the performance of states and DISCOMs based on various parameters such as operational efficiency, financial improvement, and progress in achieving renewable energy targets.

Q24. Answer: (c) Vadodara

The correct answer is Vadodara.

Key Points

• Location: The Tata Aircraft Complex, inaugurated in October 2024 to manufacture C-295 aircraft, is situated in Vadodara, Gujarat. This facility is a significant milestone in India’s aviation sector.

• Purpose: The Tata Aircraft Complex is designed to manufacture C-295 military transport aircraft, which will replace the aging fleet of Indian Air Force’s Avro aircraft. It is aimed at boosting India's defense infrastructure and indigenous manufacturing capabilities.

• Significance: The establishment of this facility aligns with the Make in India initiative, promoting self-reliance in defense production. It is the first-ever private sector aircraft manufacturing facility in India.

• Partnership: The project is a collaborative effort between Tata Advanced Systems Limited (TASL) and Airbus Defence and Space. This partnership marks a significant step in India’s defense modernization.

• Production Details: The facility will produce 56 C-295 aircraft for the Indian Air Force. Out of these, 40 aircraft will be manufactured at the Vadodara facility, while the initial 16 will be assembled in Spain.

• Employment Opportunities: The complex is expected to generate employment for thousands of people, including direct and indirect jobs in Gujarat and other parts of India, contributing to the growth of the aviation and defense sectors.

• Strategic Advantage: By manufacturing advanced transport aircraft domestically, India aims to reduce dependency on foreign imports and enhance its strategic autonomy in defense technology.

Additional Information

• C-295 Aircraft:

• The C-295 is a tactical military transport aircraft designed by Airbus Defence and Space. It is known for its versatility, including its ability to transport troops, equipment, and perform medical evacuations.

• The aircraft can operate in adverse weather conditions and is equipped with advanced systems, making it suitable for military and humanitarian missions.

• The C-295 is capable of operating on short or unprepared airstrips, which is crucial for operations in remote areas.

• Make in India Initiative:

• Launched in 2014, this initiative aims to transform India into a global design and manufacturing hub by encouraging indigenous production across sectors, including defense.

• The establishment of the Tata Aircraft Complex is part of this initiative, showcasing India’s commitment to becoming self-reliant in defense production.

• Airbus and TASL Partnership:

• The collaboration between Airbus Defence and Space and Tata Advanced Systems Limited is a landmark venture in India’s aerospace sector.

• It not only boosts the domestic manufacturing of aircraft but also brings advanced technology and expertise to India, enhancing the country’s industrial base.

• India’s Defense Modernization:

• The establishment of facilities like the Tata Aircraft Complex is crucial for modernizing India’s defense infrastructure and

enhancing its operational capabilities.

• This step ensures that India moves closer to achieving strategic autonomy by reducing reliance on foreign defense imports.

Important Points

• Economic Impact:

• The Tata Aircraft Complex will contribute to India's economy by creating employment opportunities, enhancing manufacturing capabilities, and fostering innovation in the defense sector.

• It is expected to bring global recognition to India's aerospace and defense industries.

• Strategic Importance:

• The facility strengthens India's national security by ensuring the availability of advanced military aircraft.

• The project marks a significant step toward achieving the vision of a self-reliant India in defense production.

Q25. Answer: (d) Part XII

The correct answer is Part XII.

Key Points

• Part XII of the Indian Constitution deals with the financial matters and economic relations between the Centre and the States. It includes Articles 264 to 300A.

• This part contains provisions for distribution of revenue between the Centre and the States, borrowing powers, and financial autonomy to states.

• Provisions under Part XII include Article 268 to 269, which specify taxes levied by the Centre but appropriated by the States. Hence, Part XII is correct.

• It also includes Article 280, which establishes the Finance Commission to recommend measures for the distribution of financial resources between the Centre and States.

• This Finance Commission plays a crucial role in maintaining fiscal balance between different levels of government. Hence, this reinforces the correctness of Part XII.

• Part XII also includes provisions for grants-in-aid to states under Article 275, ensuring adequate resources for states to carry out their responsibilities.

• Hence, the correct answer is Part XII.

Additional Information

• Articles under Part XII:

• Article 268: Provides for duties levied by the Union but collected and appropriated by the States.

• Article 269: Specifies taxes levied and collected by the Union but assigned to the States.

• Article 280: Establishes the Finance Commission to recommend financial distribution between the Centre and States.

• Article 275: Provides for grants-in-aid to States from the Consolidated Fund of India.

• Economic Relations:

• Part XII plays a crucial role in defining the economic relationship between the Union Government and State Governments.

• It ensures that resources are distributed fairly and efficiently to maintain fiscal balance in the country.

• The Finance Commission, as per Article 280, reviews the financial position of states and recommends measures to ensure equitable distribution.

Important Points

• Key Legal Considerations:

• Part XII also includes provisions for Contingency Fund and Public Accounts of India under Article 267.

• The division of taxes and grants-in-aid helps states to meet their financial requirements and manage their budgets effectively.

• Finance Commission:

• The Finance Commission, established under Article 280, advises the President on financial matters and suggests measures for equitable distribution of resources.

• It provides recommendations on issues such as sharing of taxes, allocation of funds, and financial grants.

• Examples:

• The 14th Finance Commission recommended increasing the states' share of central taxes from 32% to 42%.

• The creation of the Goods and Services Tax (GST) under the GST Act harmonized indirect taxation across the country, impacting Centre-State economic relations.

Q26. Answer: (d) France

The correct answer is France.

Key Points

• New Caledonia is a French overseas territory located in the South Pacific Ocean. It is known for its abundant nickel reserves, which account for a significant proportion of global nickel production.

• The territory has been in the news due to nickel mining protests, as the mining activities impact the environment and raise socio-political concerns among local communities.

• New Caledonia has also been the center of independence debates, with movements advocating for sovereignty from France. However, recent referendums have favored remaining a French territory. Hence, the statement regarding independence debates is correct.

• As of April 2025, New Caledonia remains under French governance, with France providing economic aid and administrative support to the region.

• Nickel mining in New Caledonia is a crucial economic activity, contributing significantly to its GDP. However, it has led to environmental and social challenges. Hence, this aspect of the question is correct.

• The protests related to nickel mining reflect concerns over environmental degradation, the rights of indigenous Kanak people, and the distribution of benefits from mining operations.

• France has maintained its control over New Caledonia despite periodic independence movements, as economic and strategic interests align with retaining the territory. Hence, the statement about France being the governing country is correct.

• Hence, the correct answer is France.

Additional Information

• New Caledonia:

• Location: It is situated in the South Pacific Ocean, approximately 1,200 kilometers east of Australia. The archipelago includes a main island (Grande Terre) and several smaller islands.

• Nickel Reserves: The territory is home to around 25% of the world's nickel reserves, making it a critical global supplier of this essential metal used in stainless steel and batteries.

• Kanak People: The indigenous population of New Caledonia, known as Kanaks, have been at the forefront of independence movements and environmental protests.

• Governance: New Caledonia operates under a special status within France, with a degree of autonomy in local governance. However, France retains control over foreign relations, defense, and economic assistance.

• Nickel Industry:

• Economic Importance: Nickel mining is the backbone of New Caledonia's economy, contributing heavily to export revenue and local employment.

• Environmental Concerns: Mining has led to deforestation, soil erosion, and pollution, sparking protests from local communities and environmental activists.

• Global Demand: The increasing need for nickel in battery production for electric vehicles has heightened global interest in New Caledonia's reserves.

• Independence Movements:

• Referendums: New Caledonia has held multiple referendums on independence from France, with the majority of votes supporting continued association with France.

• Kanak Advocacy: Indigenous Kanaks have historically sought independence, citing historical injustices and the need for self-determination.

• French Role: France has invested in the territory's infrastructure and economy, strengthening ties to prevent independence.

Important Points

• Strategic Importance: New Caledonia's location in the South Pacific provides France with a strategic foothold in the region, enhancing its geopolitical influence.

• Environmental Initiatives: Efforts are underway to make nickel mining more sustainable, including reforestation projects and stricter environmental regulations.

• Economic Dependence: The territory relies heavily on French aid, which supports healthcare, education, and infrastructure development.

• Global Nickel Market: New Caledonia is a key player in the global nickel trade, which is vital for industries such as stainless steel manufacturing and battery production for electric vehicles.

Q27. Answer: (a) 72 years

The correct answer is 72 years.

Key Points

• Life expectancy refers to the average number of years a person is expected to live based on statistical data. This metric is widely used to gauge the health and quality of life in a country.

• In 1990, India's life expectancy was recorded at 58.6 years, reflecting challenges in healthcare, sanitation, and nutrition during that time. This statement is correct.

• By 2023, India achieved its highest recorded life expectancy of 72 years, showcasing significant improvements in healthcare infrastructure, public health initiatives, and economic growth. This statement is correct.

• The increase in life expectancy is attributed to factors such as advancements in medical science, better access to healthcare services, improved nutrition, and reduced infant mortality rates.

• Option 72 years is the correct answer because it aligns with the latest data on India's life expectancy as of 2023. The other options (70 years, 65 years, and 75 years) do not match the officially recorded figure.

• Life expectancy is an essential indicator used by organizations such as the United Nations Development Programme (UNDP) and the World Health Organization (WHO) for assessing human development and public health globally.

• Hence, the correct answer is 72 years.

Additional Information

• Life Expectancy Trends:

• India's life expectancy has steadily risen over the decades due to investments in healthcare systems, immunization programs, and public health campaigns.

• In 1950, life expectancy was approximately 41 years, highlighting the challenges faced post-Independence. By 1990, it had risen to 58.6 years, and by 2023, reached 72 years.

• The increase reflects improvements in sanitation, nutrition, maternal healthcare, and disease prevention efforts.

• Global Comparison:

• India's life expectancy of 72 years in 2023 is close to the global average of 73 years, as reported by the United Nations.

• Countries such as Japan and Switzerland have some of the highest life expectancies globally, exceeding 83 years, due to advanced healthcare systems and higher living standards.

• Factors Contributing to Life Expectancy:

• Key contributors include access to healthcare, economic development, education, and public health programs such as vaccination drives and disease prevention campaigns.

• The reduction in infant mortality rates, improved maternal care, and better management of chronic diseases have positively impacted life expectancy.

Important Points

• UNDP and WHO Reports:

• Life expectancy is a key indicator in the Human Development Index (HDI), which evaluates countries based on health, education, and income metrics.

• WHO reports emphasize the role of universal healthcare coverage in improving life expectancy.

• India’s Healthcare Initiatives:

• Programs such as Ayushman Bharat and National Health Mission have contributed to better healthcare access and improved life expectancy.

• The government's focus on non-communicable diseases (NCDs) and preventive healthcare has played a significant role.

Q28. Answer: (a) LAN - Local Area Network connects computers within a limited area.

The correct answer is Option 1.

Key Points

• LAN - Local Area Network:

• A Local Area Network (LAN) connects computers and devices within a limited geographical area such as a home, office, or campus.

• It allows devices to communicate and share data, resources, and applications efficiently.

• LANs typically use Ethernet cables, Wi-Fi, or other technologies for connectivity. Hence, this statement is correct.

• CD - Central Disk Operating System:

• This option is incorrect as CD commonly refers to Compact Disc, a medium used for storing digital data such as music, software, and other files, not a Central Disk Operating System.

• Its primary function is to provide read-only or writable data storage.

• The statement about CD being related to a disk operating system is incorrect. Hence, this statement is incorrect.

• ASCII - American Standard Communication for Input and Interface:

• ASCII stands for American Standard Code for Information Interchange, not for communication input and interface.

• Its primary function is to represent text and control characters in computers and electronic devices.

• It is not related to graphic design. Hence, this statement is incorrect.

• ASCII - Advanced System for Communication Interface:

• As mentioned above, ASCII represents text characters through numerical codes and is not related to LAN setup or

communication interfaces.

• Its primary function is to standardize text representation across devices. Hence, this statement is incorrect.

• Hence, the correct answer is Option 1.

Additional Information

• Local Area Network (LAN):

• A LAN is typically used in environments such as homes, schools, and businesses to connect computers within a small area.

• It enables resource sharing, including internet access, printers, and files.

• Common technologies used in LANs include Ethernet and Wi-Fi.

• LANs are faster and more secure compared to wide-area networks (WANs).

• Compact Disc (CD):

• A Compact Disc is a digital optical disc used primarily for data storage and distribution.

• It was introduced by Philips and Sony in 1982.

• Uses include storing music, software, and multimedia content.

• CDs are largely replaced by modern storage formats such as USB drives and cloud storage.

• ASCII:

• ASCII is widely used in programming and data processing to represent text characters in computers.

• It uses a 7-bit binary code to represent 128 characters, including English alphabets, digits, and control characters.

• ASCII was developed in 1963 by the American National Standards Institute (ANSI).

• Examples of ASCII codes include 65 for 'A', 97 for 'a', and 48 for '0'.

Important Points

• LAN Features:

• Provides high-speed connectivity within a localized area.

• Supports multiple devices, enabling efficient communication and resource sharing.

• Typically inexpensive compared to other networks like WAN.

