# SSC MTS 2025 Official Paper (Held On: 10 Feb, 2026 Shift 1) (Previous Year Paper)

SSC Multi-Tasking Staff (MTS) • 2025 • 90 questions • 90 minutes • Answer key and solutions

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## SESSION 1

**Q1.** 91 - 49 + 84 - (27 + 21) + 38 × 2 = ?

**(a)** 154
**(b)** 156
**(c)** 158
**(d)** 160

**Q2.** 84 + 47 - 23 + 19 ÷ 1 + (26 × 1) - 39 = ?

**(a)** 114
**(b)** 116
**(c)** 118
**(d)** 120

**Q3.** Three people named 'W', 'X' and 'Y' together start a business by investing Rs. 4a, Rs. 20,000, and Rs. 5b, respectively. 'W' invested his amount for 10 months, 'X' and 'Y' invested their amount for 2 more months than 'W'. One year after starting the business, the sum of profit shares of 'X' and 'Y' was 35% more than that of 'W' and the share of 'X' was 80% of that of 'Y'. Find the sum of the initial investment of 'W' and 'Y'.

**(a)** Rs. 58000
**(b)** Rs. 72000
**(c)** Rs. 46000
**(d)** Rs. 65000

**Q4.** A bucket has 60 litres of a solution with sugar and water in the ratio 5 : 1. If 12 litres of the solution are replaced with water, what is the new ratio?

**(a)** 2:1
**(b)** 2:3
**(c)** 3:1
**(d)** 3:2

**Q5.** A shopkeeper mixes two kinds of sugar: one costing Rs. 30/kg and the other Rs. 50/kg. He mixes them in the ratio 3 : 2 by weight. At what price per kg should he sell the mixture so as to gain 25% profit?

**(a)** Rs. 42
**(b)** Rs. 48
**(c)** Rs. 46.25
**(d)** Rs. 47.50

**Q6.** In a certain examination, 67% of the candidates successfully passed, while 165 candidates failed. Determine the total number of candidates who appeared for the examination.

**(a)** 550
**(b)** 700
**(c)** 600

**(d)** 500

**Q7.** A town has a population of 75,000, of which 50% are males. Among the males, 35% are literate. It is further known that 45% of the total population is literate. Determine the percentage of literate females in the town.

**(a)** 43%
**(b)** 55%
**(c)** 53%
**(d)** 54%

**Q8.** A farmer borrowed Rs. 10,500 from a village cooperative at 7% simple interest per annum. After 2 years, he repaid the amount along with a processing fee of Rs. 525. Find the total amount he paid back.

**(a)** Rs. 12,495
**(b)** Rs. 11,970
**(c)** Rs. 12,475
**(d)** Rs. 12,500

**Q9.** The square root of the sum of squares of two numbers is 25. If one number is 15, find the other number.

**(a)** 16
**(b)** 32
**(c)** 20
**(d)** 12

**Q10.** Find the least number that must be added to 10724 to make it a perfect square. Also, find the square root of the resulting perfect square.

**(a)** 56, 88
**(b)** 92, 104
**(c)** 102, 124
**(d)** 122, 144

**Q11.** Which of the following is the largest?

**(a)** 11/12
**(b)** 17/18
**(c)** 23/24
**(d)** 21/24

**Q12.** 0.12/0.3-0.015/0.5=?

**(a)** 0.40
**(b)** 0.37
**(c)** 0.43
**(d)** 0.38

**Q13.** The product of two prime numbers is 21. What is the sum of the two numbers?

**(a)** 10
**(b)** 8
**(c)** 6
**(d)** 12

**Q14.** The sum of a positive number and its cube is 68. What is the value of the number?

**(a)** 3
**(b)** 4
**(c)** 6
**(d)** 7

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**Q15.** $(\sqrt{((46+38)^2 - 4 \times 46 \times 38)}) = ?$

**(a)** 10
**(b)** 8
**(c)** 6
**(d)** 12

**Q16.** Which of the following number is neither divisible by 3 nor by 4?

**(a)** 1272
**(b)** 1236
**(c)** 3420
**(d)** 1265

**Q17.** There are 7 numbers 34, 46, X, 22, 55, 25 and Y. Average of X and Y is 17.5. What is the average of these 7 numbers?

**(a)** 34
**(b)** 33
**(c)** 28
**(d)** 31

**Q18.** $1^2 + 2^2 + 3^2 ..... + 25^2 = ?$

**(a)** 5520
**(b)** 5525
**(c)** 5500
**(d)** 5555

**Q19.** 19 consecutive natural numbers are given. These numbers are in ascending order. The average of last 7 numbers is 25. What is the average of all 19 numbers?

**(a)** 19
**(b)** 17
**(c)** 20
**(d)** 15

**Q20.** The average of 11 consecutive natural numbers is A. What is the sum of the largest and the smallest numbers?

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

**Q21.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

D, H, N, ?, X, B, H, L, R

**(a)** O
**(b)** R
**(c)** S
**(d)** P

**Q22.** Select the option that is related to the second letter cluster in the same way as the third letter cluster is related to the fourth letter cluster and fifth letter cluster is related to sixth letter cluster.

? : TYS :: TKR : PGN :: MOE : IKA

**(a)** SAS
**(b)** XCW
**(c)** TVT
**(d)** QYR

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**Q23.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

TO, ?, ZT, CX, FC, II, LP, OX

**(a)** WQ
**(b)** ZQ
**(c)** WR
**(d)** UN

**Q24.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

RU, TW, XZ, ?, DE, FG, JJ, LL

**(a)** BB
**(b)** CY
**(c)** ZC
**(d)** ZB

**Q25.** In the following question, set of letter clusters are given. The letter clusters of each set are related to the letter clusters of the same set by some Logic/Rule/Relation. From the given alternatives, select a group of letter clusters which follows the same Logic/Rule/Relation.

(LS, FM, UN)

(UX, OR, LI)

**(a)** (ZI, QJ, XO)
**(b)** (AO, UI, FR)
**(c)** (FP, CQ, WK)
**(d)** (YB, VC, YU)

**Q26.** What was the day of the week on 9 May 2022?

**(a)** Friday
**(b)** Saturday
**(c)** Sunday
**(d)** Monday

**Q27.** A person was born on 19 April 2008. What day of the week will be on his 22nd birthday?

**(a)** Sunday
**(b)** Friday
**(c)** Saturday
**(d)** Tuesday

**Q28.** 5 boys A, B, C, D and E are sitting in a row facing north (not necessarily in the same order). C is in the middle of the row. D and E are to the right of C. A and B are to the left of C. B and D are not at any ends of the row. How many boys are sitting to the left of D?

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

**Q29.** 7 women P, Q, R, S, T, U and V are sitting in a row facing south (not necessarily in the same order). V is fifth to the left of P. No one is to the right of P. T is exactly in the middle of row. U is fourth to the right of V. Q is not to the right of V. S is to the immediate left of T. How many women are sitting between R and Q?

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

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**Q30.** 7 persons P, Q, R, S, T, W and A are sitting in a row facing north (not necessarily in the same order). Only W and A are to the right of Q. Number of persons to the left of R are same as number of persons to the right of Q. P is third to the left of T. If W is to the left of A, then how many persons are sitting between P and A?

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

**Q31.** Select the option that is related to the third letter-number cluster in the same way as the second letter-number cluster is related to the first letter-number cluster and sixth letter-number cluster is related to fifth letter-number cluster.

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

PQ190 : NM270 :: MN120 : ? :: ZV170 : XR250

**(a)** LK210
**(b)** KL200
**(c)** KJ200
**(d)** JL220

**Q32.** Select the option that is related to the fourth letter-number cluster in the same way as the first letter-number cluster is related to the second letter-number cluster and fifth letter-number cluster is related to sixth letter-number cluster.

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

MS246 : LR100 :: ? : KD400 :: TU846 : ST700

**(a)** JC546
**(b)** LE546
**(c)** JE254
**(d)** EL254

**Q33.** Select the option that is related to the sixth letter-number cluster in the same way as the first letter-number cluster is related to the second letter-number cluster and third letter-number cluster is related to fourth letter-number cluster.

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

TFK89 : HCQ178 :: UZX63 : WUR126 :: ? : POI148

**(a)** LRS74
**(b)** SRL84
**(c)** LSR84
**(d)** RSL74

**Q34.** Select the option that is related to the fifth number in the same way as the second number is related to the first number and fourth number is related to third number.

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

9039 : 9078 :: 3274 : 3313 :: 6476 : ?

**(a)** 6515
**(b)** 6516
**(c)** 6513
**(d)** 6511

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**Q35.** Select the option that is related to the fifth number in the same way as the second number is related to the first number and fourth number is related to third number.

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

4398 : 4439 :: 8594 : 8635 :: 1338 : ?

**(a)** 1379
**(b)** 1380
**(c)** 1383
**(d)** 1377

**Q36.** Select the option that is related to the fifth number in the same way as the second number is related to the first number and fourth number is related to third number.

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

22 : 66 :: 47 : 141 :: 32 : ?

**(a)** 90
**(b)** 64
**(c)** 96
**(d)** 72

**Q37.** In a certain code language, 'COVER' is coded as '18522153' and 'LOST' is coded as '20191512'. How will 'AGENCY' be coded in that code language?

**(a)** 25314571
**(b)** 25143571
**(c)** 25351471
**(d)** 25314751

**Q38.** In a certain coded language 'ROGUE' is coded as 'USFRZ' and 'FIBRE' is coded as 'IMAOZ'. How will 'LEACH' be coded in the same code language?

**(a)** NHZAA
**(b)** NIZYA
**(c)** OIZZC
**(d)** MIYAD

**Q39.** A series is given with one term wrong. Select that wrong term from the given alternatives.

MP233, HN340, CL447, XJ554, SH661, ME767

**(a)** CL447
**(b)** SH661
**(c)** ME767
**(d)** MP233

**Q40.** A series is given with one term wrong. Select that wrong term from the given alternatives.

MSO250, IXU252, ECA254, AHG256, WMM258, RRR260

**(a)** WMM258
**(b)** AHG256
**(c)** RRR260
**(d)** IXU252

## SESSION 2

**Q41.** Which of the following is example of synthetic indicator?

I. Methyl orange

II. Phenolphthalein

**(a)** Only I
**(b)** Only II
**(c)** Both I and II
**(d)** Neither I nor II

**Q42.** Coal Mines Authority Limited (CMAL) with headquarters at Calcutta, was set up by the Government in May, _____ to manage non-coking coal mines.

**(a)** 1969
**(b)** 1971
**(c)** 1973
**(d)** 1977

**Q43.** The Sambhar Lake is in _____.

**(a)** Rajasthan
**(b)** Punjab
**(c)** Gujarat
**(d)** Haryana

**Q44.** As the river approaches the sea, the speed of the flowing water decreases and the river begins to break up into a number of streams called _____.

**(a)** distributary
**(b)** levee
**(c)** floodplain
**(d)** tributary

**Q45.** Tracheid is part of which plant tissue?

**(a)** Xylem
**(b)** Phloem
**(c)** Cuticle
**(d)** Bark

**Q46.** Who killed the last Shunga ruler and founded the Kanva dynasty?

**(a)** Vasudeva
**(b)** Agnimitra
**(c)** Kalashoka
**(d)** Pushyamitra

**Q47.** 'Kuki' is a folk dance of which of the following Indian state?

**(a)** Gujarat
**(b)** Karnataka
**(c)** Telangana
**(d)** Nagaland

**Q48.** 'Chamfuli', a popular dance performed by men and women in pairs, belongs to which Indian state/Union Territory?

**(a)** Assam
**(b)** Lakshadweep
**(c)** Tamil Nadu
**(d)** Uttarakhand

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**Q49.** Where is the 'International Mango Festival' primarily celebrated in India?

**(a)** Delhi
**(b)** Shimla
**(c)** Dispur
**(d)** Mysore

**Q50.** The U R Rao Satellite Centre is in _____.

**(a)** Chennai
**(b)** Bengaluru
**(c)** Kochi
**(d)** Lucknow

**Q51.** Which of the following planet appears blue from the outer space because of its two-thirds surface is covered by water?

**(a)** Earth
**(b)** Mercury
**(c)** Venus
**(d)** Uranus

**Q52.** 'Jhumti' song is associated with which Indian state/UT?

**(a)** Jharkhand
**(b)** Andhra Pradesh
**(c)** Lakshadweep
**(d)** Andaman and Nicobar

**Q53.** India has about _____ villages according to the Census 2011.

**(a)** 340867
**(b)** 140867
**(c)** 640867
**(d)** 840867

**Q54.** Which of the following acts gave the government enormous powers and allowed detention of political prisoners without trial for two years?

**(a)** Indian Councils Act 1861
**(b)** Indian Councils Act 1891
**(c)** Morley-Minto act
**(d)** Rowlatt Act

**Q55.** The child sex ratio in India was _____ females per thousand males in 2011 census.

**(a)** 918
**(b)** 980
**(c)** 960
**(d)** 919

**Q56.** Which Indian initiative uses AI to provide internet and digital services in multiple Indian languages?

**(a)** Umang
**(b)** DigiYatra
**(c)** Aarogya Setu
**(d)** BHASHINI

**Q57.** What causes water droplets to form on the outer surface of a glass containing ice-cold water?

**(a)** The ice-cold water is evaporating.
**(b)** Water vapour in the air condenses upon contact with the cold glass.
**(c)** The glass is absorbing moisture from the air.
**(d)** The glass is heating up the surrounding air.

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**Q58.** Legionnaires' disease, which caused an outbreak in New York in August 2025, is a form of which illness?