• ASCII Advantages:

• Ensures compatibility between different computer systems.

• Standardized text representation helps in programming and data processing.

• CD Characteristics:

• Offers high data durability and low cost.

• Commonly used for archival purposes and software distribution.

Q29. Answer: (b) Establishing India as a leader in 6G technology by 2030

The correct answer is Establishing India as a leader in 6G technology by 2030.

Key Points

• Bharat 6G Vision: Launched in March 2023, this initiative outlines India's roadmap for becoming a global leader in 6G technology by the year 2030.

• The goal is to develop indigenous 6G technology, infrastructure, and applications to bolster India's position in the global telecommunications sector. Hence, the correct statement is establishing India as a leader in 6G technology by 2030.

• This vision emphasizes self-reliance in 6G technology and aims to reduce dependency on imports or foreign-developed technologies. Hence, Option 1 is incorrect.

• The implementation focuses on equitable growth, providing benefits of 6G technology to both urban and rural areas. Commercializing 6G only in urban areas is not aligned with the initiative's inclusive goals. Hence, Option 3 is incorrect.

• 6G is not intended as an immediate replacement for 5G. Instead, it is planned as a long-term evolution to cater to advanced future needs. Hence, Option 4 is incorrect.

Additional Information

• 6G Technology Overview:

• 6G is the sixth generation of wireless technology, expected to deliver significantly faster data transfer rates, reduced latency, and advanced capabilities like holographic communication and AI integration.

• It is anticipated to support cutting-edge applications such as autonomous vehicles, telemedicine, augmented reality (AR), and virtual reality (VR).

• India's Strategic Goals with 6G:

• The Bharat 6G Vision aims to establish India as a global hub for 6G innovation, fostering research and development, and creating new opportunities in the digital economy.

• The government aims to enhance the capabilities of both public and private sectors to develop and deploy 6G technologies domestically.

• Global Context:

• Countries like China, the USA, and South Korea are also investing heavily in 6G research, and India's initiative seeks to position the country among the global leaders in this field.

• India's focus on indigenous development aligns with its broader Aatmanirbhar Bharat (self-reliant India) vision.

Important Points

• Key Objectives of Bharat 6G Vision:

• Promoting indigenous research and development to achieve leadership in 6G technology.

• Ensuring equitable access to 6G technology in both urban and rural regions.

• Creating a robust ecosystem for 6G through collaboration between academia, industry, and government.

• Challenges:

• Developing 6G technology requires significant investment in infrastructure, research, and skilled workforce.

• There are challenges in ensuring affordability and widespread adoption of 6G solutions across diverse regions.

Q30. Answer: (a) Part IXB

The correct answer is Part IXB.

Key Points

• 97th Amendment: The Constitution (97th Amendment) Act, 2011, was enacted to promote the development of cooperative societies, emphasizing their importance in socio-economic development.

• Through this amendment, Part IXB was added to the Constitution of India to provide a constitutional status and protection to cooperative societies.

• It introduced provisions to ensure the autonomy, accountability, and democratic functioning of cooperative societies. Hence, the correct option is Part IXB.

• Article 243ZH to 243ZT: These articles were added under Part IXB, which detail the composition, election, and functioning of cooperative societies.

• The amendment mandates that states enact legislation to ensure that cooperative societies function in a democratic, professional, and economically sound manner.

• It also provides guidelines for the maximum number of members in the Board, tenure of the Board, and reservation of seats for women and Scheduled Castes/Scheduled Tribes in cooperative societies.

• In essence, this amendment aimed to strengthen the cooperative movement in India by ensuring their independence and efficiency.

Additional Information

• Cooperative Societies:

• Cooperative societies are organizations owned and operated by a group of individuals for their mutual benefit. They play a significant role in rural development, providing services like credit, housing, and agricultural support.

• The cooperative movement in India dates back to the early 20th century, but it gained prominence after Independence with the establishment of various cooperative banks, housing societies, and agricultural cooperatives.

• Significance of the 97th Amendment:

• The amendment aimed to address issues like poor governance, lack of accountability, and politicization of cooperative societies.

• Autonomy and Democratic Functioning: It introduced provisions to ensure that cooperative societies operate independently and conduct regular elections for their governing bodies.

• Economic Soundness: The amendment emphasized the need for cooperative societies to maintain financial discipline and transparency.

• Impact:

• The 97th Amendment has led to significant reforms in the cooperative sector, improving their efficiency and accountability.

• It has encouraged states to enact legislation that aligns with the constitutional provisions for cooperative societies.

Important Points

• Key Legal Provisions:

• The 97th Amendment requires states to enact laws ensuring the autonomous and democratic functioning of cooperative societies. These laws must include provisions for regular elections, auditing, and accountability.

• The amendment also provides for the reservation of seats for Scheduled Castes, Scheduled Tribes, and women in the governing bodies of cooperative societies.

• Examples:

• Success Stories: Several states, like Maharashtra and Kerala, have enacted legislation to strengthen their cooperative societies,

leading to improved governance and economic performance.

• Challenges: Despite the constitutional provisions, many cooperative societies still face challenges like corruption, lack of professionalism, and political interference.

Q31. Answer: (a) Tay-Sachs disease

The correct answer is Tay-Sachs disease.

Key Points

• Tay-Sachs disease is caused by the accumulation of lipids in brain cells due to the deficiency or inactivation of lipid-digesting enzymes. This leads to severe neurological degeneration and eventual death. Hence, this is the correct answer.

• It is associated with a deficiency of the enzyme hexosaminidase A, which is responsible for breaking down a fatty substance called GM2 ganglioside in the brain.

• When hexosaminidase A is deficient, GM2 ganglioside accumulates abnormally in brain and nerve cells, causing progressive damage. This accumulation severely affects the central nervous system.

• The disease is genetically inherited and follows an autosomal recessive pattern. Both parents must carry the defective gene for the child to inherit Tay-Sachs disease.

• Symptoms typically appear in infancy and include muscle weakness, motor skill loss, seizures, vision and hearing problems, and developmental delays. Death usually occurs by the age of 4 or 5.

• Currently, there is no cure for Tay-Sachs disease. Treatment focuses on managing symptoms and providing supportive care.

• Hence, the correct answer is Tay-Sachs disease.

Additional Information

• Tay-Sachs disease:

• Genetic basis: Tay-Sachs disease results from mutations in the HEXA gene, located on chromosome 15, which encodes the enzyme hexosaminidase A.

• The disease is most prevalent among certain ethnic groups, such as Ashkenazi Jews, French Canadians, and Cajuns of Louisiana.

• Symptoms:

• Early symptoms include exaggerated startle reflex, muscle weakness, and poor motor skills.

• Later symptoms include blindness, paralysis, and seizures as the disease progresses.

• Other diseases for comparison:

• Huntington's disease: A progressive brain disorder caused by defective genes, characterized by involuntary movements, cognitive decline, and psychiatric symptoms. It is not related to lipid accumulation.

• Parkinson's disease: A neurodegenerative disorder caused by the loss of dopamine-producing neurons, leading to tremors, rigidity, and slow movement. It is unrelated to lipid metabolism.

• Alzheimer's disease: A progressive neurological disorder characterized by memory loss and cognitive decline due to the buildup of amyloid plaques and tau tangles, not lipids.

Important Points

• Screening: Genetic screening and counseling are recommended for individuals at risk of carrying Tay-Sachs disease, especially in populations with a high prevalence.

• Research: Experimental approaches, such as gene therapy and enzyme replacement therapy, are being explored for potential treatment options.

• History: Tay-Sachs disease was first described by British ophthalmologist Warren Tay in 1881 and American neurologist Bernard Sachs in 1887.

Q32. Answer: (b) Sujit Kumar and Tausif Alam

The correct answer is Sujit Kumar and Tausif Alam.

Key Points

• 'AI on Trial' is a book authored by Sujit Kumar and Tausif Alam. The book was published in April 2025.

• The book explores various aspects of Artificial Intelligence, including its potential, ethical concerns, and future implications.

• It examines legal and societal challenges posed by AI technologies, such as privacy concerns, accountability, and regulation.

• Sujit Kumar and Tausif Alam are reputed authors and researchers who specialize in the fields of technology and law. Their expertise in these areas adds credibility to the book's content.

• The book has received significant attention due to its timely publication, coinciding with the global discourse surrounding AI ethics and governance.

• It is considered a valuable resource for individuals interested in understanding the complexities and implications of AI in modern society.

• Other options listed in the question, such as Himanshu Roy, Manohar Lal Khattar, Himanshu Dhulia, and Bandaru Dattatreya, are not associated with the authorship of this book. Hence, the correct answer is Sujit Kumar and Tausif Alam.

Additional Information

• About Artificial Intelligence:

• Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn.

• AI encompasses various technologies such as machine learning, natural language processing, computer vision, and robotics.

• It has applications in diverse fields, including healthcare, finance, education, and transportation.

• Ethical Concerns of AI:

• AI raises concerns related to privacy, bias, security, and job displacement.

• There is ongoing debate about the regulation of AI to ensure accountability and prevent misuse.

• Books like 'AI on Trial' contribute to the discourse by analyzing these issues and suggesting possible solutions.

• About the Authors:

• Sujit Kumar and Tausif Alam are known for their work in the intersection of law and technology.

• Their analysis is rooted in extensive research and practical insights into the challenges posed by emerging technologies.

Important Points

• AI and Law:

• The book emphasizes the need for a robust legal framework to regulate AI technologies and address concerns like liability and ownership.

• It discusses global efforts to draft policies and guidelines to ensure ethical AI development and usage.

• Global AI Governance:

• Several organizations, including the United Nations and OECD, have proposed guidelines for AI governance.

• Countries like India, USA, and China are actively working on AI policies to balance innovation and regulation.

• The book highlights the importance of international collaboration in addressing AI-related challenges.

Q33. Answer: (d) Gradual political freedom

The correct answer is Gradual political freedom.

Key Points

• The moderate Congress leaders, active during the late 19th and early 20th centuries, believed in achieving political reforms and self-governance gradually through constitutional means. Their strategy was to convince the British government to introduce reforms in India, rather than resorting to violence.

• They emphasized the importance of dialogue, petitions, and peaceful protests to demand political rights, economic reforms, and administrative changes. Leaders such as Dadabhai Naoroji, Gopal Krishna Gokhale, and Surendranath Banerjee were key proponents of this approach.

• Moderates believed that the British rule in India had a dual role—it brought certain benefits like modernization and the rule of law, but it also oppressed the Indian population. They sought to reform the British policies while working towards self-governance. Hence, the belief in gradual political freedom was central to their ideology.

• They advocated for reforms such as increased Indian representation in legislative councils, reduction of military expenditure, and economic development through industrialization and modern education. Their demands were aimed at building the foundation for an eventual self-governing India.

• The moderates opposed any form of violent uprising and instead supported constitutional methods like writing petitions, forming delegations, and presenting demands to the British Parliament. Hence, the option of violent uprising is incorrect.

• They did not seek immediate independence but believed in the concept of achieving self-rule through incremental reforms and cooperation with the British government. Hence, the option of immediate independence is incorrect.

Additional Information

• Prominent Moderate Leaders:

• Dadabhai Naoroji: Known as the "Grand Old Man of India," he exposed British economic exploitation through his theory of the ‘Drain of Wealth’.

• Gopal Krishna Gokhale: An advocate for social reform and a strong believer in constitutional methods. He mentored several prominent leaders, including Mahatma Gandhi.

• Surendranath Banerjee: He was instrumental in organizing the early nationalist movement and founded the Indian National Association.

• Methods of Moderates:

• Moderates used petitions, resolutions, pamphlets, memorandums, and meetings to present their demands to the British government.

• They believed in loyalty to the British Crown and sought to create a sense of unity among Indians through their campaigns.

• Their annual sessions included discussions on issues such as representation in the legislative council, reducing military expenditure, and improving the plight of Indian peasants.

• Criticism of Moderates:

• The extremists within the Congress, led by leaders like Bal Gangadhar Tilak, Bipin Chandra Pal, and Lala Lajpat Rai, criticized the moderates for being too soft in their approach and called for more assertive action.

• The moderates were often accused of being elitist and disconnected from the masses, as their methods primarily involved the educated middle class.

Important Points

• Key Achievements of Moderates:

• The moderates were instrumental in creating a national consciousness and laying the foundation for India's freedom struggle.

• They were successful in securing reforms such as the Indian Councils Act of 1892, which increased Indian representation in the councils, although in a limited capacity.

• They highlighted the issues of economic exploitation, taxation, and the need for Indian self-rule in international forums, gaining global attention to India's plight.

• Key Characteristics of Moderates:

• They believed in peaceful coexistence with the British and hoped to achieve their objectives through persuasion and constitutional reforms.

• They were mostly drawn from the upper-middle class, English-educated professionals, such as lawyers, teachers, and journalists.

Q34. Answer: (b) 42th

The correct answer is 42nd Amendment.

Key Points

• The 42nd Amendment Act of the Constitution of India, enacted in 1976, is often referred to as the "Mini Constitution" due to the significant changes it introduced.

• This amendment added the terms 'socialist' and 'secular' to the Preamble of the Indian Constitution to emphasize the commitment of India to social and economic equality and religious neutrality.

• The word 'integrity' was also added to the Preamble to ensure the unity and harmony of the nation.

• The amendment was introduced during the Emergency period (1975-1977) when Indira Gandhi was the Prime Minister of India.

• The addition of these words aimed to reflect the growing importance of social justice, equality, and secularism in governance and public policy.

• The amendment also led to changes in other parts of the Constitution, including provisions related to the judiciary, fundamental duties, and the Directive Principles of State Policy.

• The inclusion of 'socialist' and 'secular' reinforced India's commitment to ensuring social equality and religious tolerance. These values are integral to the governance of India.

• Hence, the correct answer is the 42nd Amendment.

Additional Information

• Preamble of the Indian Constitution:

• The Preamble serves as the introduction to the Constitution and outlines the guiding principles and philosophy of the Indian state.

• It declares India as a Sovereign, Socialist, Secular, Democratic, and Republic nation.

• The Preamble is considered a part of the Constitution and can be amended under Article 368.

• 42nd Amendment Act:

• The amendment was passed during the Emergency period and brought significant changes, including the addition of Fundamental Duties under Part IVA of the Constitution.

• It also curtailed the powers of the judiciary and increased the powers of the Parliament.

• The amendment aimed to strengthen the Directive Principles and reduce the scope of Fundamental Rights.

• Importance of Socialist and Secular Values:

• Socialist: Reflects the idea of reducing social and economic inequalities and ensuring equitable distribution of wealth.

• Secular: Ensures that the state does not favor any religion and treats all religions equally.

• These values are central to maintaining the harmony and unity of India's diverse population.

Important Points

• Significance of the Preamble:

• The Preamble is often referred to as the identity card of the Constitution.

• It reflects the aspirations and goals of the people and serves as a guiding light for constitutional interpretation.

• Impact of the 42nd Amendment:

• The amendment strengthened the role of the state in achieving social justice and religious harmony.

• It remains one of the most debated amendments due to its impact on the balance of power between the executive, legislature, and judiciary.

• Despite its controversies, the addition of 'socialist' and 'secular' highlights India's commitment to inclusive growth and religious neutrality.

Q35. Answer: (d) Odisha

The correct answer is Odisha.

Key Points

• According to the Ministry of Coal data for the financial year 2023-24, Odisha had the highest coal reserves in India. This places Odisha as a crucial contributor to India's coal production and reserves.

• Odisha accounts for a significant portion of India's coal deposits, with rich reserves primarily concentrated in areas such as Mahanadi Coalfields, which is a subsidiary of Coal India Limited.

• Coal is primarily found in the Talcher coal belt and other regions within Odisha, which are known for their high-quality coal reserves. This makes Odisha a critical region for India's energy sector.

• Jharkhand, though historically significant for coal mining, does not surpass Odisha in terms of reserves, although it remains one of India's leading coal-producing states. Hence, option 1 is incorrect.

• Telangana has coal reserves in areas like Singareni Collieries, but its reserves are not the highest compared to Odisha. Hence, option 2 is incorrect.

• Madhya Pradesh has coal reserves primarily in areas such as Singrauli and Umaria, but it does not rank as the top state for coal reserves. Hence, option 3 is incorrect.

• Although Odisha leads in coal reserves, other states also contribute significantly to India's coal production, including Chhattisgarh. Hence, option 4 is correct.

• Hence, the correct answer is Odisha.

Additional Information

• Coal Reserves in India:

• India is rich in coal reserves, with the bulk of coal deposits concentrated in states such as Odisha, Jharkhand, Chhattisgarh, and West Bengal.

• Coal plays a crucial role in India's energy sector, contributing to nearly 55% of the total energy needs of the country.

• The major types of coal found in India include bituminous and anthracite, which are used extensively for energy generation and industrial applications.

• Role of Odisha in Coal Production:

• The Mahanadi Coalfields Limited (MCL), a subsidiary of Coal India, operates extensively in Odisha and contributes to a significant portion of India's coal production.

• Talcher coalfields, located in Odisha, are one of the largest coal-producing regions in the country, supplying coal to various industries and power plants.

• Odisha's coal reserves are strategically important for sustaining India's thermal power plants, which are a major source of electricity generation.

• Other Coal-Producing States:

• Jharkhand: Rich in coal deposits, Jharkhand has significant mines such as those in Jharia, Bokaro, and Dhanbad, contributing to India's coal production.

• Chhattisgarh: Known for its high-grade coal reserves, the state is a major contributor to India's energy sector through mines like Korba.

• West Bengal: The Raniganj coalfields are among the oldest coal mines in India, and they continue to play a vital role in coal production.

Important Points

• India's Coal Statistics:

• India's total coal reserves are estimated at around 319.02 billion tonnes, with Odisha accounting for approximately 24% of these reserves.

• Coal contributes significantly to India's GDP and industrial growth, making coal-rich states like Odisha vital for the nation's economy.

• Environmental Considerations:

• Coal mining has an environmental impact, including land degradation, deforestation, and air pollution.

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• Efforts are being made to incorporate sustainable mining practices and reduce the ecological footprint of coal extraction.

Q36. Answer: (a) Smaller land area and lack of forest areas

The correct answer is Smaller land area and lack of forest areas.

Key Points

• The biodiversity of a region depends on several factors, including geography, climate, soil, and vegetation.

• The Lakshadweep Islands are geographically smaller in size compared to the Andaman and Nicobar Islands. Due to their smaller land area, they inherently support a limited variety of flora and fauna.

• The Lakshadweep Islands lack significant forested areas compared to the Andaman and Nicobar Islands, which are covered with dense tropical forests. Forests provide habitats for diverse species, and their absence in Lakshadweep limits the biodiversity in these islands.

• The Andaman and Nicobar Islands, on the other hand, are larger and have a more diverse range of ecosystems, including tropical rainforests, mangroves, and coral reefs, which support a wider variety of species.

• The geographical isolation of the Lakshadweep Islands further limits the migration of species, reducing biodiversity compared to the Andaman and Nicobar Islands.

• Thus, the smaller land area and lack of forest areas are the primary reasons for the lower biodiversity in the Lakshadweep Islands compared to the Andaman and Nicobar Islands. Hence, the correct answer is "Smaller land area and lack of forest areas".

Additional Information

• Lakshadweep Islands:

• The Lakshadweep Islands are a group of 36 small islands located in the Arabian Sea, off the southwestern coast of India.

• These islands are primarily composed of coral atolls, reefs, and sandbars, with very limited land area and vegetation.

• The soil in Lakshadweep is sandy and not very fertile, which limits the growth of forest vegetation and reduces the habitat available for terrestrial species.

• The biodiversity of Lakshadweep is primarily marine, with vibrant coral reefs and a variety of aquatic species, but terrestrial biodiversity is relatively low.

• Andaman and Nicobar Islands:

• The Andaman and Nicobar Islands are located in the Bay of Bengal and consist of around 572 islands. They have a total land area of approximately 8,249 square kilometers, much larger than Lakshadweep.

• These islands have extensive tropical rainforests, mangroves, and a rich diversity of flora and fauna. The dense forest cover provides a habitat for many endemic species.

• The Andaman and Nicobar Islands are home to numerous terrestrial animals, including Andaman wild pigs, Nicobar megapodes, and saltwater crocodiles, as well as aquatic biodiversity.

• The geographical location of these islands, along with their larger land area and varied ecosystems, makes them a hotspot for biodiversity.

• Factors affecting biodiversity:

• Important factors influencing biodiversity include climatic conditions, availability of resources, geographical size, and habitat diversity.

• Regions with larger land areas, diverse ecosystems, and favorable climates tend to support higher biodiversity.

Important Points

• Comparison between Lakshadweep and Andaman & Nicobar Islands:

• The Lakshadweep Islands are much smaller in size, with a total land area of around 32 square kilometers, compared to the larger Andaman and Nicobar Islands.

• The climate of the Lakshadweep Islands is tropical but more uniform, while the Andaman and Nicobar Islands have a mix of tropical and subtropical climates, providing a variety of habitats.

• The Andaman and Nicobar Islands are part of the Indo-Burma biodiversity hotspot, which is one of the 36 global biodiversity hotspots recognized for their rich flora and fauna.

• In contrast, the Lakshadweep Islands are not part of any recognized biodiversity hotspots, which is another factor for their lower biodiversity levels.

Q37. Answer: (a) Bihar

The correct answer is Bihar.

Key Points

• Nepal is a landlocked country located in South Asia, bordered by India on three sides (east, west, and south) and by China to the north.

• The border between Nepal and India runs for approximately 1,850 kilometers, making it one of the longest international borders that India shares with another country.

• Nepal shares its border with the following Indian states: Bihar, Uttar Pradesh, Uttarakhand, West Bengal, and Sikkim. These states are located in northern and eastern parts of India.

• Out of the given options, Bihar is the only correct state that shares its border with Nepal. Hence, the correct option is Bihar.

• Himachal Pradesh, Odisha, and Meghalaya do not share their borders with Nepal. These states are located in different geographical regions of India and are not adjacent to Nepal.

Additional Information

• Geography of Nepal:

• Nepal is a landlocked country located in the Himalayan region. It is known for its mountainous terrain, with eight of the world's ten tallest mountains, including Mount Everest.

• The country is bordered to the north by the Tibetan Autonomous Region of China, and to the south, east, and west by India.

• Indian states sharing borders with Nepal:

• Bihar: Shares the longest border with Nepal among Indian states. It is located to the south of Nepal.

• Uttar Pradesh: Lies to the southwest of Nepal and shares a significant border length.

• Uttarakhand: Located to the west of Nepal, sharing a smaller yet important border region.

• West Bengal: Shares a narrow border with Nepal in the eastern part of the country.

• Sikkim: A small northeastern state that shares a short border with Nepal in the eastern Himalayan region.

• Economic and cultural ties:

• Nepal and India share strong economic and cultural ties. The open border between the two countries facilitates movement of people and goods without requiring passports or visas.

• Many people of Nepalese origin reside in India, and cultural exchanges between the two nations are frequent.

Important Points

• Bihar:

• Bihar shares an international border with Nepal in the northern part of the state.

• Important border towns in Bihar that connect with Nepal include Raxaul, Jogbani, and Jaynagar.

• Himachal Pradesh:

• Himachal Pradesh is located in the northern part of India but shares its borders with China (Tibet) and Indian states like Punjab, Haryana, and Uttarakhand. It does not share a border with Nepal.

• Odisha:

• Odisha is located in eastern India along the Bay of Bengal. It shares borders with Andhra Pradesh, Chhattisgarh, West Bengal, and Jharkhand, but not with Nepal.

• Meghalaya:

• Meghalaya is a northeastern state of India, bordered by Assam and Bangladesh. It does not share a border with Nepal.

Q38. Answer: (b) R-N2^+ X^-

The correct answer is R-N2^+ X^-.

Key Points

• Diazonium compounds, also known as diazonium salts, contain the functional group R-N2^+ X^-, where R is an organic group and X is a halide or other anion. This structure is characterized by a positively charged diazonium group.

• The diazonium group (-N2^+) is linked to a carbon atom through an organic substituent (R), which can be an alkyl or aryl group. This structure is highly reactive and forms the basis of important chemical reactions in organic synthesis.

• Diazonium salts are typically prepared by treating primary aromatic amines (e.g., aniline) with nitrous acid (HNO2) and a mineral acid like HCl. The reaction proceeds through diazotization. Hence, the molecular structure R-N2^+ X^- is correct.

• Diazonium salts are widely used in organic synthesis, especially for the preparation of azo compounds, which are significant in dye chemistry.

• They are also key intermediates in reactions such as Sandmeyer reaction, which replaces the diazonium group with halogens, cyanides, or hydroxyl groups, demonstrating their utility in creating diverse organic compounds. Hence, option 2 is correct.

• While other molecular structures in the options represent different functional groups, they do not characterize diazonium compounds. For instance:

• Option 1 (R-C≡N) represents nitriles.

• Option 3 (R.C=NR') refers to imines.

• Option 4 (R-CO-NR'R'') denotes amides.

• None of these match the unique structure of diazonium salts. Hence, these options are incorrect.

• Hence, the correct answer is R-N2^+ X^-.

Additional Information

• Diazonium Compounds:

• Diazonium salts are highly reactive compounds used primarily in organic synthesis and the production of azo dyes.

• The synthesis of diazonium salts involves the reaction of primary aromatic amines with nitrous acid under acidic conditions. This process is known as diazotization.

• These compounds are unstable at room temperature and are typically used immediately after preparation. Stability can be enhanced by storing them in cold environments.

• Applications of Diazonium Salts:

• They are extensively used in the synthesis of azo dyes, which are colored compounds used in textiles, leather, and food industries.

• Reactions: Diazonium salts participate in substitution reactions such as the Sandmeyer reaction, where the diazonium group is replaced by halides, cyanides, or hydroxyl groups.

• They are also used in coupling reactions with phenols and aromatic amines to form azo compounds. These reactions are significant in dye chemistry.

• In organic synthesis, diazonium salts serve as intermediates for preparing aromatic compounds like fluorobenzene, phenol, and benzyl cyanide.