**(a)** Asthma
**(b)** Pneumonia
**(c)** Tuberculosis
**(d)** Influenza

**Q59.** Which of the following countries is NOT part of Mineral Security Partnership?

**(a)** Australia
**(b)** Canada
**(c)** India
**(d)** China

**Q60.** Where were the 2006 Winter Olympics held?

**(a)** Turin
**(b)** Moscow
**(c)** Zurich
**(d)** Dras

**Q61.** 'The Race of My Life' is the autobiography of which Indian athlete?

**(a)** P. T. Usha
**(b)** Milkha Singh
**(c)** Neeraj Chopra
**(d)** Abhinav Bindra

**Q62.** In the context of LPG reforms in India, the opening of the economy has led to a rapid _____.

I. increase in the foreign direct investment
II. decrease in the foreign exchange reserve

**(a)** Only I
**(b)** Only II
**(c)** Both I and II
**(d)** Neither I nor II

**Q63.** Number of Players in handball on the court excluding goalkeeper in each team is _____.

**(a)** 6
**(b)** 10
**(c)** 8
**(d)** 9

**Q64.** Which of the following institutions was established by Rabindranath Tagore?

**(a)** Presidency College
**(b)** Santiniketan
**(c)** Fort William College
**(d)** Hindu College

**Q65.** Which revolutionary freedom fighter is popularly remembered as “Shaheed-e-Azam”?

**(a)** Bhagat Singh
**(b)** Lala Lajpat Rai
**(c)** Chandrashekhar Azad
**(d)** Abbas Ali

**Q66.** Choose the correctly spelt word from the given options.

**(a)** Nausious
**(b)** Nauseous
**(c)** Naoseous
**(d)** Nouseous

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**Q67.** Select the option with the correct spelling that can replace the underlined word in the given sentence. If the spelling in the given sentence is already correct, choose option "No replacement required".

The project turned into a financial quaghmire, trapping investors in endless losses.

**(a)** quakmire
**(b)** quagmire
**(c)** quackmire
**(d)** No replacement required

**Q68.** There are four underlined words in the sentence given below. One of them is misspelt. Choose the option with the misspelt word.

Mumbai's new elevated nature walkway preserves indigenious fauna and flora while ensuring minimal intervention during its eco-friendly construction.

**(a)** indigenious
**(b)** fauna
**(c)** flora
**(d)** intervention

**Q69.** Choose the misspelt word from the given options.

**(a)** Brilliance
**(b)** Defiance
**(c)** Opulance
**(d)** Tolerance

**Q70.** Choose the word that is most opposite in meaning to "Delay".

**(a)** Hasten
**(b)** Postpone
**(c)** Defer
**(d)** Procrastinate

**Q71.** Choose the word that is the antonym of Incredible.

**(a)** Unbelievable
**(b)** Ordinary
**(c)** Amazing
**(d)** Extraordinary

**Q72.** Choose the correct word to complete the sentence.

The hikers were lost in a dense _____ of narrow lanes.

**(a)** maize
**(b)** maze
**(c)** mess
**(d)** mass

**Q73.** Choose the most suitable one-word substitution for the following.

The art of motion-picture photography.

**(a)** Calligraphy
**(b)** Cinematography
**(c)** Lithography
**(d)** Photography

**Q74.** Choose the most suitable one-word substitution for the following.

The art of beautiful handwriting.

**(a)** Typography
**(b)** Calligraphy
**(c)** Etymology

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**(d)** Lithography

**Q75.** Select the correct alternative to fill in the blank with the correct preposition/prepositional phrase in the following sentence.

_____ some pain in his belly, he could not go to the office the day before yesterday.

**(a)** Owing to
**(b)** Apart from
**(c)** According to
**(d)** Besides

**Q76.** Which of the following options is the most suitable conversion of the following sentence into Passive Voice?

The traffic department implements new traffic laws to reduce congestion.

**(a)** New traffic laws were implemented by the traffic department to reduce congestion.
**(b)** New traffic laws are being implemented by the traffic department to reduce congestion.
**(c)** New traffic laws have been implemented by the traffic department to reduce congestion.
**(d)** New traffic laws are implemented by the traffic department to reduce congestion.

**Q77.** Which of the following options is the most suitable conversion of the following sentence into Passive Voice?

Why did the baker add salt to the cake batter?

**(a)** Why is salt added to the cake batter by the baker?
**(b)** Why are salt added to the cake batter by the baker?
**(c)** Why was salt added to the cake batter by the baker?
**(d)** Why did salt added to the cake batter by the baker?

**Q78.** Which of the following options is the most suitable conversion of the following sentence into active voice?

Major breakthroughs in renewable energy have been achieved by scientists in recent decades.

**(a)** Scientists achieve major breakthroughs in renewable energy in recent decades.
**(b)** Scientists are achieving major breakthroughs in renewable energy in recent decades.
**(c)** Scientists achieved major breakthroughs in renewable energy in recent decades.
**(d)** Scientists have achieved major breakthroughs in renewable energy in recent decades.

**Q79.** Which of the following options is the most suitable conversion of the following sentence into active voice?

By whom has this programme been authorised?

**(a)** Who has authorised this programme?
**(b)** Whom has authorised this programme?
**(c)** This programme has been authorised by whom?
**(d)** By who is this programme authorised?

**Q80.** Select the correct alternative to fill in the blank with the correct preposition in the following sentence.

The crops are infested _____ exotic pests unknown to this land.

**(a)** by
**(b)** along
**(c)** with
**(d)** for

**Q81.** A part of the following sentence is underlined. Choose the option which can replace the underlined part to improve the sentence. In case Options A, B and C are not found suitable, choose Option D: “No Improvement Required.”

The report suggested that unless corrective steps are taken immediately, the problem would aggravate into an uncontrollable crisis.

**(a)** the problem would alleviate
**(b)** the problem will retaliate with
**(c)** the problem would escalate into
**(d)** No improvement required

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**Q82.** Given below are six sentences taken from a paragraph. The first and the last sentences are numbered S1 and S2 and are placed in the first and last positions respectively and are fixed in their positions. The other four sentences between the first and last sentences are jumbled up and are numbered A, B, C, and D. Rearrange the jumbled sentences in a logical sequence keeping the unity and coherence of the paragraph intact. Choose the correct alternative that best describes the sequence.

S1. But in college Ralph's goals were still hazy and undefined.

A. Though he continued to take classes here and there in the sciences and in the Department of Business, he also took some lower-division classes in history and philosophy and English.

B. He first thought he wanted to be a doctor, or a lawyer, and he took pre-medical courses and courses in history of jurisprudence and business-law before he decided he had neither the emotional detachment necessary for medicine, nor the ability for sustained reading and memorization in the Corpus Iuris Civilis, as well as the more modern texts on property and inheritance.

C. But it never came.

D. He continually felt he was on the brink of some kind of momentous discovery about himself.

S2. It was during this time, his lowest ebb, as he jokingly referred back to it later, that he believed he almost became an alcoholic; he was in a fraternity and he used to get drunk every night.

**(a)** ADCB
**(b)** BADC
**(c)** DCBA
**(d)** CBAD

**Q83.** Given below are six sentences taken from a paragraph. The first and the last sentences are numbered S1 and S2 and are placed in the first and last positions respectively and are fixed in their positions. The other four sentences between the first and last sentences are jumbled up and are numbered A, B, C, and D. Rearrange the jumbled sentences in a logical sequence keeping the unity and coherence of the paragraph intact. Choose the correct alternative that best describes the sequence.

S1. There was plenty of fish in the creek, fresh-water bream, cod, cat-fish, and tailers.

A. Andy would fish for three hours at a stretch if encouraged by a 'nibble' or a 'bite' now and then - say once in twenty minutes.

B. The party were fond of fish, and Andy and Dave of fishing.

C. However, the creek was low, just a chain of muddy water-holes, from the hole with a few bucketfuls in it to the sizable pool with an average depth of six or seven feet, and they could get fish by baling out the smaller holes or muddying up the water in the larger ones till the fish rose to the surface.

D. The butcher was always willing to give meat in exchange for fish when they caught more than they could eat; but now it was winter, and these fish wouldn't bite.

S2. There was the cat-fish, with spikes growing out of the sides of its head, and if you got pricked you'd know it, as Dave said.

**(a)** CDBA
**(b)** ADBC
**(c)** BADC
**(d)** ADCB

**Q84.** Given below are six sentences taken from a paragraph. The first and the last sentences are numbered S1 and S2 and are placed in the first and last positions respectively and are fixed in their positions. The other four sentences between the first and last sentences are jumbled up and are numbered A, B, C, and D. Rearrange the jumbled sentences in a logical sequence keeping the unity and coherence of the paragraph intact. Choose the correct alternative that best describes the sequence.

S1. I was rich and contented; I found pleasure in everything that appeals to a man of thirty-five.

A. I married a year ago.

B. A very beautiful, kindly and cultured young lady was my wife.

C. It was a love match.

D. She had been a companion to a countess not far from my estate.

S2. She loved me, and her heart was full of gratitude.

**(a)** ADCB
**(b)** ACBD
**(c)** DCBA
**(d)** CBAD

**Q85.** The following sentence is divided into four parts and are given in the alternatives A, B, C, and D. Select that alternative which contains that part of the sentence which has an error. Selecting the part with the error is the answer.

If you are looking for a free parking space, you might drive on for hours until you find one.

**(a)** If you are looking for
**(b)** a free parking space, you
**(c)** might drive on for hours
**(d)** until you find one.

**Directions**

Iron and calcium are two indispensable minerals required for the healthy growth of the human body, especially in children and women. Iron plays a crucial role in the production of hemoglobin, the pigment that transports oxygen from the lungs to various tissues. A deficiency of iron often leads to anemia, which is characterized by fatigue, dizziness, and a weakened immune system. In children, this deficiency may also result in delayed cognitive development and poor academic performance.

Calcium, on the other hand, is primarily associated with the formation and maintenance of strong bones and teeth. Inadequate calcium intake during childhood hampers skeletal growth, while in women it increases the risk of osteoporosis a condition where bones become porous and fragile. Pregnant and lactating mothers require additional calcium, as their bodies support not only their own needs but also those of the growing child.

The causes of these deficiencies are often linked to poor dietary habits, lack of awareness, and socio-economic factors. Diets deficient in green leafy vegetables, dairy products, and iron-rich foods such as pulses and lean meat significantly contribute to the problem. Therefore, it becomes imperative to encourage balanced nutrition, timely medical check-ups, and awareness campaigns. Only then can society combat the silent yet widespread issue of iron and calcium deficiency, ensuring healthier generations in the future.

**Q86.** Identify the correct verb form in the sentence.

"Calcium, on the other hand, ___ primarily associated with the formation and maintenance of strong bones and teeth."

**(a)** are
**(b)** had
**(c)** was
**(d)** is

**Q87.** Identify the type of sentence.

"A deficiency of iron often leads to anemia."

**(a)** Exclamatory
**(b)** Interrogative
**(c)** Declarative
**(d)** Imperative

**Q88.** The word 'indispensable' in the sentence "Iron and calcium are two indispensable minerals required for the healthy growth of the human body..." means _____.

**(a)** harmful
**(b)** essential
**(c)** temporary
**(d)** avoidable

**Q89.** In the sentence "...in women it increases the risk of osteoporosis—a condition where bones become porous and fragile," the antonym of 'fragile' is _____.

**(a)** weak
**(b)** delicate

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**(c)** brittle
**(d)** strong

**Q90.** According to the passage, why do “pregnant and lactating mothers require additional calcium”?
**(a)** Because they eat less food
**(b)** Because of their role in household work
**(c)** Because their bodies support both their own needs and those of the growing child
**(d)** Because they avoid dairy products

## ANSWER KEY

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

## SOLUTIONS

**Q1. Answer: (a) 154**

Shortcut Trick

Solve using the BODMAS rule by grouping terms.

91 − 49 + 84 − (48) + 76

Sum of positive terms: 91 + 84 + 76 = 251

Sum of negative terms: − (49 + 48) = − 97

Final Value: 251 − 97 = 154

Therefore The correct answer is 154.

Alternate Method

Given Expression: 91 − 49 + 84 − (27 + 21) + 38 × 2

Formula Used: BODMAS (Bracket, Of, Division, Multiplication, Addition, Subtraction)

=> 91 − 49 + 84 − 48 + 38 × 2 (Solving the Bracket 27 + 21 = 48)

=> 91 − 49 + 84 − 48 + 76 (Solving Multiplication 38 × 2 = 76)

=> 175 + 76 − 49 − 48 (Grouping terms for Addition)

=> 251 − 97 (Performing final Subtraction)

=> 154

Therefore The correct answer is 154.

Additional Information

BODMAS Rule

It defines the precedence of operators: Brackets (), Of (powers/roots), Division (÷), Multiplication (×), Addition (+), and Subtraction (−).

Grouping Property

In multi-step Simplification, adding all positive numbers and all negative numbers separately before the final subtraction reduces calculation errors.

Multiplication Shortcut

To multiply by 2 (like 38 × 2), use doubling: 30 × 2 + 8 × 2 = 60 + 16 = 76.

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**Q2. Answer: (a) 114**

Shortcut Trick

Apply the BODMAS rule by solving Brackets first, then Division, and finally Addition/Subtraction.

84 + 47 − 23 + 19 + 26 − 39

=> 131 − 23 + 19 + 26 − 39 = 114

Therefore The correct answer is 114.

Alternate Method

Given: 84 + 47 − 23 + 19 ÷ 1 + (26 × 1) − 39

Formula Used: BODMAS (Bracket, Of, Division, Multiplication, Addition, Subtraction)

=> Solve Bracket: 26 × 1 = 26

=> Solve Division: 19 ÷ 1 = 19

=> The expression becomes: 84 + 47 − 23 + 19 + 26 − 39

=> Perform Addition: (84 + 47 + 19 + 26) − 23 − 39

=> 176 − 23 − 39

=> Perform Subtraction: 176 − 62 = 114

Therefore The correct answer is 114.

Additional Information

BODMAS Rule

It stands for Bracket ((), {}, []), Of (powers/roots), Division (÷), Multiplication (×), Addition (+), and Subtraction (−). Solve in this specific order to get the correct result.

Order of Precedence

If operators of the same level (like + and − or × and ÷) are present, solve from left to right.

Division by One

Any number divided by 1 remains unchanged (n ÷ 1 = n).

**Q3. Answer: (d) Rs. 65000**

Shortcut Trick

Ratio of Profit share of X to Y = 80 : 100 = 4 : 5.

Since time periods for X and Y are equal (12 months), Investment X : Y = 4 : 5 => Y = 20,000 × (5/4) = Rs. 25,000.

Combined profit (X+Y) = 135% of W => (Investment X + Investment Y) × 12 = 1.35 × (Investment W × 10).

(20,000 + 25,000) × 12 = 13.5 × Investment W => 540,000 = 13.5 × Investment W => W = Rs. 40,000.

Sum of initial investment of W and Y = 40,000 + 25,000 = Rs. 65,000.

Therefore The correct answer is Rs. 65000.

Alternate Method

Given: Investments of W, X, and Y are Rs. 4a, Rs. 20,000, and Rs. 5b respectively. Time for W = 10 months; Time for X and Y = 12 months.

Formula: Profit Share = Investment × Time

Step 1: Find investment of Y (5b)

=> Profit of X = 0.8 × Profit of Y

=> 20,000 × 12 = 0.8 × (5b × 12)

=> 240,000 = 48b

=> b = 240,000 ÷ 48 = 5,000

=> Initial investment of Y (5b) = 5 × 5,000 = Rs. 25,000

Step 2: Find investment of W (4a)

=> Profit of X + Profit of Y = 1.35 × Profit of W

=> (20,000 × 12) + (25,000 × 12) = 1.35 × (4a × 10)

=> 240,000 + 300,000 = 1.35 × 40a

=> 540,000 = 54a

=> a = 10,000

=> Initial investment of W (4a) = 4 × 10,000 = Rs. 40,000

Step 3: Sum of initial investments

=> Sum = 4a + 5b = 40,000 + 25,000 = Rs. 65,000

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Therefore The correct answer is Rs. 65000.

Additional Information

Partnership Profit Ratio

Profit shared between partners is directly proportional to the product of their capital investment and the time duration of investment: P1 : P2 = (C1 × T1) : (C2 × T2).

Equal Time Period Rule

If the time period for all partners is the same, the profit ratio is simply equal to the investment ratio.

Working vs. Sleeping Partner

A working partner may receive an additional salary or percentage of profit for management before the remaining profit is distributed according to the investment ratio.

**Q4. Answer: (a) 2:1**

Shortcut Trick

Initial Sugar content = (5 ÷ 6) × 60 = 50 litres.

Sugar in 12 litres replaced = (5 ÷ 6) × 12 = 10 litres.

Final Sugar = 50 − 10 = 40 litres.

Final Water = Total Volume − Sugar = 60 − 40 = 20 litres.

New Ratio (Sugar : Water) = 40 : 20 = 2 : 1.

Therefore The correct answer is 2:1.

Alternate Method

Given: Total volume = 60 L, Initial ratio = 5 : 1, Quantity replaced = 12 L.

=> Total parts in ratio = 5 + 1 = 6 units.

=> Sugar in 60 L = (5 ÷ 6) × 60 = 50 L.

=> Water in 60 L = (1 ÷ 6) × 60 = 10 L.

=> Sugar removed in 12 L = (5 ÷ 6) × 12 = 10 L.

=> Water removed in 12 L = (1 ÷ 6) × 12 = 2 L.

=> Sugar remaining = 50 − 10 = 40 L.

=> Water remaining after removal = 10 − 2 = 8 L.

=> New water after addition = 8 + 12 = 20 L.

=> New Sugar : Water = 40 : 20 = 2 : 1.

Therefore The correct answer is 2:1.

Additional Information

Mixture Replacement Formula

When a quantity is replaced, the final concentration of the initial component is: C_(final) = C_(initial) × $[1 − (x ÷ V)]^n$, where x is replacement volume, V is total volume, and n is number of operations.

Ratio Distribution Rule

When a part of a mixture is removed, the ratio of components in the removed part and the remaining part remains the same as the initial ratio.

Alligation Cross Method

Used to find the ratio in which two ingredients are mixed to get a desired mean price or concentration: (Quantity 1 ÷ Quantity 2) = (Cheaper CP − Mean CP) ÷ (Mean CP − Dearer CP).

**Q5. Answer: (d) Rs. 47.50**

Shortcut Trick

Weighted Average Cost Price (CP) = [(30 × 3) + (50 × 2)] ÷ (3 + 2)

CP = (90 + 100) ÷ 5 = 190 ÷ 5 = Rs. 38/kg

Required SP for 25% profit = 38 × 1.25 = Rs. 47.50

Therefore The correct answer is Rs. 47.50.

Alternate Method

Given:

Price of Sugar1 = Rs. 30/kg

Price of Sugar2 = Rs. 50/kg

Mixing Ratio = 3 : 2

Desired Profit = 25%

Formula:

Mean Price (CP) = (Price1 × Weight1 + Price2 × Weight2) ÷ (Weight1 + Weight2)

Selling Price (SP) = CP × (100 + Profit%) ÷ 100

=> Total Weight = 3 + 2 = 5 kg

=> Total Cost Price = (30 × 3) + (50 × 2) = 90 + 100 = Rs. 190

=> Mean CP per kg = 190 ÷ 5 = Rs. 38

=> Selling Price (SP) = 38 × (125 ÷ 100)

=> SP = 38 × 1.25 = Rs. 47.50

Therefore The correct answer is Rs. 47.50.

Additional Information

Rule of Alligation

It states that (Quantity of Cheaper) ÷ (Quantity of Dearer) = (Price of Dearer − Mean Price) ÷ (Mean Price − Price of Cheaper).

Weighted Average Formula

The mean value X_(avg) of a mixture is given by (n1x1 + n2x2 + ... + n_nx_n) ÷ (n1 + n2 + ... + n_n).

Profit Percentage

SP = CP × [(100 + Gain%) ÷ 100 ]. Conversely, CP = [SP × 100] ÷ (100 + Gain%).

**Q6. Answer: (d) 500**

Shortcut Trick

Total Percentage = 100%

Failed Percentage = 100% − 67% = 33%

According to the question, 33% = 165

Total Candidates (100%) = (165 ÷ 33) × 100 = 5 × 100 = 500

Therefore The correct answer is 500 candidates.

Alternate Method

Given:

Percentage of candidates passed = 67%

Number of candidates failed = 165

Formula Used:

Total Candidates = (Number of Failures ÷ Percentage of Failures) × 100

Calculations:

=> Let the total number of candidates be x.

=> Percentage of failed candidates = 100% − 67% = 33%

=> Number of failed candidates = 33% of x = 165

=> (33 ÷ 100) × x = 165

=> x = (165 × 100) ÷ 33

=> x = 5 × 100 = 500

Therefore The correct answer is 500 candidates.

Additional Information

Percentage Base Rule

In any population or set, the total quantity is always considered as 100%. The sum of all individual percentage components must equal 100%.

Fraction to Percentage Conversion

To convert a fraction to a percentage, multiply by 100. Example: 1/4 = (1/4 × 100)% = 25%.

Successive Percentage Change

If a value is changed by a% and then by b%, the net change is [a + b + (ab ÷ 100)]%.

**Q7. Answer: (b) 55%**

Shortcut Trick

Since the male and female populations are equal (50% each), the total literacy rate is the simple average of the male and female literacy rates.

Let the literacy rate of females be x%.

Total Literacy % = (Male Literacy % + Female Literacy %) ÷ 2
45% = (35% + x%) ÷ 2
35 + x = 90 => x = 55%
Therefore The correct answer is 55%.
Alternate Method
Given: Total population = 75,000 | Males = 50% | Literate Males = 35% of males | Total literacy = 45%
Formula: Literate Females = Total Literate Population − Literate Males
=> Total Literate Population = 45% of 75,000 = 0.45 × 75,000 = 33,750
=> Male Population = 50% of 75,000 = 37,500
=> Female Population = 75,000 − 37,500 = 37,500
=> Literate Males = 35% of 37,500 = 0.35 × 37,500 = 13,125
=> Literate Females = 33,750 − 13,125 = 20,625
=> Percentage of Literate Females = (20,625 ÷ 37,500) × 100
=> Percentage of Literate Females = 0.55 × 100 = 55%
Therefore The correct answer is 55%.
Additional Information
Weighted Average Formula
Used when two groups are combined: Average_(Total) = (n1x1 + n2x2) ÷ (n1 + n2), where n is quantity and x is rate.
Percentage Change
Percentage = (Part ÷ Whole) × 100. Always ensure the denominator is the base value specified in the question.
Alligation Method
A visual tool to solve weighted averages: Ratio of quantities = (Higher rate − Mean rate) : (Mean rate − Lower rate).

**Q8. Answer: (a) Rs. 12,495**

Shortcut Trick
Effective Simple Interest % = Rate × Time = 7% × 2 = 14%
Interest amount = 14% of Rs. 10,500 = 14 × 105 = Rs. 1,470
Total amount to repay = Principal + Interest + Processing Fee
Total amount = Rs. 10,500 + Rs. 1,470 + Rs. 525 = Rs. 12,495
Therefore The correct answer is Rs. 12,495.
Alternate Method
Given:
Principal (P) = Rs. 10,500
Rate (R) = 7% p.a.
Time (T) = 2 years
Processing Fee = Rs. 525
Formula Used:
Simple Interest (SI) = (P × R × T) ÷ 100
Total Amount = Principal + SI + Other Fees
Calculations:
=> SI = (10500 × 7 × 2) ÷ 100
=> SI = 105 × 14
=> SI = Rs. 1,470
=> Repayment Amount = Principal + SI
=> Repayment Amount = Rs. 10,500 + Rs. 1,470 = Rs. 11,970
=> Total Payment including Fee = Rs. 11,970 + Rs. 525
=> Total Payment = Rs. 12,495
Therefore The correct answer is Rs. 12,495.
Additional Information
Total Repayment with Extra Charges
Total Payback = P + (P × R × T)/100 + Service Charges. Extra fees are always added to the final amount.
Effective Rate of Simple Interest

The total percentage of interest accrued is R × T. Amount becomes (100 + RT)% of the principal.

Simple Interest vs Compound Interest

For 2 years, the difference between CI and SI is $P(R/100)^2$. In SI, interest is only calculated on the principal.

**Q9. Answer: (c) 20**

Shortcut Trick

The relation $\sqrt{(a^2 + b^2)} = c$ represents a Pythagorean triplet a, b, c.

The standard triplet ratio is 3 : 4 : 5.

Given values: 15 and 25 are multiples of 3 and 5 ($3 \times 5 = 15$ and $5 \times 5 = 25$).

The missing part of the ratio is 4. Therefore Other number = $4 \times 5 = 20$.

Therefore The correct answer is 20.

Alternate Method

Given: One number = 15, Square root of sum of squares = 25

Formula: $\sqrt{(x^2 + y^2)} = z \Rightarrow x^2 + y^2 = z^2$

$\Rightarrow \sqrt{(15^2 + x^2)} = 25$

$\Rightarrow 15^2 + x^2 = 25^2$

$\Rightarrow 225 + x^2 = 625$

$\Rightarrow x^2 = 625 - 225$

$\Rightarrow x^2 = 400$

$\Rightarrow x = \sqrt{400} = 20$

Therefore The correct answer is 20.

Additional Information

Pythagorean Triplets

Sets of three positive integers a, b, and c such that $a^2 + b^2 = c^2$. Examples: (3, 4, 5), (5, 12, 13), (8, 15, 17), (7, 24, 25).

Squares and Square Roots

Calculating the square root is the inverse operation of squaring a number. $\sqrt{x^2} = x$ for any positive number x.

Hypotenuse Property

In any right-angled triangle, the hypotenuse is the longest side and is opposite the 90° angle.

**Q10. Answer: (b) 92, 104**

Shortcut Trick

Estimate the root: $100^2 = 10000$ and $110^2 = 12100$.

Check squares near 100: $103^2 = 10609$ and $104^2 = 10816$.

The next perfect square after 10724 is 10816.

Number to be added = 10816 − 10724 = 92.

Square root of 10816 = 104.

Therefore The correct answer is 92, 104.

Alternate Method

Given: Number = 10724

Formula Used: Square of a number $(a + b)^2 = a^2 + 2ab + b^2$

$\Rightarrow$ Identify base square: $100^2 = 10000$

$\Rightarrow$ Since 10724 > 10000, we calculate $104^2 = (100 + 4)^2$

$\Rightarrow 104^2 = 10000 + (2 \times 100 \times 4) + 4^2 = 10000 + 800 + 16 = 10816$

$\Rightarrow$ Value to be added = 10816 − 10724 = 92

$\Rightarrow$ Resulting square root = $\sqrt{10816} = 104$

Therefore The correct answer is 92, 104.

Additional Information

Last Digit of Perfect Squares

A perfect square always ends in the digits 0, 1, 4, 5, 6, or 9. Numbers ending in 2, 3, 7, or 8 cannot be perfect squares.

Difference Between Consecutive Squares

The difference between the squares of two consecutive integers n and (n+1) is given by $(n + 1)^2 - n^2 = 2n + 1$.

Square Root Approximation

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For a number x, the square root can be estimated using the nearest perfect square $n^2$ as $\sqrt{x} \approx n + (x - n^2) \div 2n$.

**Q11. Answer: (c) 23/24**

Shortcut Trick

Check the difference between the denominator (D) and the numerator (N).

For 11/12, 17/18, and 23/24, the difference (D − N) is 1.

When the difference is constant, the fraction with the largest numerator is the largest.

Comparing 23/24 and 21/24, since denominators are the same, 23/24 is clearly larger.

Among 11/12, 17/18, and 23/24, the largest numerator is 23.

Therefore The correct answer is 23/24.

Alternate Method

Given fractions: 11/12, 17/18, 23/24, 21/24

To compare these fractions, find the LCM of the denominators: 12, 18, and 24.