• Examples of Diazonium Salts:

• Benzene diazonium chloride (C6H5N2^+Cl^-): Used in the synthesis of azo dyes.

• Toluene diazonium chloride: Used for introducing functional groups into aromatic systems.

Important Points

• Key Characteristics:

• Diazonium compounds are characterized by the N2^+ group, making them highly reactive intermediates in organic chemistry.

• The diazonium group is stable only under specific conditions (low temperature) and decomposes quickly at higher temperatures.

• Reactivity and Versatility:

• Due to their reactivity, diazonium salts are versatile tools for functional group transformation in aromatic compounds.

• Their ability to form azo compounds makes them indispensable in the dye industry.

Q39. Answer: (a) Israel's first attack on Iran's nuclear facilities

The correct answer is Israel's first attack on Iran's nuclear facilities.

Key Points

• In June 2025, Israel conducted its first attack on Iran's nuclear facilities. This marked a significant escalation in the longstanding conflict between the two countries. This event intensified hostilities and drew international attention.

• The attack was strategically aimed at Iran's nuclear infrastructure, which Israel has long considered a threat to its national security due to Iran's ambitions to develop nuclear weapons. Hence, option 1 is correct.

• Statements mentioning the Iranian missile attack on Tel Aviv (option 2) or the dismantling of the Joint Comprehensive Plan of Action (JCPOA) (option 3) are incorrect, as no such events directly took place in June 2025 to escalate the conflict.

• While the killing of an Iranian general (option 4) could trigger tension, it was not the defining event that escalated the conflict in June 2025. Hence, these options are incorrect.

• The attack led to widespread international condemnation and calls for restraint, highlighting the fragile state of peace in the Middle East.

Additional Information

• Israel-Iran Relations:

• The conflict between Israel and Iran stems from ideological, geopolitical, and security concerns. Israel sees Iran’s nuclear program as a direct threat to its existence.

• Iran, on the other hand, supports anti-Israel groups like Hezbollah and Hamas, further exacerbating tensions.

• Nuclear Facilities and International Concerns:

• Iran’s nuclear facilities have been under scrutiny by the International Atomic Energy Agency (IAEA), which monitors compliance with the Non-Proliferation Treaty (NPT).

• Israel has repeatedly warned against Iran’s nuclear ambitions and has been vocal about its willingness to act militarily to prevent Iran from acquiring nuclear weapons.

• Joint Comprehensive Plan of Action (JCPOA):

• The JCPOA, signed in 2015, was an agreement between Iran and world powers to limit Iran’s nuclear program in exchange for sanctions relief.

• However, the deal faced criticism from Israel, which believed it did not adequately prevent Iran from pursuing nuclear weapons.

• International Reactions:

• The attack in June 2025 drew condemnation from global powers, with calls for de-escalation and diplomatic resolution.

• The event underscored the fragile nature of peace and stability in the Middle East, a region prone to conflict and geopolitical rivalries.

Important Points

• Key Developments in Israel-Iran Conflict:

• Israel has conducted cyberattacks and intelligence operations against Iran's nuclear program in the past, but the June 2025 attack was a direct military strike, marking a significant escalation.

• Iran's response included threats of retaliation, raising fears of a broader regional conflict.

• Global Implications:

• The attack highlighted the limitations of international agreements like the JCPOA in addressing regional security concerns.

• It also demonstrated the complexity of Middle Eastern geopolitics, where regional rivalries intersect with global power dynamics.

Q40. Answer: (a) Mistrust developed between the Hindu and Muslim communities.

The correct answer is Mistrust developed between the Hindu and Muslim communities.

Key Points

• The Revolt of 1857, also referred to as India's First War of Independence, caused significant socio-political changes in Indian society. One of the most prominent negative consequences was the rise of mistrust between Hindu and Muslim communities. Hence, this statement is correct.

• The British adopted a policy of "divide and rule" after the revolt. They intentionally widened the gap between the two major religious communities to prevent unified uprisings in the future. This was a deliberate strategy to weaken India's social fabric.

• The revolt saw participation from both Hindu and Muslim leaders and soldiers, but post-1857, the British propagated the narrative that Muslims were primarily responsible for the rebellion. This led to systemic discrimination against Muslims in administrative roles and education. This further deepened the mistrust.

• The mistrust between communities was compounded by the British policy of favoring certain groups in government recruitment and educational opportunities. This led to competition and suspicion between Hindus and Muslims. Hence, this was a profound and lasting consequence.

• While the 1857 revolt aimed to unite Indians against colonial rule, the aftermath saw the British dismantling this unity by fostering communal divisions. Hence, the correct option is mistrust between the Hindu and Muslim communities.

Additional Information

• Decline of Indian Handicrafts:

• The economic policies introduced by the British post-1857 led to the decline of Indian handicrafts and industries. The British flooded Indian markets with machine-made goods from Britain, causing artisans to lose their livelihood. Hence, this statement is correct.

• The British dismantled traditional economic systems and implemented exploitative colonial policies, making India economically dependent on Britain. This had a profound impact on local economies. Hence, this statement is true.

• Weakened Tribal and Peasant Movements:

• Post-1857, the British implemented measures to suppress tribal and peasant uprisings. The heavy military presence and repressive policies weakened local resistance movements. Hence, this statement is correct.

• The British introduced zamindari and revenue systems that exploited peasants and tribal communities, further suppressing their ability to organize resistance. This statement is true.

• Decline in Indian Language and Culture:

• The British promoted English education and administration, leading to the decline of Indian languages like Sanskrit, Urdu, and Persian. They also undermined Indian cultural practices to establish their own dominance. Hence, this statement is correct.

• Traditional knowledge systems, including Ayurveda and indigenous sciences, were ignored or suppressed under British rule. This caused a loss of cultural identity and heritage. This statement is true.

Important Points

• The Revolt of 1857:

• The revolt was triggered by various factors, including religious intolerance, economic exploitation, and political dissatisfaction. It marked the first organized resistance against British rule. However, its failure led to harsh retribution by the British.

• The British response included widespread executions, confiscation of property, and punitive taxes. These measures further alienated Indian society and deepened mistrust between communities.

• Divide and Rule Policy:

• The British actively propagated communal divisions, portraying Hindus and Muslims as antagonistic groups. This policy was instrumental in preventing united resistance movements.

• Examples include the partition of Bengal in 1905, which was justified on religious grounds but aimed at dividing the population.

Q41. Answer: (a) Rs. 318

Shortcut Trick

Let actual cost of a pen be x and a pencil be y.

We get two equations: 2x + 19y = 118 and 5x + 8y = 137

Using cross-multiplication to solve directly for y:

y = (2 × 137 − 118 × 5) ÷ (2 × 8 − 19 × 5) = −316 ÷ −79 = 4

x = (118 − 19 × 4) ÷ 2 = 42 ÷ 2 = 21

Cost of 14 pens and 6 pencils = 14 × 21 + 6 × 4 = 294 + 24 = 318

Therefore The correct answer is Rs. 318.

Alternate Method

Given:

Cost of 2 pens and 19 pencils = Rs. 118

When the cost of a pen decreases by Rs. 5 and a pencil increases by Rs. 4, the cost of 5 pens and 8 pencils becomes Rs. 144.

Formula Used:

Standard elimination method for a system of linear equations in two variables.

Calculations:

=> Let the actual cost of a pen be Rs. x and a pencil be Rs. y.

=> 2x + 19y = 118 --- (Equation 1)

=> The new cost of a pen is Rs. (x − 5) and a pencil is Rs. (y + 4).

=> 5(x − 5) + 8(y + 4) = 144

=> 5x − 25 + 8y + 32 = 144

=> 5x + 8y + 7 = 144

=> 5x + 8y = 137 --- (Equation 2)

=> Multiplying Equation 1 by 5 and Equation 2 by 2, we get:

=> 10x + 95y = 590

=> 10x + 16y = 274

=> Subtracting the second modified equation from the first:

=> 79y = 316

=> y = 4

=> Substituting the value of y in Equation 1:

=> 2x + 19(4) = 118

=> 2x + 76 = 118

=> 2x = 42

=> x = 21

=> The actual cost of a pen is Rs. 21 and a pencil is Rs. 4.

=> Cost of 14 pens and 6 pencils = 14x + 6y

=> 14(21) + 6(4) = 294 + 24 = 318

Therefore The correct answer is Rs. 318.

Additional Information

Linear Equation in Two Variables

An equation of the form ax + by + c = 0, where a and b are non-zero constants, representing a straight line on a Cartesian plane.

Methods of Solving Simultaneous Equations

Commonly solved using substitution (expressing one variable in terms of another), elimination (making coefficients equal to cancel out a variable), or cross-multiplication.

Conditions for Solvability

For a1x + b1y = c1 and a2x + b2y = c2: A unique solution exists if a1 ÷ a2 ≠ b1 ÷ b2.

Q42. Answer: (a) 273

Shortcut Trick

The product of two numbers is equal to the product of their HCM and LCM.

=> 1st Number × 2nd Number = HCM × LCM

=> 182 × N2 = 91 × 546

=> N2 = (91 × 546) ÷ 182 = 546 ÷ 2

=> N2 = 273

Therefore The correct answer is 273.

Alternate Method

Given:

HCM (Highest Common Measure) = 91

LCM (Lowest Common Multiple) = 546

First Number = 182

Formula Used:

Product of the two numbers = Product of their HCM and LCM

Num 1 × Num 2

182 × ?

=

HCM × LCM

91 × 546

Calculations:

=> Let the other number be x.

=> 182 × x = 91 × 546

=> x = (91 × 546) ÷ 182

=> We know that 182 is exactly twice of 91 (91 × 2 = 182).

=> x = 546 ÷ 2

=> x = 273

Therefore The correct answer is 273.

Additional Information

Product of Two Numbers Rule

For any two positive integers a and b, it is always true that a × b = HCF(a, b) × LCM(a, b). Note that this specific rule applies strictly to TWO numbers only and does not scale directly to three or more numbers.

Co-prime Numbers

Two numbers are said to be co-prime if their HCF is 1. In such instances, their LCM is exactly equal to the product of the two numbers.

HCF and LCM of Fractions

HCF of fractions = (HCF of numerators) ÷ (LCM of denominators). Conversely, the LCM of fractions = (LCM of numerators) ÷ (HCF of denominators).

Q43. Answer: (a) 2218.75

Shortcut Trick

60% can be written as the fraction 3/5.

Let the original number be 5 units. The increased number will be 5 + 3 = 8 units.

8 units = 3550 => 1 unit = 3550 ÷ 8 = 443.75

Original number = 5 units = 5 × 443.75 = 2218.75

Therefore The correct answer is 2218.75.

Alternate Method

Given:

Number after a 60% increase = 3550

Formula Used:

Final Value = Initial Value × (1 + Percentage Increase ÷ 100)

Original (100%)

• 60%

Increased Number (160%) = 3550

Calculations:

Let the original number be x.

=> x + 60% of x = 3550

=> x + 0.60x = 3550

=> 1.60x = 3550

=> x = 3550 ÷ 1.60

=> x = 35500 ÷ 16

=> x = 2218.75

Therefore The correct answer is 2218.75.

Additional Information

Percentage Increase Formula

New Value = Original Value × (1 + Percentage Increase ÷ 100). It is often faster to convert the percentage into a fraction and use the ratio method to solve proportionately.

Percentage Decrease Formula

New Value = Original Value × (1 − Percentage Decrease ÷ 100).

Successive Percentage Change

When a number is changed successively by a% and b%, the net percentage change is calculated using the standard formula: (a + b + ab ÷ 100)%.

Q44. Answer: (c) 67%

Shortcut Trick

Let 100g of rice cost 100 units.

Selling Price (SP) for 100g stated value = 100 + 39% profit = 139 units.

Actual Cost Price (CP) for weight given (17% less) = 100 − 17 = 83 units.

Profit % = [(SP − CP) ÷ CP] × 100 = [(139 − 83) ÷ 83] × 100.

Profit % = (56 ÷ 83) × 100 ≈ 67.47% ≈ 67%.

Therefore The correct answer is 67%.

Alternate Method

Given:

=> Claimed profit on sale = 39%

=> Less weight used by the trader = 17%

Formula Used:

=> Profit % = [(SP − CP) ÷ CP] × 100

Actual CP = 83(83g given)Actual SP = 139(100g claimed)Profit = 56Dishonest Dealer ConceptProfit % = (56 ÷ 83) × 100 ≈ 67%

Calculations:

=> Let the stated value be 100g and its cost price be 100 units.

=> The trader claims a profit of 39%, so the Selling Price (SP) of 100g = 100 + 39 = 139 units.

=> The trader uses 17% less weight, so the actual weight given = 100 − 17 = 83g.

=> The Cost Price (CP) incurred by the trader is only for 83g = 83 units.

=> Total Profit = SP − CP = 139 − 83 = 56 units.

=> Profit % = (Profit ÷ Actual CP) × 100

=> Profit % = (56 ÷ 83) × 100

=> Profit % = 5600 ÷ 83 ≈ 67.469%

=> Rounding to the nearest whole number, the profit percentage is 67%.

Therefore The correct answer is 67%.