=> LCM(12, 18, 24) = 72

=> 11/12 = (11 × 6) / (12 × 6) = 66/72

=> 17/18 = (17 × 4) / (18 × 4) = 68/72

=> 23/24 = (23 × 3) / (24 × 3) = 69/72

=> 21/24 = (21 × 3) / (24 × 3) = 63/72

=> Comparing numerators: 69 > 68 > 66 > 63

=> The largest fraction is 69/72, which corresponds to 23/24.

Therefore The correct answer is 23/24.

Additional Information

Comparison of Like Fractions

When denominators are the same, the fraction with the larger numerator is larger. For example, 23/24 > 21/24.

Proper Fractions Rule

For proper fractions, if the difference between the denominator and numerator is constant, the fraction with the highest values of N and D is the largest.

Cross-Multiplication Method

To compare a/b and c/d, check (a × d) vs (b × c). If ad > bc, then a/b > c/d.

Decimal Conversion

Fractions can be compared by converting them to decimals: 23/24 ≈ 0.958, 17/18 ≈ 0.944, 11/12 ≈ 0.916.

**Q12. Answer: (b) 0.37**

Shortcut Trick

Perform decimal division by shifting decimals to the right.

0.12 ÷ 0.3 = 1.2 ÷ 3 = 0.4

0.015 ÷ 0.5 = 0.15 ÷ 5 = 0.03

Calculation: 0.40 − 0.03 = 0.37

Therefore The correct answer is 0.37.

Alternate Method

Given: Expression = (0.12 ÷ 0.3) − (0.015 ÷ 0.5)

Formula: Convert decimals to fractions where $a \div b = (a \times 10^n) \div (b \times 10^n)$

=> [(12/100) ÷ (3/10)] − [(15/1000) ÷ (5/10)]

=> [(12/100) × (10/3)] − [(15/1000) × (10/5)]

=> (4/10) − (3/100)

=> 0.4 − 0.03

=> 0.37

Therefore The correct answer is 0.37.

Additional Information

BODMAS Rule

Always solve expressions in the order of Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction.

Decimal Division

To divide by a decimal, move the decimal point in both the dividend and divisor to the right until the divisor is a whole number.
Subtraction of Decimals
Align the decimal points vertically and add placeholder zeros if the numbers have a different number of decimal places.

**Q13. Answer: (a) 10**

Shortcut Trick
Identify prime factors of the given product 21.
21 = 3 × 7
Check if factors are prime: 3 and 7 are both prime numbers.
Sum = 3 + 7 = 10.
Therefore The correct answer is 10.
Alternate Method
Given:
Product of two prime numbers = 21
Calculations:
=> List all pairs of numbers whose product is 21: (1, 21) and (3, 7).
=> In the pair (1, 21), 1 is not a prime number and 21 is a composite number.
=> In the pair (3, 7), both 3 and 7 are prime numbers.
=> Sum of these two prime numbers = 3 + 7
=> Sum = 10
Therefore The correct answer is 10.
Additional Information
Definition of Prime Numbers
A prime number is a natural number greater than 1 that has exactly two distinct positive divisors: 1 and itself (e.g., 2, 3, 5, 7, 11...).
Smallest Prime Number
The number 2 is the smallest prime number and the only even prime number.
Composite Numbers
A composite number is a positive integer greater than 1 that has at least one divisor other than 1 and itself (e.g., 4, 6, 8, 9, 21...).
Number 1 Property
The number 1 is neither prime nor composite as it has only one factor.

**Q14. Answer: (b) 4**

Shortcut Trick
Test the options to find which value satisfies the equation $x + x^3 = 68$.
Checking x = 4: $4 + 4^3 = 4 + 64 = 68$.
The condition is satisfied for x = 4.
Therefore The correct answer is 4.
Alternate Method
Given: Sum of a positive number and its cube = 68.
Formula: Let the number be x, then the equation is $x + x^3 = 68$.
=> $x + x^3 = 68$
=> $x(1 + x^2) = 68$
=> Factoring 68 into two parts such that one part is slightly more than the square of the other.
=> 68 = 4 × 17
=> $x(1 + x^2) = 4 \times (1 + 16)$
=> $x(1 + x^2) = 4 \times (1 + 4^2)$
=> By comparing both sides, x = 4.
Therefore The correct answer is 4.
Additional Information
Roots of Cubic Equations
A cubic equation $ax^3 + bx^2 + cx + d = 0$ can have at most three real roots. For $x^3 + x - 68 = 0$, x = 4 is the only real positive root.
Perfect Cubes

Knowing common cubes helps in solving such problems quickly: $1^3 = 1$, $2^3 = 8$, $3^3 = 27$, $4^3 = 64$, $5^3 = 125$.

Factorization Method

If x is an integer root of a polynomial, it must be a factor of the constant term (here, 68). Factors of 68 are 1, 2, 4, 17, 34, 68.

**Q15. Answer: (b) 8**

Shortcut Trick

Use the algebraic identity: $(a + b)^2 - 4ab = (a - b)^2$

Here, a = 46 and b = 38.

The expression becomes $\sqrt{((46 - 38)^2)} = 46 - 38$.

Value = 8.

Therefore The correct answer is 8.

Alternate Method

Given: $\sqrt{((46 + 38)^2 - 4 \times 46 \times 38)}$

Formula used: $(a + b)^2 - 4ab = (a - b)^2$

=> $\sqrt{((84)^2 - 4 \times 1748)}$

=> $\sqrt{(7056 - 6992)}$

=> $\sqrt{64}$

=> 8

Therefore The correct answer is 8.

Additional Information

Square of Difference Identity

The formula $(a - b)^2 = a^2 - 2ab + b^2$ is used to calculate the square of the subtraction of two numbers.

Algebraic Relation

$(a + b)^2 - (a - b)^2 = 4ab$ is an identity relating the sum, the difference, and the product of two variables.

Square of Sum Identity

The formula $(a + b)^2 = a^2 + 2ab + b^2$ represents the expansion of the square of a binomial sum.

**Q16. Answer: (d) 1265**

Shortcut Trick

Quickly check divisibility by 4: Only even numbers are divisible by 4. Since 1265 is odd, it is not divisible by 4.

Now check 1265 for divisibility by 3: Sum of digits = 1 + 2 + 6 + 5 = 14.

Since 14 is not divisible by 3, 1265 is neither divisible by 3 nor by 4.

Therefore The correct answer is 1265.

Alternate Method

Given: Numbers 1272, 1236, 3420, 1265.

Divisibility Rules: For 3, the sum of digits must be divisible by 3. For 4, the last two digits must be divisible by 4.

=> Testing 1272: Sum = 1+2+7+2 = 12 (divisible by 3) and last two digits = 72 (divisible by 4).

=> Testing 1236: Sum = 1+2+3+6 = 12 (divisible by 3) and last two digits = 36 (divisible by 4).

=> Testing 3420: Sum = 3+4+2+0 = 9 (divisible by 3) and last two digits = 20 (divisible by 4).

=> Testing 1265: Sum = 1+2+6+5 = 14 (not divisible by 3) and last two digits = 65 (not divisible by 4).

=> Among the given options, only 1265 fails both divisibility tests.

Therefore The correct answer is 1265.

Additional Information

Divisibility by 3

A number is divisible by 3 if the sum of its individual digits is a multiple of 3 (e.g., 123 → 1+2+3 = 6).

Divisibility by 4

A number is divisible by 4 if its last two digits form a number that is divisible by 4 or if the last two digits are 00.

Divisibility by 12

A number is divisible by 12 if and only if it is divisible by both 3 and 4 simultaneously.

Divisibility by 6

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

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**Q17. Answer: (d) 31**

Shortcut Trick

Sum of known numbers = 34 + 46 + 22 + 55 + 25 = 182

Sum of X and Y = Average × 2 = 17.5 × 2 = 35

Total sum of 7 numbers = 182 + 35 = 217

Average of 7 numbers = 217 ÷ 7 = 31

Therefore The correct answer is 31.

Alternate Method

Given: Numbers are 34, 46, X, 22, 55, 25, Y. Average of X and Y = 17.5.

Formula Used: Sum of observations = Average × Number of observations

=> Sum of (X + Y) = 17.5 × 2 = 35

=> Total Sum = 34 + 46 + 22 + 55 + 25 + (X + Y)

=> Total Sum = 182 + 35 = 217

=> Required Average = Total Sum ÷ 7

=> Required Average = 217 ÷ 7 = 31

Therefore The correct answer is 31.

Additional Information

Sum of Observations

The basic relationship in average problems is: Total Sum = Average × Number of terms.

Weighted Average

When two groups with averages A1 and A2 and sizes n1 and n2 are combined, the new average is (n1A1 + n2A2) ÷ (n1 + n2).

Arithmetic Progression Average

For numbers in an AP (equal gaps), the average is simply (First term + Last term) ÷ 2.

**Q18. Answer: (b) 5525**

Shortcut Trick

Sum of squares of first n natural numbers = [n(n + 1)(2n + 1)] ÷ 6

Given n = 25

Sum = (25 × 26 × 51) ÷ 6

Sum = 25 × 13 × 17 = 5525

Therefore The correct answer is 5525.

Alternate Method

Given expression: $1^2 + 2^2 + 3^2 + ... + 25^2$

This is the sum of the squares of the first 25 natural numbers.

Formula: $\Sigma n^2 = [n(n + 1)(2n + 1)] \div 6$

=> n = 25

=> Sum = [25 × (25 + 1) × (2 × 25 + 1)] ÷ 6

=> Sum = (25 × 26 × 51) ÷ 6

=> Sum = (25 × 13 × 51) ÷ 3

=> Sum = 25 × 13 × 17

=> Sum = 325 × 17

=> Sum = 5525

Therefore The correct answer is 5525.

Additional Information

Sum of first n natural numbers

The sum of 1 + 2 + 3 + ... + n is given by the formula [n(n + 1)] ÷ 2.

Sum of cubes of first n natural numbers

The sum of $1^3 + 2^3 + 3^3 + ... + n^3$ is given by $[[n(n + 1)] \div 2]^2$.

Sum of first n odd natural numbers

The sum of 1 + 3 + 5 + ... up to n terms is equal to $n^2$.

**Q19. Answer: (a) 19**

Shortcut Trick

For consecutive numbers, the average is the middle term.

Middle of all 19 terms is the 10^(th) term.

Last 7 terms are from 13^(th) to 19^(th), so their middle is the 16^(th) term.

Given: 16^(th) term = 25.

Average of all = 10^(th) term = 16^(th) term − (16 − 10) = 25 − 6 = 19.

Therefore The correct answer is 19.

Alternate Method

Given:

Number of terms (n) = 19 consecutive natural numbers.

Average of last 7 numbers = 25.

Calculations:

=> Let the consecutive natural numbers be x, x+1, x+2, ..., x+18.

=> Average of any AP = Middle term (if n is odd).

=> Average of all 19 terms = Middle term = ((1 + 19) ÷ 2)^(th) term = 10^(th) term.

=> Last 7 terms are x+12, x+13, x+14, x+15, x+16, x+17, x+18 (i.e., 13^(th) to 19^(th) terms).

=> Average of last 7 terms = Middle of 13^(th) and 19^(th) = ((13 + 19) ÷ 2)^(th) term = 16^(th) term.

=> Given, 16^(th) term = 25.

=> 10^(th) term = 16^(th) term − 6 = 25 − 6 = 19.

Therefore The correct answer is 19.

Additional Information

Average of an Arithmetic Progression (AP)

For any sequence in AP, the average is always equal to (First Term + Last Term) ÷ 2.

Middle Term Property

If there are n terms in a consecutive series and n is odd, the average is the ((n+1)/2)^(th) term. If n is even, it is the average of the two middle terms.

Consecutive Natural Numbers

The difference between any two consecutive natural numbers is always 1. Thus, the n^(th) term = 1^(st) term + (n − 1).

**Q20. Answer: (c) 2A**

Shortcut Trick

For any sequence of consecutive numbers, the average is always the middle term.

Average of an Arithmetic Progression (AP) = (Smallest number + Largest number) ÷ 2

Given Average = A

Sum of smallest and largest = 2 × Average = 2A

Therefore The correct answer is 2A.

Alternate Method

Given:

Number of consecutive natural numbers = 11

Average = A

Formula Used:

Average of n consecutive numbers = (First term + Last term) ÷ 2

Calculations:

=> Let the 11 consecutive natural numbers be x, x+1, x+2, ..., x+10.

=> Smallest number = x

=> Largest number = x + 10

=> Average = (x + x + 10) ÷ 2

=> A = (2x + 10) ÷ 2

=> A = x + 5

=> x = A − 5

=> Smallest number = A − 5

=> Largest number = (A − 5) + 10 = A + 5

=> Sum of smallest and largest = (A − 5) + (A + 5)

=> Sum = 2A

Therefore The correct answer is 2A.

Additional Information

Average of Arithmetic Progression

For any series in AP, the average is always the middle term if the number of terms is odd, or the mean of the two middle terms if even.

Sum of First n Natural Numbers

The sum of the first n natural numbers is given by S = n(n + 1) ÷ 2.

Middle Term Property

In any sequence of consecutive integers, the distance from the average to the smallest term is equal to the distance from the average to the largest term.

**Q21. Answer: (b) R**

The position and positional values or English Alphabets are:

Given: D, H, N, ?, X, B, H, L, R

The logic followed here is:

Thus, R is the correct alternative from the given ones that will complete the series.

Hence, the correct answer is "Option 2".

**Q22. Answer: (b) XCW**

The position and positional values or English Alphabets are:

Given: ? : TYS :: TKR : PGN :: MOE : IKA

The logic followed here is:

Similarly,

Thus, XCW is related to the second letter cluster in the same way as the third letter cluster is related to the fourth letter cluster and fifth letter cluster is related to sixth letter cluster.

Hence, the correct answer is "Option 2".

**Q23. Answer: (a) WQ**

The position and positional values or English Alphabets are:

Given: TO, ?, ZT, CX, FC, II, LP, OX

The logic followed here is:

Thus, WQ is the missing term from the series.

Hence, the correct answer is "Option 1".

**Q24. Answer: (d) ZB**

The position and positional values or English Alphabets are:

Given: RU, TW, XZ, ?, DE, FG, JJ, LL

The logic followed here is:

Thus, ZB is the correct alternative from the given ones that will complete the series.

Hence, the correct answer is "Option 4".

**Q25. Answer: (b) (AO, UI, FR)**

The position and positional values or English Alphabets are:

Given:

(LS, FM, UN)

(UX, OR, LI)

Similarly,

2. (AO, UI, FR)

Thus, the set that follows the same logic is (AO, UI, FR).

Hence, the correct answer is "Option 2".

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**Q26. Answer: (d) Monday**

Given date: 9th May 2022.

| Year | Odd Days |
|---|---|
| 100 | 5 odd days |
| 200 | 3 odd days |
| 300 | 1 odd day |
| 400 | 0 odd days |

Now,

Till 2021 → 2000 + 21

| Type of Year | Odd Days |
|---|---|
| Leap Year | 2 Odd days |
| Ordinary Year | 1 Odd day |

In 21 years, 5 leap years and 16 ordinary years.

=> 0 + (5 × 2) + (16 × 1)

=> 10 + 16 = 26 odd days.

And, till 9th May

=> 31(Jan) + 28(Feb) + 31(March) + 30(April) + 9(May)

=> 129 days

Total odd days = 26 + 129 = 155 days = 155/7 = 22 week and 1 odd day.

→ 1 represents Monday.

Code for Week days:

| No. of odd days | Day |
|---|---|
| 0/7 | Sunday |
| 1 | Monday |
| 2 | Tuesday |
| 3 | Wednesday |
| 4 | Thursday |
| 5 | Friday |
| 6 | Saturday |

So, 9th May 2022 was Monday.

Hence, the correct answer is "Option 4".

**Q27. Answer: (b) Friday**

Given: A person was born on 19 April 2008.

His 22nd birthday will be on:

19 April (2008 + 22) = 19 April 2030

Since the starting date is 19 April 2008, the leap day (February 29) of 2008 has already passed and is not counted. We count the leap years from 2008 to 2030:

Total number of leap years = 5 (2012, 2016, 2020, 2024, 2028)

Total Ordinary years = 22 - 5 = 17

Odd days = (Number of ordinary years + Number of leap years)

Odd days = 17 + (5 × 2) = 17 + 10 = 27 days

Convert days to weeks: 27 ÷ 7 = 3 weeks and 6 odd days.

In 22 years, 6 leap years and 16 ordinary years.

Calculation for 19 April 2008:

Odd days from 2001 to 2007 = 7 years + 1 leap year (2004) = 8 days → 1 odd day.

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Odd days in 2008 (up to 19 April) = Jan (3) + Feb (1) + Mar (3) + Apr (19 days = 5) = 12 days → 5 odd days.

Total odd days = 1 + 5 = 6 (which corresponds to Saturday).

Day = Day of birth + Remainder of odd days

Day = Saturday + 6 days = Friday.

Thus, the day of the week on his 22nd birthday will be Friday.

Hence, the correct option is "Option 2".

**Q28. Answer: (d) 3**

Given: 5 boys A, B, C, D and E are sitting in a row facing north (not necessarily in the same order).

1. C is in the middle of the row.
2. D and E are to the right of C.
3. A and B are to the left of C.
4. B and D are not at any ends of the row.

Thus, 3 boys are sitting to the left of D.

Hence, the correct answer is "Option 4".

**Q29. Answer: (c) 3**

Given: 7 women P, Q, R, S, T, U and V are sitting in a row facing south (not necessarily in the same order).

1. V is fifth to the left of P.
2. No one is to the right of P.
3. T is exactly in the middle of row.
4. U is fourth to the right of V.
5. Q is not to the right of V.
6. S is to the immediate left of T.

Thus, 3 women are sitting between R and Q.

Hence, the correct answer is "Option 3".

**Q30. Answer: (a) 5**

Given: 7 persons P, Q, R, S, T, W and A are sitting in a row facing north (not necessarily in the same order).

1. Only W and A are to the right of Q.
2. Number of persons to the left of R are same as number of persons to the right of Q.
3. P is third to the left of T.
4. W is to the left of A.

S, the only person left will occupy the vacant position.

Thus, if W is to the left of A, then 5 persons are sitting between P and A.

Hence, the correct answer is "Option 1".

**Q31. Answer: (c) KJ200**

The position and positional values or English Alphabets are:

Given: PQ190 : NM270 :: MN120 : ? :: ZV170 : XR250

The logic followed here is:

Similarly,

Thus, KJ200 is related to the third letter-number cluster in the same way as the second letter-number cluster is related to the first letter-number cluster and sixth letter-number cluster is related to fifth letter-number cluster.

Hence, the correct answer is "Option 3".

**Q32. Answer: (b) LE546**

The position and positional values or English Alphabets are:

Given: MS246 : LR100 :: ? : KD400 :: TU846 : ST700

The logic followed here is:

Similarly,

Thus, LE546 is related to the fourth letter-number cluster in the same way as the first letter-number cluster is related to the second letter-number cluster and fifth letter-number cluster is related to sixth letter-number cluster.

Hence, the correct answer is "Option 2".

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**Q33. Answer: (b) SRL84**

The logic followed here is:

First, let's analyze the letter transformation:

The relationship between the clusters is based on the alphabetical positions of the letters. In each pair, the letters of the second cluster are obtained by subtracting 3 from the positional values of the letters in the first cluster, but their order is rearranged.

For TFK89 : HCQ178

| Input (TFK) | T (20) | F (6) | K (11) | 89 |
|---|---|---|---|---|
| Operation | -3 | -3 | -3 | × 2 |
| Result | Q (17) | C (3) | H (8) | 178 |

Rearranging the results (H, C, Q) gives the second cluster: HCQ.

For UZX63 : WUR126

| Input (UZX) | U (21) | Z (26) | X (24) | 63 |
|---|---|---|---|---|
| Operation | -3 | -3 | -3 | × 2 |
| Result | R (18) | W (23) | U (21) | 126 |

Rearranging the results (W, U, R) gives the fourth cluster: WUR.

Similarly, let's find the input cluster for POI148:

| Input () | S | R | L | 74 |
|---|---|---|---|---|
| Operation | -3 | -3 | -3 | × 2 |
| Result (POI) | P (16) | O(15) | I (9) | 148 |

Hence, the correct answer is "Option 2".

**Q34. Answer: (a) 6515**

The logic followed here is:

Logic: Second number = First number + 39

9039 + 39 = 9078

3274 + 39 = 3313

Similarly,

6476 + 39 = 6515

Thus, the number related to 6476 is 6515.

Hence, the correct answer is "Option 1".

**Q35. Answer: (a) 1379**

The logic followed here is:

Logic: Second number = First number + 41

4398 + 41 = 4439

8594 + 41 = 8635

Similarly,

1338 + 41 = 1379

Thus, the number related to 1338 is 1379.

Hence, the correct answer is "Option 1".

**Q36. Answer: (c) 96**

The logic followed here is:

Logic: Second number = First number × 3

22 × 3 = 66

47 × 3 = 141

Similarly,

32 × 3 = 96

Thus, the number related to 32 is 96.

Hence, the correct answer is "Option 3".

**Q37. Answer: (a) 25314571**

The position and positional values or English Alphabets are:

Given: In a certain code language, 'COVER' is coded as '18522153' and 'LOST' is coded as '20191512'.

The logic followed here is:

| C | O | V | E | R |
|---|---|---|---|---|
| 3 | 15 | 22 | 5 | 18 |

Positional values in reverse order: 18, 5, 22, 15, 3

Code = 18522153

| L | O | S | T |
|---|---|---|---|
| 12 | 15 | 19 | 20 |

Positional values in reverse order: 20, 19, 15, 12

Code = 20191512

Similarly,

| A | G | E | N | C | Y |
|---|---|---|---|---|---|
| 1 | 7 | 5 | 14 | 3 | 25 |

Positional values in reverse order: 25, 3, 14, 5, 7, 1

Code = 25314571

Thus, the code for 'AGENCY' is 25314571.

Hence, the correct answer is "Option 1".

**Q38. Answer: (c) OIZZC**

The position and positional values or English Alphabets are:

Given: In a certain coded language 'ROGUE' is coded as 'USFRZ' and 'FIBRE' is coded as 'IMAOZ'.

The logic followed here is:

Similarly,

Thus, 'LEACH' be coded as 'OIZZC' in the same code language.

Hence, the correct answer is "Option 3".

**Q39. Answer: (c) ME767**

The position and positional values or English Alphabets are:

Given: MP233, HN340, CL447, XJ554, SH661, ME767

The logic followed here is:

Thus, ME767 is the wrong term from the given alternatives.

Hence, the correct answer is "Option 3".

**Q40. Answer: (c) RRR260**

The position and positional values or English Alphabets are:

Given: MSO250, IXU252, ECA254, AHG256, WMM258, RRR260

The logic followed here is:

Thus, RRR260 is the wrong term from the given alternatives.

Hence, the correct answer is "Option 3".

**Q41. Answer: (c) Both I and II**

The correct answer is Both I and II.

Key Points

• Synthetic indicators are substances that are synthesized in the laboratory rather than being obtained from natural sources like plants. They are primarily used in acid-base titrations to determine the endpoint of a reaction.

• Methyl orange is a classic example of a synthetic indicator. It is a nitrogen-based azo dye that changes color based on the acidity of the medium. In acidic solutions, it turns red, while in basic solutions, it turns yellow. Hence, statement I is correct.

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• Phenolphthalein is another very common synthetic indicator belonging to the phthalein family. It is widely used because of its sharp color change at a specific pH range. It remains colorless in acidic and neutral solutions but turns pink or magenta in basic solutions. Hence, statement II is correct.

• Both of these indicators are man-made chemicals designed to have high sensitivity to Hydrogen ion (H+) concentrations, making them more reliable for precise chemical analysis compared to some natural indicators.

• Therefore, both Methyl orange and Phenolphthalein are examples of synthetic indicators.

Additional Information

• Natural Indicators:

• These are substances found in nature, mostly in plants.

• Litmus: Extracted from Lichens, it is the most common natural indicator. It turns red in acidic and blue in basic solutions.

• Turmeric: It stays yellow in acidic solutions but turns reddish-brown in basic solutions.

• China Rose (Gudhal): It turns dark pink (magenta) in acidic solutions and green in basic solutions.

• Olfactory Indicators:

• These are substances whose odour changes in acidic or basic media.

• Examples include onion, clove oil, and vanilla essence. For instance, the smell of onion vanishes when added to a basic solution like Sodium Hydroxide.

• Universal Indicator:

• It is a mixture of several synthetic indicators that shows different colors at different pH values ranging from 0 to 14.

• It helps in determining not just if a substance is an acid or base, but also its strength.

Important Points

• pH Range of Methyl Orange: It typically changes color in the pH range of 3.1 to 4.4. Because it changes color in the acidic range, it is frequently used for titrations involving strong acids and weak bases.

• pH Range of Phenolphthalein: It changes color in the pH range of 8.2 to 10.0. This makes it ideal for titrations involving strong bases and strong acids or weak acids.

• Chemical Nature: Phenolphthalein is a weak acid itself, which dissociates in alkaline conditions to form a pink-colored ion. Methyl orange is a weak base.

• Safety: While common in labs, Phenolphthalein has been noted for laxative properties and potential carcinogenicity, leading to its removal from many over-the-counter medications in recent years.

**Q42. Answer: (c) 1973**

The correct answer is 1973.

Key Points

• The Coal Mines Authority Limited (CMAL) was established by the Government of India in May 1973.

• It was set up with its headquarters located at Calcutta (now Kolkata) to function as a central authority for the management of non-coking coal mines.

• The formation of CMAL followed the Coal Mines (Taking Over of Management) Ordinance, which was promulgated in January 1973, leading to the nationalization of non-coking coal mines.

• The primary objective of creating CMAL was to ensure the scientific development of coal resources and to provide better working conditions and social security for the labor force.

• It played a transitional role in the Indian coal industry before the various wings of the industry were unified under a single holding company.

Additional Information

• Coal India Limited (CIL):

• In November 1975, the Government of India decided to merge CMAL and Bharat Coking Coal Limited (BCCL) to form Coal India Limited (CIL) as a formal holding company.

• Currently, Coal India Limited is a Maharatna Public Sector Undertaking and is the largest coal producer in the world.

• Phases of Nationalization:

• The nationalization of the coal industry in India occurred in two distinct phases. The first phase involved the nationalization of coking coal mines in 1971-72.

• The second phase involved the nationalization of non-coking coal mines in 1973, leading to the creation of CMAL.

• Bharat Coking Coal Limited (BCCL):

• BCCL was incorporated in January 1972 to operate the coking coal mines in the Jharia and Raniganj coalfields.

• It was later made a subsidiary of Coal India Limited in 1975.

• Ministry of Coal:

• The overall administration and policy-making for the coal sector in India are handled by the Ministry of Coal, which ensures the supply and distribution of coal to meet the energy demands of the nation.

Important Points

• Early History: Commercial coal mining in India began in 1774 when John Sumner and Suetonius Grant Heatly of the East India Company started operations in the Raniganj Coalfield.

• Energy Security: Coal is often referred to as "Black Diamond" because it is the most significant source of commercial energy in India, powering the majority of the country's thermal power plants.

• Geographical Distribution: The major coalfields in India are located in the states of Jharkhand, Odisha, Chhattisgarh, West Bengal, and Madhya Pradesh.

• The 1973 Act: The Coal Mines (Nationalisation) Act, 1973, provided the legal framework for the central government to acquire all rights and titles in relation to coal mines to ensure equitable distribution of resources.

**Q43. Answer: (a) Rajasthan**

The correct answer is Rajasthan.

Key Points

• Sambhar Salt Lake is situated in the state of Rajasthan, specifically spanning across the Jaipur, Nagaur, and Ajmer districts.