Additional Information

Dishonest Dealer Selling at Cost Price

If a trader claims to sell goods at cost price but uses a false weight, the profit percentage is calculated purely on the weight discrepancy: Profit % = [Error ÷ (True Value − Error)] × 100.

Multiplying Factor Method

For dishonest dealer problems involving multiple markups or discounts, the final profit ratio is the product of individual multipliers: (Final SP ÷ Final CP) = (Claimed SP ÷ True CP) × (True Weight ÷ False Weight).

Marked Price and Discounts

When a dealer marks up the price and offers a discount, the effective Selling Price is determined by successive percentage changes on the Cost Price: SP = CP × (1 + Markup %) × (1 − Discount %).

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Q45. Answer: (d) 17.15

Shortcut Trick

Evaluate the square roots of the given perfect squares directly.

√400 = 20

√0.0225 = 0.15

√9 = 3

Expression value = 20 + 0.15 − 3 = 17.15

Therefore The correct answer is 17.15.

Alternate Method

Given:

Expression: √400 + √0.0225 − √9

Concept Used:

To easily find the square root of a decimal number, convert it into a fraction first.

Calculation:

=> √400 = 20

=> √0.0225 = √(225 ÷ 10000) = 15 ÷ 100 = 0.15

=> √9 = 3

Substitute these values back into the expression:

=> 20 + 0.15 − 3

=> 20.15 − 3

=> 17.15

Therefore The correct answer is 17.15.

Additional Information

Square Root of Decimals

Count the number of decimal places in the perfect square. The square root will always have exactly half as many decimal places.

BODMAS Rule

Always solve mathematical expressions in the order of Brackets, Orders (powers and roots), Division, Multiplication, Addition, and Subtraction.

Perfect Squares

A number that can be expressed as the product of an integer with itself. Memorising perfect squares up to 30 speeds up simplification significantly.

Q46. Answer: (b) 104

Shortcut Trick

Subtract the respective remainders from the given numbers to find the exactly divisible numbers.

527 − 7 = 520 and 632 − 8 = 624.

The required largest number is the Highest Common Factor (HCF) of 520 and 624.

Using the difference trick for HCF: 624 − 520 = 104.

Since 104 completely divides both 520 (104 × 5) and 624 (104 × 6), the HCF is 104.

Therefore The correct answer is 104.

Alternate Method

Given:

Numbers = 527 and 632

Remainders = 7 and 8

Formula Used:

Required largest number = HCF of (N1 − R1) and (N2 − R2)

Calculations:

=> First divisible number = 527 − 7 = 520

=> Second divisible number = 632 − 8 = 624

=> Find the prime factorization of 520 and 624.

=> Factors of 520 = $2^3 \times 5 \times 13$

=> Factors of 624 = 2^4 × 3 × 13

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=> The common prime factors with the lowest power are 2^3 and 13.

=> Highest Common Factor (HCF) = $2^3 \times 13$

=> HCF = $8 \times 13 = 104$

Therefore The correct answer is 104.

Additional Information

Highest Common Factor (HCF)

The HCF of two or more numbers is the greatest number that completely divides each of them without leaving a remainder. It is also known as the Greatest Common Divisor (GCD).

Same Remainder Case

The largest number that divides a, b, and c leaving the same remainder 'r' in each case is given by the HCF of (a − r), (b − r), and (c − r).

Unknown Same Remainder Case

The largest number that divides a, b, and c leaving the same unknown remainder in each case is given by the HCF of |a − b|, |b − c|, and |c − a|.

Product of Two Numbers

For any two numbers 'a' and 'b', the product of the numbers is equal to the product of their HCF and LCM: a × b = HCF(a, b) × LCM(a, b).

Q47. Answer: (c) Rs. 14,000

Shortcut Trick

If xA = yB = zC, the ratio A : B : C is directly found by taking (yz) : (xz) : (xy).

For 9A = 3B = 7C, the ratio A : B : C = (3 × 7) : (9 × 7) : (9 × 3) = 21 : 63 : 27.

Simplifying by dividing by 3, we get A : B : C = 7 : 21 : 9.

Total units = 7 + 21 + 9 = 37 units.

37 units = Rs. 74,000 => 1 unit = Rs. 2,000

Share of A = 7 units × Rs. 2,000 = Rs. 14,000.

Therefore The correct answer is Rs. 14,000.

Alternate Method

Given:

=> Total amount to be divided = Rs. 74,000

=> Relationship between shares: 9 × A = 3 × B = 7 × C

Total = 37 parts = Rs. 74,000

A (7x)

B (21x)

C (9x)

A = Rs. 14,000

Calculations:

=> Let 9A = 3B = 7C = k

=> A = k/9, B = k/3, C = k/7

=> Ratio of their shares, A : B : C = 1/9 : 1/3 : 1/7

=> To simplify, multiply the entire ratio by the LCM of denominators (9, 3, 7) which is 63.

=> A : B : C = (63 × 1/9) : (63 × 1/3) : (63 × 1/7)

=> A : B : C = 7 : 21 : 9

=> Sum of ratio parts = 7 + 21 + 9 = 37 parts

=> Value of 37 parts = Rs. 74,000

=> Value of 1 part = 74,000 ÷ 37 = Rs. 2,000

=> Share of A = 7 parts = 7 × 2,000 = Rs. 14,000

Therefore The correct answer is Rs. 14,000.

Additional Information

Inverse Ratio Concept

If pA = qB = rC, then the simplest ratio form of A : B : C is calculated as (1/p) : (1/q) : (1/r).

Dividing a Quantity

To divide a total quantity Q into a ratio a : b : c, the actual value of the first part is (a ÷ (a + b + c)) × Q.

Combining Multiple Ratios

If given two sets of ratios such as A:B = m:n and B:C = p:q, the combined ratio A:B:C becomes (m × p) : (n × p) : (n × q).

Q48. Answer: (b) $11x^2 - 3x - 2$

Shortcut Trick

Directly expand the brackets and combine the like terms mentally:

=> $6x^2 - 3x + 5x^2 - 20 + 18$

=> $(6 + 5)x^2 - 3x + (18 - 20)$

=> $11x^2 - 3x - 2$

Therefore The correct answer is $11x^2 - 3x - 2$.

Alternate Method

Given:

Expression: $x(6x - 3) + 5(x^2 - 4) + 18$

Calculation:

=> First, apply the distributive property to multiply out the brackets.

=> Multiply x by (6x − 3): $x \times 6x - x \times 3 = 6x^2 - 3x$

=> Multiply 5 by ($x^2 - 4$): $5 \times x^2 - 5 \times 4 = 5x^2 - 20$

=> Substitute these expanded forms back into the original expression:

=> $6x^2 - 3x + 5x^2 - 20 + 18$

=> Now, group the like terms together (terms with x^2, terms with x, and constants):

=> $(6x^2 + 5x^2) - 3x + (-20 + 18)$

=> Add the coefficients of the grouped terms:

=> $11x^2 - 3x - 2$

Therefore The correct answer is $11x^2 - 3x - 2$.

Additional Information

BODMAS Rule

BODMAS stands for Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction. It determines the correct sequence of operations in any mathematical expression.

Distributive Property

The distributive property states that a(b + c) = ab + ac. This is essential for expanding expressions with brackets before combining the terms.

Combining Like Terms

Terms with the exact same variables and powers are called like terms. Only like terms can be added or subtracted from one another (e.g., $ax^2 + bx^2 = (a + b)x^2$).

Q49. Answer: (a) 1

Shortcut Trick

List the odd numbers in the given range: 467, 469, 471, 473, and 475.

Eliminate numbers divisible by 3 and 5: 471 (sum of digits = 12) and 475 (ends in 5).

Check the rest using prime factors up to $\sqrt{476} \approx 21$.

469 = 7 × 67, and 473 = 11 × 43. Both are non-prime.

Only 467 has no prime factors up to 19. Hence, it is the only prime number.

Therefore The correct answer is 1.

Alternate Method

Given:

Range of numbers: 466 to 476 (inclusive).

Concept Used:

A prime number has exactly two factors: 1 and itself.

To verify if a number N is prime, check for divisibility by all prime numbers up to $\sqrt{N}$.

Calculation:

=> Even numbers in the range (466, 468, 470, 472, 474, 476) are divisible by 2. Thus, they are not prime.

=> The remaining odd numbers to test are: 467, 469, 471, 473, 475.

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=> 469 ÷ 7 = 67

=> 471 ÷ 3 = 157

=> 473 ÷ 11 = 43

=> 475 ÷ 5 = 95

=> The number 467 is not divisible by any prime numbers up to 19 (2, 3, 5, 7, 11, 13, 17, 19). Therefore, 467 is a prime number.

=> The only prime number present in this given range is 467.

Therefore The correct answer is 1.

Additional Information

Prime Number Definition

A natural number greater than 1 that has only two factors: 1 and itself.

Divisibility Test for Primes

To check if a number N is prime, verify its divisibility by all prime numbers less than or equal to √N. If none divide it evenly, N is prime.

Co-prime Numbers

Two integers are said to be co-prime or mutually prime if their highest common factor (HCF) is exactly 1.

Twin Primes

Twin primes are a pair of prime numbers that have a difference of exactly 2, such as (11, 13) or (41, 43).

Q50. Answer: (d) Rs. 310.40

Shortcut Trick

Total Selling Price = Remaining plates × Selling price per plate

Total Selling Price = (79 − 13) × 5.90 = 66 × 5.90 = Rs. 389.40

Total Cost Price = Rs. 79

Profit = Total SP − Total CP = 389.40 − 79 = Rs. 310.40

Therefore The correct answer is Rs. 310.40.

Alternate Method

Given:

Total cost price of 79 plates = Rs. 79

Number of broken plates = 13

Selling price per plate = Rs. 5.90

Formula Used:

Profit = Total Selling Price − Total Cost Price

Total CP

Rs. 79

(79 plates)

Total SP

Rs. 389.40

(66 plates)

Remaining: 66

Selling Rate:

Rs. 5.90 / plate

Profit = SP − CP = Rs. 310.40

Calculations:

=> Number of remaining plates = 79 − 13 = 66

=> Total Selling Price = 66 × 5.90

=> Total Selling Price = Rs. 389.40

=> Total Cost Price = Rs. 79

=> Profit = Total Selling Price − Total Cost Price

=> Profit = 389.40 − 79 = Rs. 310.40

Therefore The correct answer is Rs. 310.40.

Additional Information

Profit & Loss Formula

Profit occurs when the Selling Price (SP) is strictly greater than the Cost Price (CP). The formula used is: Profit = SP − CP.

Effective Cost Price

In scenarios involving damaged or lost items, the total initial investment remains the effective Cost Price. The revenue generated solely from the remaining items dictates the final actual Selling Price.

Profit Percentage

If required to calculate profit percentage, it is universally calculated over the effective Cost Price. Formula: Profit % = (Profit ÷ CP) × 100.

Q51. Answer: (b) 44.9

Shortcut Trick

Average Speed = Total Distance ÷ Total Time

Total Distance = 282 + 120 + 496 = 898 km

Total Time = (282 ÷ 47) + (120 ÷ 20) + (496 ÷ 62) = 6 + 6 + 8 = 20 hr

Average Speed = 898 ÷ 20 = 44.9 km/hr

Therefore The correct answer is 44.9 km/hr.

Alternate Method

Given:

Distance 1 (D1) = 282 km, Speed 1 (S1) = 47 km/hr

Distance 2 (D2) = 120 km, Speed 2 (S2) = 20 km/hr

Distance 3 (D3) = 496 km, Speed 3 (S3) = 62 km/hr

Formula Used:

Time = Distance ÷ Speed

Average Speed = Total Distance ÷ Total Time

D1 = 282 km

S1 = 47 km/hr

T1 = 6 hr

D2 = 120 km

S2 = 20 km/hr

T2 = 6 hr

D3 = 496 km

S3 = 62 km/hr

T3 = 8 hr

Total Distance = 898 km | Total Time = 20 hr

Calculations:

=> Time for 1st part (T1) = 282 ÷ 47 = 6 hours

=> Time for 2nd part (T2) = 120 ÷ 20 = 6 hours

=> Time for 3rd part (T3) = 496 ÷ 62 = 8 hours

=> Total Distance = 282 + 120 + 496 = 898 km

=> Total Time = 6 + 6 + 8 = 20 hours

=> Average Speed = 898 ÷ 20 = 44.9 km/hr

Therefore The correct answer is 44.9 km/hr.

Additional Information

Average Speed for Two Equal Distances

If a person travels two equal distances at speeds x and y, then Average Speed = (2 × x × y) ÷ (x + y).

Average Speed for Three Equal Distances

If a person travels three equal distances at speeds x, y and z, then Average Speed = (3 × x × y × z) ÷ (xy + yz + zx).

Relative Speed

When two bodies move in the same direction, Relative Speed = Difference of speeds. When they move in opposite directions, Relative Speed = Sum of speeds.

Q52. Answer: (a) 14,130 cm3

Shortcut Trick

Radius of the sphere (r) = Diameter ÷ 2 = 30 ÷ 2 = 15 cm.