• It is recognized as India's largest inland salt lake and represents a classic example of an endorheic basin (a closed drainage basin that retains water and allows no outflow to other external bodies of water).

• The lake is elliptical in shape and is surrounded on all sides by the Aravalli Hills, which play a crucial role in its catchment area.

• It receives its water supply from several seasonal rivers, primarily the Mendha, Rupangarh, Khari, Khandela, Medtha, and Samod rivers.

• The surface area of the lake fluctuates significantly depending on the season, typically ranging from 190 to 230 square kilometers.

Additional Information

• Ecological Importance:

• In 1990, the Sambhar Lake was designated as a Ramsar Site (a wetland of international importance) due to its unique ecosystem.

• It is a vital wintering ground for thousands of migratory birds, most notably the Lesser Flamingos and Greater Flamingos, which migrate from Siberia and Northern Asia.

• Salt Industry:

• The lake is a major hub for salt production in India. The operations are largely managed by Sambhar Salts Ltd. (SSL), which is a joint venture between Hindustan Salts Ltd. and the Government of Rajasthan.

• Brine is extracted from the lake and processed in large salt pans to produce high-quality salt used for domestic and industrial purposes.

• Cultural and Historical Context:

• According to Hindu mythology, the lake was created by the goddess Shakambhari Devi. A temple dedicated to her is located on the shores of the lake.

• Historical records indicate that the lake was under the control of various dynasties, including the Chauhans and the Mughals, before the colonial era.

• Geographical Features:

• The salinity of the water varies from season to season. During the peak of summer, the water evaporates, leaving behind a vast white salt crust.

• The lake bed is situated at an elevation of approximately 360 meters above mean sea level.

Important Points

• Other Notable Lakes in Rajasthan:

• Pushkar Lake: A sacred lake in Ajmer district, famous for the Brahma temple.

• Nakki Lake: Located in Mount Abu, it is the only hill station lake in the state.

• Pichola Lake and Fateh Sagar Lake: Located in the "City of Lakes," Udaipur, these are iconic artificial freshwater lakes.

• Rajsamand Lake: Built by Maharana Raj Singh in the 17th century, known for its marble embankments.

• State Geography:

• Rajasthan is the largest state in India by land area, characterized by the Thar Desert in the west and the Aravalli Range running through the center.

• The state shares international borders with Pakistan and national borders with Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, and Gujarat.

**Q44. Answer: (a) distributary**

The correct answer is distributary.

Key Points

• A distributary is a stream that branches off and flows away from a main river channel, a phenomenon typically occurring near the river mouth as it approaches a lake, sea, or ocean. Hence, option 1 is correct.

• As a river enters its Lower Course (also known as the Old Stage), the gradient of the land becomes extremely gentle. This leads to a significant decrease in the velocity of the flowing water.

• Because the speed decreases, the river loses its transporting power and begins to deposit its sediment load (silt, sand, and clay) on the riverbed.

• The accumulation of these deposits eventually chokes the main channel, forcing the river to break up into multiple smaller channels known as distributaries.

• This network of distributaries is a primary characteristic of delta formation, such as the Ganges-Brahmaputra Delta, which is the largest delta in the world.

Additional Information

• Tributary:

• A tributary is a freshwater stream or river that feeds into a larger "parent" river or a lake. Unlike a distributary, it adds volume to the main river.

• Tributaries are most common in the Upper Course and Middle Course of a river system. Hence, option 4 is incorrect.

• Levee:

• A levee is a natural or artificial embankment or wall that runs parallel to the banks of a river.

• Natural levees are formed during floods when the river overflows its banks and deposits coarse sediments immediately along the edge of the channel. Hence, option 2 is incorrect.

• Floodplain:

• A floodplain is the flat, low-lying area of land adjacent to a river that stretches from the banks of its channel to the base of the enclosing valley walls.

• It is formed by the lateral erosion of meanders and the deposition of fine alluvium during periodic flooding. Hence, option 3 is incorrect.

• Meander:

• As the river enters the plains, it twists and turns forming large bends known as meanders. Continuous erosion and deposition along the sides of the meander lead to the formation of ox-bow lakes over time.

Important Points

• The River Lifecycle:

• Upper Course: Characterized by high vertical erosion, V-shaped valleys, waterfalls, and gorges.

• Middle Course: The river starts lateral erosion, creating meanders and wider valleys as the discharge increases.

• Lower Course: Dominanted by deposition. Features include floodplains, ox-bow lakes, levees, distributaries, and deltas.

• Delta Types:

• Arcuate Delta: Fan-shaped (e.g., Nile River).

• Bird's Foot Delta: Resembles the claws of a bird (e.g., Mississippi River).

• Estuarine Delta: Formed in submerged river mouths (e.g., Seine River).

**Q45. Answer: (a) Xylem**

The correct answer is Xylem.

Key Points

• Tracheids are elongated, tube-like cells with thick, lignified walls and tapering ends that serve as the primary conducting elements of the Xylem.

• They are dead cells at maturity, meaning they lack protoplasm, which allows them to function efficiently as hollow tubes for water transport. Hence, option 1 is correct.

• The main function of tracheids is the conduction of water and minerals from the roots to various parts of the plant, such as the stem and leaves.

• In Pteridophytes and Gymnosperms, tracheids are the only water-conducting elements, whereas Angiosperms (flowering plants) possess both tracheids and vessels.

• Apart from conduction, the thick, lignified walls of tracheids provide significant mechanical support to the plant body, helping it stand upright.

Additional Information

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• Xylem (Complex Permanent Tissue):

• The term Xylem was introduced by Carl Nägeli in 1858.

• It is composed of four distinct types of elements: Tracheids, Vessels, Xylem Parenchyma, and Xylem Fibers.

• Xylem Parenchyma is the only living component of the xylem and is responsible for storing food materials like starch and fats.

• Vessels are long cylindrical structures with perforated end walls, forming continuous channels for water flow, a characteristic feature of Angiosperms.

• Phloem:

• Phloem is responsible for the translocation of organic food (sucrose) from the leaves (source) to other parts of the plant (sink). Hence, option 2 is incorrect.

• It consists of Sieve tubes, Companion cells, Phloem parenchyma, and Phloem fibers.

• Unlike xylem, phloem transport is bidirectional, allowing nutrients to move both up and down the plant.

Important Points

• Cuticle:

• The Cuticle is a protective, waxy, and water-repellent layer covering the epidermis of leaves, young shoots, and other aerial plant organs. Hence, option 3 is incorrect.

• Its primary function is to minimize water loss through transpiration and protect the plant against pathogens and mechanical injury.

• Bark:

• Bark is a non-technical term used to describe all tissues outside the vascular cambium, including the secondary phloem, periderm, and phellogen. Hence, option 4 is incorrect.

• It forms during secondary growth in woody plants and acts as a protective outer covering against environmental stress and physical damage.

• Structural Differences:

• Tracheids possess pits (thin areas in the cell wall) through which water passes from cell to cell, whereas vessels have perforation plates at their ends for more rapid conduction.

• The presence of Lignin in tracheid walls is a crucial evolutionary adaptation that allowed plants to grow tall by providing structural rigidity.

**Q46. Answer: (a) Vasudeva**

The correct answer is Vasudeva.

Key Points

• Vasudeva Kanva was the founder of the Kanva dynasty, which succeeded the Shunga dynasty in Magadha.

• He ascended the throne in approximately 73 BCE (some historical sources suggest 75 BCE) after assassinating the last Shunga ruler, Devabhuti.

• Before becoming the king, Vasudeva served as the Amatya (minister) to Devabhuti; he took advantage of the king's incompetence and the declining power of the Shungas to establish his own rule.

• The Kanva dynasty was a Brahmanical dynasty that ruled over parts of eastern and central India from their capital at Pataliputra.

• The dynasty ruled for a relatively short period of about 45 years, during which time the central authority of Magadha continued to shrink in the face of rising regional powers.

Additional Information

• Pushyamitra Shunga:

• He was the founder of the Shunga dynasty in 185 BCE.

• He was the Senapati (commander-in-chief) of the last Mauryan emperor, Brihadratha, whom he assassinated during a military parade.

• His reign marked the revival of Brahmanism and the performance of Ashvamedha sacrifices.

• Agnimitra:

• He was the son of Pushyamitra Shunga and the second king of the Shunga dynasty.

• He is famously known as the hero of Kalidasa’s Sanskrit drama, Malavikagnimitra, which depicts his love for the princess Malavika.

• Kalashoka:

• He was a ruler of the Shishunaga dynasty, the son of Shishunaga.

• He is primarily remembered for convening the Second Buddhist Council at Vaishali in 383 BCE, roughly a century after the death of Gautama Buddha.

• End of the Kanva Dynasty:

• The last ruler of the Kanva dynasty was Susarman.

• According to the Puranas, the Kanvas were overthrown by the Andhras (identified with the Satavahana dynasty), specifically by the king Simuka, around 28 BCE.

Important Points

• Kings of the Kanva Dynasty: According to the Puranic lists, there were four kings in this dynasty: Vasudeva, Bhumimitra, Narayana, and Susarman.

• Territorial Reach: During the Kanva period, the vast Mauryan Empire had already fragmented. The Kanvas ruled a significantly reduced territory compared to their predecessors, with their influence mostly confined to the Magadha region.

• Political Context: The transition from Shunga to Kanva rule reflects the internal instability and the "palace revolution" style of succession prevalent in ancient Indian kingdoms during the Post-Mauryan era.

**Q47. Answer: (d) Nagaland**

The correct answer is Nagaland.

Key Points

• The Kuki dance is a traditional folk dance performed by the Kuki tribe, primarily residing in the North East India state of Nagaland and surrounding regions.

• This dance form is a vital expression of the cultural identity and heritage of the Kuki people, who are one of the prominent ethnic groups in the Hilly regions of the North East.

• The performance is characterized by its rhythmic movements, synchronized footwork, and the use of traditional attire that includes hand-woven shawls, beaded jewelry, and tribal headgear.

• It is typically performed during significant social gatherings, community festivals, and harvest celebrations to express gratitude and joy.

• The accompaniment of music is usually provided by indigenous instruments such as drums, gongs, and bamboo flutes, which dictate the pace and energy of the dance.

Additional Information

• Nagaland Folk Dances:

• Nagaland is often referred to as the 'Land of Festivals', and each of its 16 major tribes has its own unique folk dances.

• Apart from the Kuki dance, other famous forms include the War Dance, Zeliang dance, and the Bamboo Dance (often associated with the Mizo but also performed by tribes in Nagaland).

• The Hornbill Festival, held annually in the first week of December, is a major event where all tribes showcase their traditional dances and music.

• Gujarat Folk Dances:

• Gujarat is world-renowned for its vibrant folk traditions, most notably Garba and Dandiya Raas, which are performed during the Navratri festival.

• Other forms include Bhavai (a folk theater/dance) and the Tippani dance, which originated among the laborers of the Saurashtra region.

• Karnataka Folk Dances:

• The state of Karnataka boasts a rich heritage of classical and folk forms. Yakshagana is a highly stylized dance-drama that combines music, elaborate costumes, and dialogue.

• Dollu Kunitha is a popular drum dance performed by the Kuruba community, while Hulivesha (Tiger Dance) is performed during Dasara and Krishna Janmashtami.

• Telangana Folk Dances:

• Telangana is home to the ancient Perini Shivatandavam, a powerful dance form that saw a revival in the 20th century and dates back to the Kakatiya dynasty.

• Other folk dances include Lambadi, performed by the semi-nomadic Banjara tribes, and Dappu, which involves rhythmic steps to the beat of a handheld drum.

• Kuki Tribe Distribution:

• While the question focuses on Nagaland, the Kuki people are also found in significant numbers in Manipur, Mizoram, and Assam in India, as well as in parts of Myanmar and Bangladesh.

• Their culture is deeply rooted in nature and agrarian cycles, which is reflected in their varied dance forms like Saguiteh and Lammual.

**Q48. Answer: (d) Uttarakhand**

The correct answer is Uttarakhand.

Key Points

• Chamfuli (also known as Chauphula) is a highly popular and traditional folk dance performed in the Garhwal region of

Uttarakhand.

• This dance is distinct because it is performed by men and women in pairs, symbolizing the union of the masculine and feminine energies in nature.

• The performance typically takes place during the Basant Panchami festival, which marks the transition of seasons and celebrates the arrival of spring.

• The choreography involves dancers moving in circular formations, where the rhythm is maintained through hand clapping, foot-thumping, and the snapping of fingers.

• It is considered a "dance of joy" that reflects the beauty of the Himalayan landscape and the blooming of flowers in the Garhwal hills.

Additional Information

• Other Folk Dances of Uttarakhand:

• Chholiya Dance: Originating from the Kumaon region, this is a martial art dance performed with swords and shields. It is traditionally performed during wedding processions to ward off evil spirits.

• Jhora Dance: A community dance performed by people of all castes in Kumaon. Dancers hold hands and move in a circle, accompanied by the Hurka (a traditional drum).

• Langvir Nritya: An acrobatic dance performed exclusively by men in the Garhwal region, where a performer balances himself on the tip of a bamboo pole.

• Barada Nati: A popular folk dance of the Jaunsar-Bawar area in Dehradun district, usually performed during religious festivals and social gatherings.

• Dances of other mentioned States:

• Assam: Famous for the Bihu dance, which is a celebration of the harvest and the Assamese New Year. Other dances include Sattriya (a classical dance) and Bagurumba.

• Lakshadweep: Notable for Lava, Kolkali, and Parichakali. The Lava dance is particularly famous on the Minicoy Island.

• Tamil Nadu: Home to the classical dance Bharatanatyam. Folk dances include Karakattam, Kavadi Aattam, and Oyilattam.

Important Points

• Cultural Significance: Folk dances in Uttarakhand are deeply rooted in spirituality and agriculture. They are often performed to please local deities like Nanda Devi.

• Musical Instruments: Common instruments used during Chamfuli and other Uttarakhandi dances include the Dhol, Damau, Turri, and Ransingha.