Volume of a sphere = 4/3 × π × r³
=> Volume = 4/3 × 3.14 × 15³
=> Volume = 4/3 × 3.14 × 3375
=> Volume = 4 × 3.14 × 1125 = 14,130
Therefore The correct answer is 14,130 cm³.
Alternate Method
Sphere Volume Diagram
r = 15 cm
Diameter (d) = 30 cm
Given:
Diameter of the sphere (d) = 30 cm
Value of π ≈ 3.14
Formula Used:
Radius (r) = Diameter ÷ 2
Volume of a Sphere = 4/3 × π × r³
Calculations:
=> Radius (r) = 30 ÷ 2 = 15 cm
=> Volume = 4/3 × 3.14 × (15)³
=> Volume = 4/3 × 3.14 × 3375
=> Volume = 4 × 3.14 × (3375 ÷ 3)
=> Volume = 4 × 3.14 × 1125
=> Volume = 4500 × 3.14
=> Volume = 14130 cm³
Therefore The correct answer is 14,130 cm³.
Additional Information
Surface Area of a Sphere
The total area covered by the outer surface of a complete 3D sphere. Formula: Area = 4 × π × r².
Volume of a Hemisphere
A hemisphere is exactly half of a complete sphere. Formula: Volume = 2/3 × π × r³.
Total Surface Area of a Hemisphere
It includes both the curved outer surface area and the flat circular base area. Formula: TSA = 3 × π × r².

Q53. Answer: (b) 48

Shortcut Trick
In ΔABC, angle BCA = 180° − (54° + 60°) = 66°.
Since BC || AD, alternate interior angle angle CAD = angle BCA = 66°.
In isosceles ΔACD (AC = CD), base angles are equal => angle CDA = angle CAD = 66°.
Therefore angle ACD = 180° − (66° + 66°) = 48°.
Therefore The correct answer is 48°.
Alternate Method
A
B
C
D
54°
60°
66°
66°
66°
?°
Given:
Trapezium ABCD where BC || AD.

angle ABC = 54°

angle BAC = 60°

AC = CD

Calculation:

=> In ΔABC, the sum of all interior angles is 180°.

=> angle BCA = 180° − (angle ABC + angle BAC)

=> angle BCA = 180° − (54° + 60°) = 180° − 114° = 66°

=> Since BC || AD, the alternate interior angles across transversal AC are equal.

=> angle CAD = angle BCA = 66°

=> In ΔACD, it is given that AC = CD.

=> In a triangle, angles opposite to equal sides are equal.

=> angle CDA = angle CAD = 66°

=> The sum of angles in ΔACD is 180°.

=> angle ACD = 180° − (angle CAD + angle CDA)

=> angle ACD = 180° − (66° + 66°) = 180° − 132° = 48°

Therefore The correct answer is 48°.

Additional Information

Properties of Trapezium

A convex quadrilateral with at least one pair of parallel sides. The consecutive interior angles between the parallel sides always sum to 180°.

Isosceles Triangle Properties

If two sides of a triangle are equal in length, the angles opposite to them are also equal. The altitude dropped to the base also bisects the base.

Alternate Interior Angles Theorem

When a transversal intersects two parallel lines, the alternate interior angles formed on opposite sides of the transversal are perfectly equal.

Q54. Answer: (c) 5

Shortcut Trick

Identify the last digit of the given number 740705.

The last digit is 5.

According to the divisibility rule, any number ending in 0 or 5 is completely divisible by 5.

Therefore The correct answer is 5.

Alternate Method

Given:

The number is 740705.

Concept Used:

We check the divisibility rules systematically for each of the given options: 12, 4, 5, and 9.

Calculations:

=> Divisibility by 4 → The last two digits are 05. Since 05 is not divisible by 4, the entire number is not divisible by 4.

=> Divisibility by 12 → For a number to be divisible by 12, it must be divisible by both 3 and 4. Since it fails the divisibility test for 4, it is not divisible by 12.

=> Divisibility by 9 → The sum of the digits is 7 + 4 + 0 + 7 + 0 + 5 = 23. Since 23 is not a multiple of 9, the number is not divisible by 9.

=> Divisibility by 5 → The unit digit of the number is 5. Since any number with a unit digit of 0 or 5 is exactly divisible by 5, the number is 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 digits is a multiple of 3.

Divisibility Rule of 8

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

Divisibility Rule of 11

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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 0 or a multiple of 11.

Q55. Answer: (c) Rs. 437

Shortcut Trick

Since the time of investment is constant, Profit Ratio = Capital Investment Ratio.

Capital Ratio = 1350 : 1470 : 1380 = 45 : 49 : 46

Total ratio parts = 45 + 49 + 46 = 140 parts

140 parts = Rs. 1330 => 1 part = 1330 ÷ 140 = Rs. 9.5

Isha's share = 46 parts = 46 × 9.5 = Rs. 437

Therefore The correct answer is Rs. 437.

Alternate Method

Given:

Investment by Ritu = Rs. 1,350

Investment by Sameer = Rs. 1,470

Investment by Isha = Rs. 1,380

Total profit at the end of the year = Rs. 1,330

Formula Used:

Profit Ratio = Capital Ratio × Time Ratio

Since the time period is 1 year for all partners, Profit Ratio = Capital Ratio.

Ritu

Rs. 1350

Sameer

Rs. 1470

Isha

Rs. 1380

Capital Ratio → 45 : 49 : 46

Calculations:

=> Profit ratio of Ritu, Sameer and Isha = 1350 : 1470 : 1380

=> Simplifying the ratio by dividing by 10 = 135 : 147 : 138

=> Further simplifying by dividing by 3 = 45 : 49 : 46

=> Sum of the profit ratios = 45 + 49 + 46 = 140

=> Isha's profit share = (46 ÷ 140) × 1330

=> Isha's profit share = 46 × 9.5

=> Isha's profit share = 437

Therefore The correct answer is Rs. 437.

Additional Information

Profit Ratio in Partnership

Profit is always divided in the ratio of the product of capital invested and the time period of investment (Profit = Capital × Time).

Working vs Sleeping Partner

A working partner actively manages the business and usually receives a fixed salary or a certain percentage of the profit, after which the remaining profit is distributed. A sleeping partner solely provides investment.

Joining Mid-way

If a partner joins or leaves the business mid-way, their respective profit share must be calculated strictly on the exact number of months their capital actually remained invested.

Q56. Answer: (d) 32.82

Shortcut Trick

Deviation of the 10 matches from the initial average = 14 − 41 = −27

Total deviation for 10 matches = 10 × (−27) = −270

This total deviation is distributed equally among all 33 matches.

Net change in average = −270 ÷ 33 ≈ −8.18

New average = 41 − 8.18 = 32.82

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Therefore The correct answer is 32.82 runs.

Alternate Method

Given:

Average runs in the first 23 matches = 41

Average runs in the next 10 matches = 14

Formula Used:

Combined Average = (Sum of all observations) ÷ (Total number of observations)

23 Matches (Avg 41)

10 Matches (Avg 14)

Combined Average ≈ 32.82

Runs = 41

Runs = 14

Calculations:

=> Total runs in the first 23 matches = 23 × 41 = 943

=> Total runs in the next 10 matches = 10 × 14 = 140

=> Total runs in all 33 matches = 943 + 140 = 1083

=> Total number of matches = 23 + 10 = 33

=> Combined Average = 1083 ÷ 33

=> Combined Average = 32.8181...

=> Rounding to two decimal places, Combined Average ≈ 32.82

Therefore The correct answer is 32.82 runs.

Additional Information

Weighted Average

When groups of different sizes are combined, the overall average is calculated using the formula: (n1A1 + n2A2) ÷ (n1 + n2).

Deviation Method

A shortcut technique used to find the combined average quickly by assuming a base average and calculating the net deviation distributed uniformly over the total count.

Arithmetic Mean

It is defined as the sum of a collection of values divided by the total count of values in that collection.

Q57. Answer: (d) Rs. 144

Shortcut Trick

Monthly Interest = 4% of ∞1200 = Rs. 48

Since interest is simple, it remains constant every month.

Total Interest for 3 months = Rs. 48 × 3 = Rs. 144

Therefore The correct answer is Rs. 144.

Alternate Method

Given:

Principal (P) = Rs. 1,200

Rate (R) = 4% per month

Time (T) = 3 months

Formula Used:

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

P = Rs. 1200

Month 0

+4%

1

+Rs. 48

+4%

2

+Rs. 48

+4%

3

+Rs. 48

Total Interest = Rs. 48 × 3 = Rs. 144

Simple Interest Timeline (Monthly)

Calculations:

=> SI = (1200 × 4 × 3) ÷ 100

=> SI = 12 × 4 × 3

=> SI = 144

Therefore The correct answer is Rs. 144.

Additional Information

Unit Matching Rule

In the simple interest formula, the unit of Time (T) must strictly match the period of the Interest Rate (R). Here, since the rate is per month, the time must also be in months to directly use the formula without conversion.

Annual Rate Conversion

If the given rate was an annual rate, it would need to be divided by 12 to find the monthly interest. E.g., an annual rate of 12% means a monthly rate of 12 ÷ 12 = 1% per month.

Amount Calculation

The final Amount (A) represents the total accrued money after the given time period. Formula: A = P + SI. For this specific case, the Amount would be Rs. 1200 + Rs. 144 = Rs. 1344.

Q58. Answer: (b) 800 : 351

Shortcut Trick

Directly equate the fractions and cross-multiply to find the ratio:

First Number × (39 / 100) = Second Number × (8 / 9)

Ratio = (8 / 9) × (100 / 39)

Ratio = 800 / 351

Therefore The correct answer is 800 : 351.

Alternate Method

Given:

39% of the first number is equal to 8/9 of the second number.

Equating Two Values

39% of First Number

(39 / 100) × x

=

8/9 of Second Number

(8 / 9) × y

x : y = 800 : 351

Method Used:

Let the first number be x and the second number be y.

Equate the given expressions and solve for the ratio x / y.

Calculations:

=> 39% of x = (8 / 9) of y

=> (39 / 100) × x = (8 / 9) × y

=> x / y = (8 / 9) ÷ (39 / 100)

=> x / y = (8 / 9) × (100 / 39)

=> x / y = (8 × 100) / (9 × 39)

=> x / y = 800 / 351

Therefore The correct answer is 800 : 351.

Additional Information

Ratio & Proportion Basics

A ratio compares two quantities, indicating how many times the first number contains the second. It is commonly expressed as a : b or as a fraction a / b.

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Percentage to Fraction Conversion

To convert any percentage to a fraction, divide the percentage value by 100. For example, x% equals x / 100.

Cross-Multiplication Rule

When solving equations involving fractions, if a / b = c / d, then multiplying the extremes and the means gives ad = bc. This simplifies proportional relationships directly.

Q59. Answer: (b) 20√3

Shortcut Trick

For an object placed on a building, observed from distance d with elevation angles α (roof) and β (top):

Height of flagpole = d × (tan β − tan α)

=> Height = 30 × (tan 60° − tan 30°)

=> Height = 30 × (√3 − 1/√3)

=> Height = 30 × (2/√3) = 20√3 m

Therefore The correct answer is 20√3 m.

Alternate Method

House

30°

60°

A

B

C

D

30 m

h&sub2;

Given:

Distance from the base of the house, AB = 30 m

Angle of elevation of the house roof, angle CAB = 30°

Angle of elevation of the top of the flagpole, angle DAB = 60°

Formula Used:

tan θ = Perpendicular / Base

Calculations:

Let the height of the house be BC = h1

Let the height of the flagpole be CD = h2

In right-angled triangle ABC:

=> tan 30° = BC / AB

=> 1/√3 = h1 / 30

=> h1 = 30 / √3 = 10√3 m

In right-angled triangle ABD:

=> tan 60° = BD / AB

=> √3 = (h1 + h2) / 30

=> 30√3 = 10√3 + h2

=> h2 = 30√3 − 10√3 = 20√3 m

Therefore The correct answer is 20√3 m.

Additional Information

Angle of Elevation vs Depression

The angle of elevation is measured upwards from the horizontal, while the angle of depression is measured downwards. Both are geometrically equal due to alternate interior angles formed by parallel lines.

Important Trigonometric Ratios

For standard height and distance problems, memorize the basic tangent values: tan 30° = 1/√3, tan 45° = 1, and tan 60° = √3.

Complementary Angles Trick

If two points on the ground are in a straight line with the base, and their angles of elevation to the top are complementary (α + β = 90°), the height of the object can be directly calculated as h = √(d1 × d2).

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Q60. Answer: (d) 10

Shortcut Trick

Apply the BODMAS rule directly to evaluate the given expression.

=> 16 + 12 ÷ 6 − 2 × 4

=> 16 + 2 − 8

=> 10

Therefore The correct answer is 10.

Alternate Method

Given:

Expression: 16 + 12 ÷ 6 − 2 × 4

Concept Used:

BODMAS Rule (Brackets, Orders, Division, Multiplication, Addition, Subtraction)

Calculations:

=> 16 + (12 ÷ 6) − (2 × 4)

First, evaluate the division part:

=> 16 + 2 − 2 × 4

Next, perform the multiplication:

=> 16 + 2 − 8

Then, perform the addition:

=> 18 − 8

Finally, complete the subtraction:

=> 10

Therefore The correct answer is 10.