• Geographic Diversity: The state is divided into two main administrative divisions, Garhwal and Kumaon, each possessing a unique set of musical and dance traditions that contribute to the Himalayan culture.

• Preservation: These traditional forms are preserved through mela (fairs) and local festivals, which are vital for the socio-cultural identity of the Pahari people.

**Q49. Answer: (a) Delhi**

The correct answer is Delhi.

Key Points

• The International Mango Festival is a world-renowned annual event primarily celebrated in Delhi, India.

• It was first inaugurated in the year 1987 to showcase the diversity of the "King of Fruits" and to promote the export of Indian mangoes.

• The festival is organized by the Delhi Tourism and Transportation Development Corporation (DTTDC) in collaboration with the Agricultural and Processed Food Products Export Development Authority (APEDA) and the National Horticultural Board (NHB).

• It usually takes place during the month of July, coinciding with the peak harvest season of mangoes in India.

• The primary venue for this celebration is often Dilli Haat (Janakpuri or INA) or the Talkatora Stadium, where thousands of visitors gather to witness the display.

• The festival showcases more than 500 varieties of mangoes, ranging from the famous Alphonso and Dasheri to rare and traditional types.

Additional Information

• Major Mango Varieties in India:

• Alphonso: Primarily grown in Ratnagiri, Maharashtra; it is often considered the most premium variety for export.

• Kesar: Characterized by its intense aroma, it is grown in the foothills of Girnar in Gujarat.

• Langra: A popular variety from Varanasi, Uttar Pradesh, known for its distinct green skin and fiberless pulp.

• Banganapalli: The leading variety of Andhra Pradesh, which received a Geographical Indication (GI) tag in 2017.

• Festival Highlights:

• The event features various competitions, including mango-eating contests, where participants compete to eat the maximum

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number of mangoes within a time limit.

• It provides a platform for horticulturists and farmers from across the country to interact with exporters and display their unique hybrids.

• Culinary experts often demonstrate how to prepare mango-based recipes, such as pickles, jams, juices, and desserts.

• Economic Significance:

• India is the largest producer of mangoes in the world, accounting for nearly 50% of the global production.

• The festival plays a crucial role in the Ministry of Agriculture's efforts to boost the commercial trade of the fruit in international markets.

Important Points

• Scientific Details: The scientific name of Mango is Mangifera indica, and it belongs to the family Anacardiaceae.

• National Symbol: The mango is officially recognized as the National Fruit of India, Pakistan, and the Philippines.

• Other Locations: While the International Mango Festival is synonymous with Delhi, other states like Uttar Pradesh and Maharashtra also organize regional mango fairs and exhibitions to promote local agriculture.

• Cultural Impact: In Indian culture, the mango is a symbol of prosperity and abundance, and its leaves are frequently used in traditional rituals and decorations.

**Q50. Answer: (b) Bengaluru**

The correct answer is Bengaluru.

Key Points

• The U R Rao Satellite Centre (URSC), formerly known as the ISRO Satellite Centre (ISAC), is located in Bengaluru, Karnataka.

• It is the lead centre of the Indian Space Research Organisation (ISRO) responsible for the design, development, and construction of all Indian satellites.

• The centre was officially renamed in 2018 to honor Professor U R Rao, a pioneer in space science and the former Chairman of ISRO, who led the development of India's first satellite.

• The primary function of this centre is the end-to-end realization of satellites, encompassing conceptual design, structural assembly, thermal control, and rigorous testing before launch.

• The historic first Indian satellite, Aryabhata, was fabricated at this centre and launched in 1975, establishing India as a space-faring nation.

Additional Information

• Bengaluru's Role in Space: Known as the "Space City of India", Bengaluru houses the ISRO Headquarters (Antariksh Bhavan) and the Department of Space (DoS), making it the administrative nerve center of Indian space exploration.

• Vikram Sarabhai Space Centre (VSSC): Located in Thiruvananthapuram, Kerala, this centre focuses on the design and development of launch vehicle technology, such as the PSLV and GSLV.

• Satish Dhawan Space Centre (SDSC) SHAR: Situated in Sriharikota, Andhra Pradesh, it serves as India's main spaceport for satellite launches into various orbits.

• Space Applications Centre (SAC): This centre is based in Ahmedabad, Gujarat, and is primarily involved in developing sensors and payloads for communication and remote sensing satellites.

• National Remote Sensing Centre (NRSC): Located in Hyderabad, this facility manages the acquisition, processing, and distribution of satellite data used for resource mapping and disaster management.

Important Points

• Technological Prowess: URSC is equipped with advanced cleanrooms, thermovacuum chambers, and vibration testing systems to ensure satellites can withstand the harsh environment of space.

• Major Satellite Series: The centre has developed the Indian National Satellite (INSAT) series for telecommunications and the Indian Remote Sensing (IRS) series for Earth observation.

• Interplanetary Missions: It played a critical role in prestigious projects like Chandrayaan-1, Chandrayaan-2, Chandrayaan-3, and the Mars Orbiter Mission (Mangalyaan).

• Navigation Systems: The development of the Navigation with Indian Constellation (NavIC) satellites, which provides independent regional navigation for India, is managed by this centre.

**Q51. Answer: (a) Earth**

The correct answer is Earth.

Key Points

• Earth is famously known as the Blue Planet because approximately 71% (roughly two-thirds) of its surface is covered by water.

• When viewed from outer space, the vast oceans reflect sunlight and scatter blue light, giving the planet its distinctive and vibrant blue appearance.

• It is the third planet from the Sun and is the only known celestial body in the universe to support life, primarily due to the

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presence of liquid water.

• The Earth's atmosphere, composed of 78% Nitrogen and 21% Oxygen, also contributes to this appearance through a phenomenon called Rayleigh scattering, which makes the sky look blue from the surface and enhances the blue tint from space.

• The planet possesses a magnetic field generated by its molten iron core, which protects the hydrosphere and atmosphere from solar winds.

Additional Information

• Mercury:

• It is the smallest planet in the Solar System and the closest to the Sun.

• Mercury has almost no atmosphere to retain heat, leading to extreme surface temperatures ranging from -173°C at night to 427°C during the day.

• Its surface is heavily cratered and appears grey or dark brown, similar to the Moon.

• Venus:

• Commonly referred to as Earth's sister planet or twin because of its similar size and mass.

• It is the hottest planet in the solar system due to a thick atmosphere primarily composed of Carbon Dioxide, which traps heat via a runaway greenhouse effect.

• Venus appears bright yellowish-white from space because of its thick clouds of sulfuric acid.

• Uranus:

• Classified as an Ice Giant, it is the seventh planet from the Sun.

• It appears pale blue or cyan, but this is not due to liquid water; rather, the Methane in its atmosphere absorbs red light and reflects blue-green light.

• It has a unique tilt of about 98 degrees, meaning it effectively rotates on its side.

• Mars:

• Known as the Red Planet, its color is caused by the prevalence of Iron Oxide (rust) on its surface.

• It contains Olympus Mons, the highest mountain and volcano discovered in the Solar System.

Important Points

• The Solar System consists of eight planets, divided into Terrestrial planets (Mercury, Venus, Earth, Mars) and Jovian planets or Gas Giants (Jupiter, Saturn, Uranus, Neptune).

• Earth is the densest planet in the Solar System and the largest of the terrestrial planets.

• The Earth completes one rotation on its axis in 23 hours, 56 minutes, and 4 seconds, and one revolution around the Sun in 365.25 days.

• The distance between the Earth and the Sun is approximately 150 million kilometers, a distance defined as one Astronomical Unit (AU).

**Q52. Answer: (a) Jharkhand**

The correct answer is Jharkhand.

Key Points

• The Jhumti song is a traditional folk music form deeply rooted in the cultural landscape of Jharkhand, specifically among the Sadan and various tribal groups.

• It is considered a specialized variation of the Jhumair (or Jhumar) tradition, which is a dominant folk style across the Chota Nagpur plateau.

• The performance is typically female-centric, where women sing collectively in a rhythmic, melodic structure often during weddings and festive celebrations.

• The songs are accompanied by indigenous percussion instruments such as the Mandar, Dhol, and Nagari, which provide the distinct folk beat characteristic of the region.

• Themes of Jhumti often revolve around daily life, nature, and communal joy, serving as a medium for oral storytelling and cultural preservation.

Additional Information

• Jharkhand Folk Arts:

• Chhau Dance: A famous masked dance-drama; the Seraikella style originated in Jharkhand and is recognized by UNESCO.

• Sohrai and Khovar: Renowned mural arts and paintings practiced by tribal women, often linked to harvest festivals.

• Karma Dance: Performed during the Karma festival, symbolizing the worship of the God of Fate.

• Andhra Pradesh:

• Famous for Kuchipudi, a classical dance form, and folk traditions like Burra Katha and Veeranatyam.

• Lakshadweep:

• Known for the Lava Dance, a rhythmic folk performance primarily seen on Minicoy Island.

• Andaman and Nicobar:

• The Nicobarese Dance is a prominent tribal dance performed during the Ossuary Feast to honor the spirits of ancestors.

**Q53. Answer: (c) 640867**

The correct answer is 640867.

Key Points

• According to the Census of India 2011, there are a total of 640,867 villages in the country, representing the vast rural administrative network of India.

• Out of the total 640,867 villages, approximately 597,464 are classified as inhabited villages, while the remaining 43,403 are recorded as uninhabited.

• There was a net increase of 2,279 villages during the decade 2001−2011, as the total number of villages in the 2001 Census was 638,588.

• The data highlights that about 68.84% of the total Indian population resides in these rural areas, amounting to nearly 833.1 million people.

Additional Information

• Census 2011 Overview:

• The 2011 Census was the 15th National Census of India since 1872 and the 7th after Independence.

• It was conducted under the guidance of C. Chandramouli, the then Registrar General and Census Commissioner of India.

• The state of Uttar Pradesh recorded the highest number of villages in the country, whereas Goa had the lowest among the states.

• The census also categorized 7,935 towns, including 3,894 Census Towns and 4,041 Statutory Towns.

• The sex ratio in rural India according to this census was 949 females per 1000 males, which was higher than the urban sex ratio of 929.

• The literacy rate in rural areas was recorded at 67.8%, compared to 84.1% in urban areas.

**Q54. Answer: (d) Rowlatt Act**

The correct answer is Rowlatt Act.

Key Points

• The Anarchical and Revolutionary Crimes Act, popularly known as the Rowlatt Act, was passed in March 1919 by the Imperial Legislative Council despite unanimous opposition from Indian members.

• The act was based on the recommendations of the Sedition Committee, headed by Sir Sidney Rowlatt, to investigate the revolutionary conspiracies of the Indian Ghadar Party and Bengal revolutionaries.

• It granted the British government extraordinary powers to repress political activities and allowed the detention of political prisoners without trial for a period of up to two years.

• This legislation effectively suspended the right of Habeas Corpus, leading to the popular Indian description: 'No Dalil, No Vakil, No Appeal' (No argument, no lawyer, no appeal).

• Mahatma Gandhi condemned the act as a 'Black Act' and launched the Rowlatt Satyagraha, which served as the first major pan-India organized protest against the British Raj.

Additional Information

• Indian Councils Act 1861:

• It marked the beginning of representative institutions by associating Indians with the law-making process.

• It restored the legislative powers of the Bombay and Madras presidencies and introduced the Portfolio System.

• Indian Councils Act 1892 (often cited as 1891/92 in context):

• It increased the number of non-official members in the Central and Provincial Legislative Councils.

• It expanded the functions of the councils, allowing members to discuss the budget and address questions to the executive.

• Morley-Minto Act:

• Formally known as the Indian Councils Act 1909, it significantly increased the size of the Legislative Councils.

• It introduced a system of separate electorates for Muslims, thereby legalizing communalism in Indian politics.

**Q55. Answer: (d) 919**

The correct answer is 919.

Key Points

• The Child Sex Ratio is defined as the number of females per 1,000 males in the age group of 0-6 years within a given population.

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• According to the 2011 Census, the child sex ratio in India was recorded at 919, which marked a decrease from the 927 recorded during the 2001 Census.

• The decline in this ratio is primarily attributed to factors such as female foeticide, gender-based discrimination, and a traditional preference for male children in several parts of the country.

• Among the various states in India, Arunachal Pradesh held the highest child sex ratio at 972, while Haryana reported the lowest child sex ratio at a mere 834.

• In terms of Union Territories, the Andaman and Nicobar Islands registered the highest child sex ratio at 968, whereas Delhi and Chandigarh recorded significantly lower figures.

Additional Information

• The Census of 2011 served as the 15th National Census of India and the 7th since the country achieved independence.

• The official slogan for the 2011 Census was ‘Our Census, Our Future’, and it was conducted under the supervision of C. Chandramouli, the Registrar General and Census Commissioner.

• While the child sex ratio saw a decline, the overall sex ratio of India improved from 933 in 2001 to 943 in 2011.

• Kerala maintained its position as the state with the highest overall sex ratio at 1,084, whereas Haryana remained at the bottom with 879.

• The literacy rate of India as per the 2011 data was 74.04 percent, with male literacy at 82.14 percent and female literacy at 65.46 percent.

**Q56. Answer: (d) BHASHINI**

The correct answer is BHASHINI.

Key Points

• BHASHINI, or the Bhasha Interface for India, is an Artificial Intelligence (AI)-led language translation platform launched by the Ministry of Electronics and Information Technology (MeitY).

• It serves as the National Language Translation Mission (NLTM) to break language barriers by providing digital content and internet services in local Indian languages.

• The initiative utilizes high-end technologies like Natural Language Processing (NLP) and Machine Learning (ML) to enable real-time translation, including speech-to-speech capabilities.

• A critical component of this project is Bhasha Daan, a crowdsourcing initiative that encourages citizens to contribute data in various languages to refine and train the AI datasets.

• It aims to empower the Digital India vision by ensuring that people from diverse linguistic backgrounds can access government schemes, e-commerce, and educational resources in all 22 scheduled languages.