Additional Information

BODMAS Rule

It dictates the order of mathematical operations: Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction.

Same Precedence Operations

Division and Multiplication share the same precedence, as do Addition and Subtraction. They are evaluated sequentially from left to right.

Types of Brackets (VBODMAS)

V stands for Vinculum (bar over numbers). The priority order to solve brackets is: Vinculum, Simple brackets (), Curly brackets {}, and Square brackets [].

Q61. Answer: (b) Rs. 600

Shortcut Trick

Selling Price = (100% − Discount%) of Marked Price

SP = (100% − 25%) of 800

SP = 75% of 800 = (3 ÷ 4) × 800

SP = 600

Therefore The correct answer is Rs. 600.

Alternate Method

Given:

Printed price (MP) = Rs. 800

Discount = 25%

Formula Used:

Selling Price = MP × (100 − Discount%) ÷ 100

Marked Price

Rs. 800

− 25% Discount

(− Rs. 200)

Selling Price

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Rs. 600

Calculations:

=> SP = 800 × (100 − 25) ÷ 100

=> SP = 800 × 75 ÷ 100

=> SP = 8 × 75

=> SP = 600

Therefore The correct answer is Rs. 600.

Additional Information

Marked Price (MP)

It is the printed price or tag price of an article. Discounts are always calculated on the Marked Price unless stated otherwise.

Successive Discount

If two successive discounts of x% and y% are given, the equivalent single discount is (x + y − (x × y) ÷ 100)%.

Relationship between CP and MP

The ratio of Marked Price to Cost Price is given by: MP ÷ CP = (100 + Profit%) ÷ (100 − Discount%).

Q62. Answer: (c) 127/312

Shortcut Trick

Total work = LCM(13, 24) = 312 units.

Combined efficiency of A and B = 24 + 13 = 37 units/day.

Work done in 5 days = 37 × 5 = 185 units.

Work remaining = 312 − 185 = 127 units.

Fraction of work left = 127/312.

Therefore The correct answer is 127/312.

Alternate Method

Given:

Time taken by A to complete the work = 13 days

Time taken by B to complete the work = 24 days

Number of days they worked together = 5 days

Person	Days	Total Work	Efficiency
A	13	312	24
B	24	13	

Calculations:

=> Total efficiency of A and B together = 24 + 13 = 37 units/day

=> Work done by A and B in 5 days = 37 × 5 = 185 units

=> Remaining work = Total work − Work done

=> Remaining work = 312 − 185 = 127 units

=> Fraction of work left = Remaining work ÷ Total work

=> Fraction of work left = 127/312

Therefore The correct answer is 127/312.

Additional Information

Total Work Concept

Assuming total work as the Least Common Multiple (LCM) of individual completion times makes calculations integer-based and much easier than fractional addition.

Work & Efficiency

Efficiency is inversely proportional to time. A person taking more days has lower efficiency. Efficiency = Total Work ÷ Total Days.

Work Left Fraction

Fraction of work left = 1 − (Days worked × Combined 1-day work). It simply represents the ratio of the uncompleted units to the total units.

Pipes and Cisterns

Pipes and Cisterns problems use the exact same principles as Time & Work, with leaks or emptying pipes treated as having a negative efficiency.

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Q63. Answer: (d) Rs. 6,840

Shortcut Trick

The final price after successive discounts can be found directly by multiplying the initial price with the respective discount multiplying factors.

Final Price = MP × (100 − D1)% × (100 − D2)% × (100 − D3)%

Final Price = 10000 × 0.80 × 0.90 × 0.95

Final Price = 10000 × 0.684 = 6840

Therefore The correct answer is Rs. 6,840.

Alternate Method

Given:

Marked Price of the product = Rs. 10,000

Trade discount (D1) = 20%

Scheme discount (D2) = 10%

Cash discount (D3) = 5%

Formula Used:

Selling Price = MP × [(100 − D1)/100] × [(100 − D2)/100] × [(100 − D3)/100]

Rs. 10,000

Rs. 8,000

Rs. 7,200

Rs. 6,840

(Final Price)

−20%

−10%

−5%

Trade Discount

Scheme Discount

Cash Discount

Calculations:

=> Final Selling Price = 10000 × (100 − 20)/100 × (100 − 10)/100 × (100 − 5)/100

=> Final Selling Price = 10000 × (80/100) × (90/100) × (95/100)

=> Final Selling Price = 10000 × 4/5 × 9/10 × 19/20

=> Final Selling Price = 10000 × (4 × 9 × 19) / (5 × 10 × 20)

=> Final Selling Price = 10000 × 684 / 1000

=> Final Selling Price = 10 × 684 = 6840

Therefore The correct answer is Rs. 6,840.

Additional Information

Successive Discounts

When two discounts D1% and D2% are applied successively, the effective discount is given by: D_(eff) = (D1 + D2 − (D1 × D2) / 100)%.

Marked Price and Selling Price

Selling Price (SP) = Marked Price (MP) × (1 − Discount/100). The discount is always calculated on the Marked Price, not on the Cost Price.

Types of Discounts

A trade discount is offered directly on the catalog price to arrive at the invoice price. A cash discount is further applied on this invoice price to encourage prompt payment.

Q64. Answer: (c) 22%

Shortcut Trick

The overall literacy rate is given as 22%, and the male literacy rate is also 22%.

According to the weighted average concept, if a subgroup has an average identical to the overall group average, the remaining subgroup must also share the exact same average.

Since the male literacy matches the overall literacy, the female literacy rate must naturally be equal to the overall average without any calculation.

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Therefore The correct answer is 22%.

Alternate Method

Given:

Total population = 359,000

Total males = 179,000

=> Total females = Total population − Total males = 359,000 − 179,000 = 180,000

Overall literacy rate = 22%

Male literacy rate = 22%

Formula Used:

Total literate people = Literate males + Literate females

Males: 22%

Females: x%

Overall: 22%

x − 22

0

Population Ratio → 179 : 180

Calculations:

Let the literacy rate of females be x%.

=> 22% of 359,000 = (22% of 179,000) + (x% of 180,000)

=> (22 ÷ 100) × 359000 = (22 ÷ 100) × 179000 + (x ÷ 100) × 180000

Multiplying the entire equation by 100 to remove fractions:

=> 22 × 359000 = 22 × 179000 + x × 180000

=> 22 × 359000 − 22 × 179000 = x × 180000

=> 22 × (359000 − 179000) = x × 180000

=> 22 × 180000 = x × 180000

=> x = (22 × 180000) ÷ 180000

=> x = 22

Therefore The correct answer is 22%.

Additional Information

Weighted Average Property

When a group is divided into two or more parts and one part has the same average as the overall average, the remaining parts must also have an average identical to the overall average.

Rule of Alligation

It is used to find the ratio in which two groups with different averages are mixed to obtain an overall average. Formula: (Quantity 1 ÷ Quantity 2) = (Average 2 − Overall Average) ÷ (Overall Average − Average 1).

Percentage Basics

Percentage literally means "per hundred". It is a fraction with a denominator of 100. To find a percentage of any quantity: Value = (Percentage × Total Base) ÷ 100.

Q65. Answer: (c) 682

Shortcut Trick

The largest circle inscribed inside a rectangle always has its diameter equal to the smaller side (breadth) of the rectangle.

Diameter of the largest circle (d) = 217 m.

Perimeter of circle = π × d

Perimeter = (22 ÷ 7) × 217 = 22 × 31 = 682 m.

Therefore The correct answer is 682 m.

Alternate Method

Given:

Length of the rectangle (L) = 249 m

Breadth of the rectangle (B) = 217 m

Value of π = 22 ÷ 7

d = 217 m

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L = 249 m

B = 217 m

Formula Used:

When a circle is drawn inside a rectangle such that it covers the maximum possible area, its diameter is strictly restricted by the smaller side of the rectangle.

Diameter of largest circle (d) = Breadth of rectangle

Perimeter (Circumference) of a circle = π × d

Calculations:

=> Diameter of the inscribed circle = 217 m

=> Perimeter of the circle = (22 ÷ 7) × 217

=> Perimeter = 22 × (217 ÷ 7)

=> Perimeter = 22 × 31

=> Perimeter = 682 m

Therefore The correct answer is 682 m.

Additional Information

Area of Largest Inscribed Circle

The diameter of the largest circle inscribed in a rectangle is equal to its smaller side (breadth). Area = π × (B ÷ 2)².

Circumcircle of a Rectangle

The diameter of the circle circumscribing a rectangle equals the diagonal of the rectangle. Diameter = √(L² + B²).

Largest Square Inside a Circle

The diagonal of the largest inscribed square is equal to the diameter of the circle. Side of square = d ÷ √2.

Q66. Answer: (d) 20 hours

Shortcut Trick

Time for P to fill tank = 15 × 4/3 = 20 h, and Q = 25 × 6/5 = 30 h.

Let Total Work = LCM(20, 30) = 60 units.

Efficiency: P = 3 units/h, Q = 2 units/h. Filled in 2 hrs = (3 + 2) × 2 = 10 units.

Pipe R empties 10 units in 5 hrs => Efficiency of R = −2 units/h.

Combined efficiency of P, Q, and R = 3 + 2 − 2 = 3 units/h.

Therefore The correct answer is 20 hours.

Alternate Method

Given:

Time taken by P to fill 3/4 part = 15 hours

=> Time for P to fill the full tank = 15 × 4/3 = 20 hours

Time taken by Q to fill 5/6 part = 25 hours

=> Time for Q to fill the full tank = 25 × 6/5 = 30 hours

Part of tank filled by P and Q in 2 hours = 2 × (1/20 + 1/30) = 2 × (3 + 2)/60 = 1/6

Pipe R empties this 1/6 part in 5 hours.

=> Time for R to empty the full tank = 5 × 6 = 30 hours

Pipe	Hours	Total Work	Efficiency
P	20	60	3
Q	30	2	
R	30	−2	

Calculations:

=> Combined efficiency of P, Q, and R = 3 + 2 − 2 = 3 units/hr

=> Time taken by P, Q, and R together = Total Work ÷ Combined Efficiency

=> Time taken = 60 ÷ 3 = 20 hours

Therefore The correct answer is 20 hours.

Additional Information

Inlet and Outlet Pipes

An inlet pipe fills the tank and its work is considered positive (+). An outlet or emptying pipe drains the tank, so its work is considered negative (−).

Total Work and Efficiency

Efficiency is the amount of work done in a unit time. It is inversely proportional to the time taken. Total Work = Time Taken × Combined Efficiency.

Work Cycle Principle

If pipes operate on alternate hours, the total work is divided by the work done in one complete cycle to find the number of cycles needed.

Q67. Answer: (a) 34

Shortcut Trick

Let Father's age be F and Son's age be S.

Given: F + 5S = 79 and 2.5F + S = 94

Multiply the second equation by 5 to equalise S: 12.5F + 5S = 470

Subtract the first equation: (12.5F + 5S) − (F + 5S) = 470 − 79

=> 11.5F = 391 => F = 34

Therefore The correct answer is 34 years.

Alternate Method

Given:

F + 5S = 79 --- (Equation 1)

2.5F + S = 94 --- (Equation 2)

Father (F)

5 × Son (5S)

= 79 years

2.5 × Father (2.5F)

Son (S)

= 94 years

Calculations:

=> From Equation 2, express S in terms of F:

=> S = 94 − 2.5F

=> Substitute the value of S in Equation 1:

=> F + 5(94 − 2.5F) = 79

=> F + 470 − 12.5F = 79

=> 470 − 79 = 12.5F − F

=> 391 = 11.5F

=> F = 391 ÷ 11.5

=> F = 34

Therefore The correct answer is 34 years.

Additional Information

Linear Equations in Two Variables

A system of two linear equations can be solved using substitution, where one variable is isolated and substituted into the other equation.

Elimination Method

Multiply both equations by suitable numbers to make the coefficients of one variable equal, then subtract to eliminate it.

Consistency of Equations

Unique solutions exist when the ratio of coefficients a1/a2 is not equal to b1/b2.

Q68. Answer: (b) 9,594

Shortcut Trick

The ratio of the prices is 3 : 5 : 7, which forms an Arithmetic Progression (AP).

For an odd number of terms in an AP, the average is simply the middle term, which is 5 units.

We are given that the average price is Rs. 15,990.

=> 5 units = Rs. 15,990 → 1 unit = Rs. 15,990 ÷ 5 = Rs. 3,198

The price of the cheapest piece corresponds to 3 units.

=> Cheapest piece = 3 × Rs. 3,198 = Rs. 9,594

Therefore The correct answer is Rs. 9,594.

Alternate Method

Given:

Average price of 3 pieces of furniture = Rs. 15,990

Ratio of their prices = 3 : 5 : 7

Formula Used:

Total sum of observations = Average × Number of observations

Average = (3x + 5x + 7x) ÷ 3 = 5x = Rs. 15,990

3x

5x

7x

Cheapest

Total = 15x = 3 × Rs. 15,990 = Rs. 47,970

Calculations:

Let the prices of the three pieces of furniture be 3x, 5x, and 7x respectively.

=> Total price = 3x + 5x + 7x = 15x

=> We know that, Total price = Average × Number of items

=> 15x = 15,990 × 3

=> 15x = 47,970

=> x = 47,970 ÷ 15

=> x = 3,198

The price of the cheapest piece of furniture corresponds to the smallest ratio part, which is 3x.

=> Cheapest price = 3 × 3,198 = Rs. 9,594

Therefore The correct answer is Rs. 9,594.

Additional Information

Average of Terms in Arithmetic Progression (AP)

When a sequence of numbers is in Arithmetic Progression (meaning the difference between consecutive terms is constant), their average is exactly equal to the middle term (for an odd number of terms) or the average of the two middle terms (for an even number of terms).

Ratio and Proportion

When a total quantity is divided in the ratio a : b : c, the share of the first part is calculated directly using the formula: Share = [a ÷ (a + b + c)] × Total Quantity.

Weighted Average

Used when computing the overall average of sets with different numbers of items. The formula is: A_w = (n1A1 + n2A2 + ... + n_kA_k) ÷ (n1 + n2 + ... + n_k).

Q69. Answer: (a) Rs. 7,491

Shortcut Trick

Effective % for Case 1 = 7.7 × 20/7 = 22%

22% of Principal = Rs. 1,188 => Principal = Rs. 5,400

Effective % for Case 2 = 8.5 × 41/9 = 348.5/9%

New Interest = (348.5/9)% of 5400 = 348.5 × 6 = Rs. 2,091

Total Amount = Principal + New Interest = 5400 + 2091 = Rs. 7,491

Therefore The correct answer is Rs. 7,491.

Alternate Method

Given:

SI1 = Rs. 1,188

R1 = 7.7% and T1 = 20/7 years

R2 = 8.5% and T2 = 41/9 years

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100
Amount = Principal (P) + SI
Principal (P) = ?
R = 7.7%, T = 20/7 yrs
SI = 1188
Find P = 5400
R = 8.5%, T = 41/9 yrs
Find SI = 2091
Amount = 7491
Calculations:
=> SI1 = (P × R1 × T1) ÷ 100
=> 1188 = [P × 7.7 × (20/7)] ÷ 100
=> 1188 = (P × 1.1 × 20) ÷ 100
=> 1188 = P × (22 ÷ 100)
=> P = (1188 × 100) ÷ 22 = Rs. 5,400
Now, finding the interest for the second case:
=> SI2 = (P × R2 × T2) ÷ 100
=> SI2 = [5400 × 8.5 × (41/9)] ÷ 100
=> SI2 = 54 × 8.5 × (41/9)
=> SI2 = 6 × 8.5 × 41
=> SI2 = 51 × 41 = Rs. 2,091
Total Amount = Principal + SI2
=> Amount = 5400 + 2091 = Rs. 7,491
Therefore The correct answer is Rs. 7,491.
Additional Information
Effective Interest Rate
The total simple interest over a time period T is directly proportional to the product of Rate and Time. Effective Interest % = R × T.
Amount in Simple Interest
The final accumulated sum is the original Principal plus the generated Interest. Formula: A = P + (P × R × T) ÷ 100.
Principal Invariance
Unlike compound interest, the principal in simple interest remains constant throughout the entire term, making the interest linearly dependent on time.

Q70. Answer: (d) 3.78 km

Shortcut Trick
Convert time directly into hours to match the speed unit.
Time in hours = 5.4 ÷ 60 = 0.09 hours
Distance = Speed × Time
Distance = 42 × 0.09 = 3.78 km
Therefore The correct answer is 3.78 km.
Alternate Method
Given:
Speed of the person = 42 km/h
Time taken to cross the bridge = 5.4 minutes
Speed = 42 km/h
Time = 5.4 min
Length of Bridge = ?
Formula Used:
Distance = Speed × Time
1 hour = 60 minutes
Calculations:
=> First, convert the time from minutes to hours.

=> Time = 5.4 ÷ 60 hours
=> Time = 0.09 hours
=> Now, use the distance formula:
=> Length of the bridge = Distance covered
=> Length of the bridge = 42 × 0.09
=> Length of the bridge = 3.78 km
Therefore The correct answer is 3.78 km.
Additional Information
Unit Conversion
To convert km/h to m/s, multiply the speed by 5 ÷ 18. To convert m/s to km/h, multiply by 18 ÷ 5.
Relative Speed
If two bodies move in the same direction, relative speed = |S1 − S2|. In opposite directions, relative speed = S1 + S2.
Average Speed
If equal distances are covered at speeds S1 and S2, Average Speed = (2 × S1 × S2) ÷ (S1 + S2).

Q71. Answer: (a) 50

By using the BODMAS rule:
Decoding the given information:

Alphabet	A	B	C	D
Meaning	÷	×	•	•

Given equation : 9 B 5 D 12 A 2 C 11 = ?
New equation after replacing the alphabets from signs: 9 × 5 - 12 ÷ 2 + 11 = ?
9 × 5 - 12 ÷ 2 +11 = ?
9 × 5 - 6 +11 = ?
45 - 6 + 11 = ?
56 - 6 = ?
50 = ?
Hence, the correct answer is "Option 1"

Q72. Answer: (c) LNF

The pattern followed is,
Hence, the correct answer is "Option 3"

Q73. Answer: (a) 59

Rajesh's rank from first = 25th
Rajesh's rank from last = 35th
Total students = (Rank from Top) + (Rank from Bottom) - 1
Total students = 25 + 35 − 1
Total students = 60 –1
Total students = 59
Hence, the correct answer is "Option 1"

Q74. Answer: (a) GJT

The logic followed here is:
Hence, the correct answer is "Option 1"

Q75. Answer: (a) KITE - IKET - ETIK

The logic followed here is:
SKIP - KSPI - PIKS →
MEND - EMDN - DNEM →
Similarly,
KITE - IKET - ETIK →

Hence, the correct answer is "Option 1"

Q76. Answer: (c) 175

The logic follows,

Hence, the correct answer is "Option 3"

Q77. Answer: (b) M

GIven :Seven persons L, M, N, O, P, Q and R, are sitting in a row facing north.

• Only two are sitting to the right of N.

• Only two are sitting between N and R.

• Q is sitting to the immediate left of N.

• Only two are sitting between L and Q.

• O is sitting to the immediate right of P.

The final arrangement is

M is sitting third from left in the row.

Hence, the correct answer is "Option 2"

Q78. Answer: (d) eg

The logic followed here is:

In that code language "row" is written as "eg".

Hence, the correct answer is "Option 4 "

Q79. Answer: (c) 119

The logic follows here,

Hence, the correct answer is "Option 3"

Q80. Answer: (d) Neither conclusion (I) nor (II) follows

The least possible venn diagram is shown below,

Conclusions:

(I) Some watches are ties. → False (As their is no direct relation given between watches and Tie. it is possible but not definite)

(II) All ties are belts. → False (No belt is tie is given, so all ties are belt is not possible)

Neither conclusion (I) nor (II) follows.

Hence, the correct answer is "Option 4"

Q81. Answer: (a) 225

The logic follows here is,

Missing tern is 225.

Hence, the correct answer is "Option 1"

Q82. Answer: (d) 41

Symbol	•	•	×	÷
Meaning	•	•	÷	×

Given equation : 24 + 86 × 2 - 15 ÷ 4 = ?

After interchanging the signs, new equation is,

24 - 86 ÷ 2 + 15 × 4 = ?

24 - 43 + 15 × 4 = ?

24 - 43 + 60 = ?

84 - 43 = ?

41 = ?

Hence, the correct answer is “Option 4”.

Q83. Answer: (b) (416, 52, 4)

The logic follows here is,

(Middle number × Last number) × 2 = First number

(384, 32, 6) →
(32 × 6) × 2 = 192 × 2 = 384
(408, 68, 3) →
(68 × 3) × 2 = 204 × 2 = 408
Similarly,
(416, 52, 4) →
(52 × 4) × 2 = 208 × 2 = 416
Hence, the correct answer is "Option 2"

Q84. Answer: (c) 45

Vijay's rank from first = 12th
Vijay's rank from last = 34th
Total students = (Rank from Top) + (Rank from Bottom) - 1
Total students = 12 + 34 − 1
Total students = 46 –1
Total students = 45
Hence, the correct answer is “Option 3”.

Q85. Answer: (d) Four

Given series:
(Left) 7 @ > 5 # ? \ + * 2 > ? > $ 4 % % $ 7 4 2 (Right)
Condition to be checked:
Symbol → Symbol → Number
7 @ > 5 # ? \ + * 2 > ? > $ 4 % % $ 7 4 2
There are Four such numbers in the above arrangement.
Hence, the correct answer is "Option 4 "

Q86. Answer: (a) NI-MO

Logic:
All follows same logic except NI-MO.
Hence, the correct answer is "Option 1"

Q87. Answer: (b) Two people

GIven :Seven persons A, B, C, T, U, V and W are sitting in a row facing north.
• Only three persons are sitting between V and T.
• U is sitting to the immediate left of T.
• No one is sitting to the right of C.
• Only two persons are sitting between C and U.
• W is sitting to the immediate right of A
The final arrangement is

Two persons are sitting between B and W.
Hence, the correct answer is "Option 2"

Q88. Answer: (b) 9

Given number is 6317458.
Arranging the digits of the number 6317458 in descending order from left to right:

Original Digit	**6**	**3**	**1**	**7**	**4**	**5**	**8**
After arranging in descending order	8	7	6	5	4	3	1

The new number formed is : 8765431
The third digit from the left is 6.

The second digit from the right is 3.
The sum of these two digits is 6 + 3 = 9.
Hence, the correct answer is "Option 2".

Q89. Answer: (d) 19

If 'A' means '÷', 'B' means '×', 'C' means '+' and 'D' means '-'

Symbol	A	B	C	D
Meaning	÷	×	•	•

After replacing all the symbols from sign. new equation is
100 ÷ 5 + 14 - 5 × 3 = ?
100 ÷ 5 + 14 - 5 × 3 = ?
20 + 14 - 5 × 3 = ?
20 + 14 - 15 = ?
19.
Hence, the correct answer is "Option 4"

Q90. Answer: (d) FUSE - UFSE - ESUF

The logic followed here is:
SONG - OSNG - GNOS
HEAT - EHAT - TAEH
Similarly,
Hence, the correct answer is "Option 4"

Q91. Answer: (b) KR - GT

The logic followed here is:
All follow the same logic except KR-GT.
Hence, the correct answer is "Option 2"

Q92. Answer: (b) 14 km North

According to given information,
She has to travel 9 km + 5 km = 14 km North to reach again Point A.
Hence, the correct answer is "Option 2"

Q93. Answer: (d) 7 m East

According to given information,
The minimum distance he walk to reach starting point = 12 - 5 = 7 m in East direction.
Hence, the correct answer is "Option 4"

Q94. Answer: (a) 10

Total students: 30
Savita is 11th from the right.
Her position from the left = 30 - 11 + 1 = 20
Deepa's position from the left: 9th
Savita's position from the left: 20th
Number of students between = (Savita's position from left) - (Deepa's position from left) - 1
Number of students between = 20 - 9 - 1 =10.
Hence, the correct answer is "Option 1.

Q95. Answer: (b) NH 2

Pattern followed here is,
GT 23 is related to FP 6 in a certain way.
G - 1 = F
T - 4 = P

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23 - 17 = 6

HP 21 is related to GL 4 in a similar way.

H - 1 = G

P - 4 = L

21 - 17 = 4

Similarly,

OL 15 is related to

O - 1 = N

L - 4 = H

15 - 17 = -2 (We can consider it as 2)

OL 15 is related to NH2.

Hence, the correct answer is “Option 2”.

Q96. Answer: (b) one

Given series: (Left) 5 * # 7 % £ 9 4 $ 3 & @ 8 Q $ 1 6 & # 2 (Right)

Required condition: One Number - Symbol - Another Number

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

There is only one symbol have a number immediately before each one and another number immediately after each one.

Hence, the correct answer is "Option 2"

Q97. Answer: (d) GK-BF

The logic followed here is:

All follow the same logic except GK-BF.

Hence, the correct answer is "Option 4"

Q98. Answer: (a) Neither conclusion I nor II follows.

The least possible diagram for the given statements is as follows:

Conclusions:

(I) All legs are hands → Does not follow (All hands are legs means some legs are hands but all legs are hands is possible but not definite).

(II) All faces are leg → Does not follow (Some legs are faces. so, some faces are legs but all faces are legs is not true)

Neither conclusion I nor II follows.

Hence, the correct answer is "Option 1"

Q99. Answer: (d) Brother's wife

Code Language (A is of B)				
Symbol	$	•	@	÷
Meaning	Daughter	Brother	Wife	Father

Given Expression: E @ F + G $ M ÷ N

E is wife of F, F is brother of G, G is daughter of M and M is father of N.

G is daughter of M and M is father of N. which means G and N are siblings. F is brother of G. so, F is also brother of N.

According to this. E is N's brother's wife.

Hence, the correct answer is “Option 4”.

Q100. Answer: (c) 6

According to given information,

LOS and 934 same in both statement.

So only letter left is T and number is 6.

Code for "T" is "6".

Hence, the correct answer is "Option 3"

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