• The platform was notably demonstrated during the G20 Summit and at the Kashi Tamil Sangamam, where it provided real-time translation of the Prime Minister's speech.

Additional Information

• UMANG (Unified Mobile Application for New-age Governance)

• Launched in 2017, it acts as a single point of access for over 1,200 central and state government services including EPF, Aadhaar, and PAN card services.

• DigiYatra

• An initiative by the Ministry of Civil Aviation that implements Facial Recognition Technology (FRT) to provide a seamless and contactless boarding experience at Indian airports.

• Aarogya Setu

• Developed by the National Informatics Centre (NIC), this mobile application was used for contact tracing, syndromic mapping, and self-assessment during the COVID-19 pandemic.

**Q57. Answer: (b) Water vapour in the air condenses upon contact with the cold glass.**

The correct answer is Water vapour in the air condenses upon contact with the cold glass.

Key Points

• The atmosphere contains water in a gaseous state known as water vapour, which is invisible to the naked eye.

• When air moves near a glass containing ice-cold water, the temperature gradient causes heat to transfer from the warmer air to the colder surface of the glass.

• As the water vapour molecules lose kinetic energy due to this cooling effect, they slow down and begin to cluster together.

• This physical change from a gaseous phase to a liquid phase is called condensation.

• The dew point is the specific temperature at which the air becomes saturated and cannot hold all its water vapour, leading to the formation of the liquid droplets seen on the exterior surface.

Additional Information

• Phase Transitions:

• Condensation: An exothermic process where gas releases heat to become a liquid. It is the fundamental reason behind cloud formation and morning dew.

• Evaporation: The reverse process where liquid turns into gas. It is an endothermic process that requires heat absorption from the surroundings.

• Properties of Glass:

• Glass is an impermeable and non-porous material, meaning water cannot leak through the solid walls of the container.

• The appearance of water on the outside is entirely due to atmospheric moisture rather than the liquid inside the glass.

• Humidity Factors:

• The rate of droplet formation depends on relative humidity; higher humidity levels mean there is more water vapour available to condense, making the effect more pronounced.

**Q58. Answer: (b) Pneumonia**

The correct answer is Pneumonia.

Key Points

• Legionnaires' disease is a severe and potentially fatal form of pneumonia, which involves inflammation of the lungs typically caused by infection.

• The disease is caused by the Legionella bacterium, most commonly the species Legionella pneumophila, which is found naturally in freshwater environments but becomes a health risk when it grows in man-made water systems.

• The outbreak in New York in August 2025 was linked to contaminated aerosolized water, which individuals inhaled, allowing the bacteria to settle in the respiratory tract.

• Common sources of the bacteria include cooling towers used for large building air conditioning systems, hot tubs, decorative fountains, and large plumbing systems.

• Clinically, it presents with symptoms such as high fever, chills, cough, and shortness of breath, distinguishing it as a lung-specific infection.

• The disease was first recognized in 1976 after an outbreak at an American Legion convention in Philadelphia, which gave the illness its name.

Additional Information

• Asthma:

• A chronic non-communicable disease characterized by recurrent attacks of breathlessness and wheezing.

• It involves the narrowing of the airways due to inflammation and muscle tightening, rather than a specific bacterial infection like Legionnaires'.

• Tuberculosis (TB):

• An infectious disease caused by Mycobacterium tuberculosis that mainly affects the lungs.

• While it is a lung infection, it has a different pathogen and transmission method (person-to-person via air) compared to the water-borne Legionella.

• Influenza:

• Commonly known as the flu, it is an acute viral infection caused by influenza viruses.

• It affects the upper and lower respiratory tracts and, while it can lead to secondary pneumonia, it is fundamentally a viral illness rather than a bacterial one.

**Q59. Answer: (d) China**

The correct answer is China.

Key Points

• The Mineral Security Partnership (MSP) is a strategic collaboration of 13 countries and the European Union, established to accelerate the development of diverse and sustainable critical energy minerals supply chains globally.

• The partnership was announced in June 2022 by the United States and its key partners to reduce dependency on single-source suppliers and ensure minerals are produced under high environmental, social, and governance (ESG) standards.

• The current members of the MSP include Australia, Canada, Finland, France, Germany, India, Italy, Japan, the Republic of Korea, Norway, Sweden, the United Kingdom, and the United States.

• China is noticeably absent from this partnership, as the initiative is largely seen as a collective effort by Western allies and partners to counter China's global monopoly over the processing and supply of rare earth elements and critical minerals.

• India became a member of the elite group in June 2023, making it the only developing nation in the partnership, which is significant for its transition to green energy and electric vehicle (EV) manufacturing.

Additional Information

• Critical Minerals and their Importance:

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• The MSP focuses on minerals like Lithium, Cobalt, Nickel, Manganese, Graphite, and Rare Earth Elements.

• These minerals are vital for high-tech electronics, defense equipment, telecommunications, and renewable energy technologies like solar panels and wind turbines.

• Securing these supply chains is essential for meeting net-zero carbon emission targets and maintaining national security.

• The partnership encourages public and private sector investment to ensure that the minerals are processed and recycled in a way that provides economic benefits to the countries where they are found.

**Q60. Answer: (a) Turin**

The correct answer is Turin.

Key Points

• The 2006 Winter Olympics, officially known as the XX Olympic Winter Games and commonly known as Torino 2006, were held in Turin, Italy.

• The event took place from February 10 to February 26, 2006, marking the second time Italy hosted the Winter Olympics, following the 1956 Games in Cortina d'Ampezzo.

• Turin was selected as the host city in June 1999 during the 109th IOC Session in Seoul, where it defeated Sion, Switzerland, by a vote of 53 to 36.

• The Games featured 84 medal events across 15 disciplines in 7 sports, with a record 2,508 athletes participating from 80 National Olympic Committees (NOCs).

• The official motto of the Games was 'Passion lives here', and the opening ceremony was held at the Stadio Olimpico.

• Germany emerged as the most successful nation at the event, securing a total of 29 medals, including 11 gold medals.

Additional Information

• Moscow:

• The capital of Russia, it hosted the 1980 Summer Olympics, which was notable for the United States-led boycott.

• While Russia hosted the 2014 Winter Olympics in Sochi, Moscow has never hosted a Winter edition.

• Zurich:

• A major financial center in Switzerland and home to the FIFA headquarters.

• Although Switzerland hosted the Winter Olympics in 1928 and 1948 (both in St. Moritz), Zurich has not been a host city.

• Dras:

• Located in the Kargil district of Ladakh, India, it is often called the Gateway to Ladakh.

• It is recognized as the coldest inhabited place in India, but it has no association with hosting Olympic events.

**Q61. Answer: (b) Milkha Singh**

The correct answer is Milkha Singh.

Key Points

• Milkha Singh, popularly known as The Flying Sikh, is the author of the autobiography titled 'The Race of My Life', which was released in July 2013.

• The book was co-authored with his daughter, Sonia Sanwalka, and provides a poignant account of his struggle during the Partition of India, his time in the Indian Army, and his rise to international athletics fame.

• He represented India in three consecutive Summer Olympics: 1956 Melbourne, 1960 Rome, and 1964 Tokyo.

• Singh is iconic for his performance in the 1960 Rome Olympics, where he finished fourth in the 400m final with a timing of 45.73 seconds, a national record that stood for nearly 40 years.

• His life and the narrative of this autobiography served as the primary source for the National Award-winning biographical film 'Bhaag Milkha Bhaag'.

Additional Information

• P. T. Usha:

• Known as the Payyoli Express, her autobiography is titled 'Golden Girl'.

• She won four gold medals at the 1986 Asian Games in Seoul and narrowly missed an Olympic medal in 1984.

• Abhinav Bindra:

• He is India's first individual Olympic gold medalist, winning the 10m Air Rifle event at the 2008 Beijing Olympics.

• His autobiography is titled 'A Shot at History: My Obsessive Journey to Olympic Gold'.

• Neeraj Chopra:

• He is an Indian javelin thrower who made history by winning the gold medal at the 2020 Tokyo Olympics.

• He is the first Indian to win a gold medal in track and field at the Olympic level.

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**Q62. Answer: (a) Only I**

The correct answer is Only I.

Key Points

• The New Economic Policy (NEP) launched in 1991 introduced the LPG (Liberalization, Privatization, and Globalization) model. By dismantling the License Raj and allowing Foreign Direct Investment (FDI) through automatic and government routes, India became a prime destination for global capital, leading to a massive increase in foreign investment across sectors like telecommunications, retail, and manufacturing. Hence, statement I is correct.

• Prior to 1991, India faced a severe Balance of Payments (BoP) crisis, where foreign exchange reserves fell to approximately 1.2 billion USD, barely enough to cover two weeks of essential imports. The opening of the economy actually facilitated a rapid build-up of these reserves through increased exports, foreign institutional investment (FII), and inward remittances, rather than a decrease. Hence, statement II is incorrect.

Additional Information

• The LPG Reforms were initiated under the leadership of Prime Minister P.V. Narasimha Rao and Finance Minister Dr. Manmohan Singh to prevent a national economic collapse.

• Liberalization: This involved the deregulation of industrial sectors, allowing private businesses to expand without excessive government oversight and reducing import tariffs.

• Privatization: The process of disinvestment in Public Sector Undertakings (PSUs) was accelerated to improve efficiency and reduce the fiscal burden on the state.

• Globalization: This aimed to integrate the Indian economy with the global market by reducing trade barriers and allowing the Indian Rupee to be partially convertible on the current account.

• Foreign Exchange Management Act (FEMA): In 1999, FEMA replaced the more restrictive FERA to facilitate external trade and payments and promote orderly development of the foreign exchange market in India.

**Q63. Answer: (a) 6**

The correct answer is 6.

Key Points

• A standard handball team consists of a total of seven players on the court during active play.

• Among these seven players, one is designated as the goalkeeper, while the remaining six are referred to as court players.

• The primary objective of the six court players is to navigate the ball using their hands to score goals in the opposing team's net while defending their own half.

• The specific positions of these six court players typically include two wingers (left and right), three backcourt players (left back, center back/playmaker, and right back), and one pivot (also known as the line player).

• According to the official rules set by the International Handball Federation (IHF), a team must have at least five players (including a goalkeeper) on the court to start a match, but the standard configuration remains 6 court players plus the goalkeeper.

Additional Information

• Match Duration and Structure:

• A professional handball match consists of two halves of 30 minutes each, with a 10-minute halftime interval.

• If a match ends in a draw during knockout stages, overtime consisting of two periods of 5 minutes is played.

• Court Dimensions:

• The game is played on a rectangular court measuring 40 meters × 20 meters.

• The goal area line, or the 6-meter line, is the most crucial boundary where only the goalkeeper is allowed to stand.

• Ball Handling Rules:

• A player is permitted to hold the ball for a maximum of three seconds and can take a maximum of three steps while holding it.

• Players may dribble the ball indefinitely, but once the ball is caught after a dribble, the three-step/three-second rule applies again before they must pass or shoot.

• Substitution Rules:

• Handball allows unlimited substitutions, which can be made at any time during the game without notifying the timekeeper, provided the player being replaced has fully exited the court.

**Q64. Answer: (b) Santiniketan**

The correct answer is Santiniketan.

Key Points

• Santiniketan was originally established as an ashram in 1863 by Maharshi Debendranath Tagore, the father of Rabindranath Tagore, in the Birbhum district of West Bengal.

• In 1901, Rabindranath Tagore founded an experimental school at Santiniketan called Brahmacharya Ashram (later Patha

Bhavana) based on the principles of open-air education and learning through nature.

• Tagore expanded the institution into Visva-Bharati University in 1921, envisioning it as a world center where the East and West could meet through cultural and academic exchange.

• The institution was declared a Central University and an Institution of National Importance by an Act of the Indian Parliament in 1951.

• In September 2023, Santiniketan was inscribed as India's 41st UNESCO World Heritage Site, recognizing its unique approach to internationalism and humanism.

Additional Information

• Presidency College:

• Founded in 1817 as Hindoo College in Calcutta, it was renamed Presidency College in 1855 and later upgraded to Presidency University in 2010.

• Fort William College:

• Established in 1800 by Lord Wellesley, the Governor-General of India, to train British civil servants in Indian languages, customs, and law.

• Hindu College:

• Established in 1817 in Calcutta by Raja Ram Mohan Roy, David Hare, and Radhakanta Deb to promote modern Western education among the Indian populace.

**Q65. Answer: (a) Bhagat Singh**

The correct answer is Bhagat Singh.

Key Points

• Bhagat Singh was a charismatic Indian revolutionary who became an enduring symbol of resistance against British colonial rule. He was born on September 28, 1907, in the village of Banga, Punjab.

• The honorific title Shaheed-e-Azam (meaning Great Martyr or King of Martyrs) was bestowed upon him by the Indian public to honor his supreme sacrifice for the nation at the young age of 23.

• He was a leading figure in the Hindustan Socialist Republican Association (HSRA), where he worked to transform the revolutionary movement from individual acts of heroism to a broader struggle based on socialist ideology.

• Singh was convicted in the Lahore Conspiracy Case for the assassination of British police officer John Saunders in 1928. This act was carried out as retaliation for the death of the veteran leader Lala Lajpat Rai.

• On April 8, 1929, he and Batukeshwar Dutt threw non-lethal smoke bombs into the Central Legislative Assembly in Delhi to protest against the Public Safety Bill and the Trade Dispute Bill, raising the legendary slogan Inquilab Zindabad.

• He was executed by hanging on March 23, 1931, in the Lahore Jail alongside Sukhdev and Rajguru. This day is observed as Shaheed Diwas (Martyrs Day) across India.

Additional Information

• Lala Lajpat Rai:

• Known as Punjab Kesari (Lion of Punjab), he was a prominent leader of the Lal-Bal-Pal trio within the Indian National Congress. He passed away in November 1928 after being severely injured during a protest against the Simon Commission.

• Chandrashekhar Azad:

• A fearless revolutionary and the commander-in-chief of the HSRA. He maintained his vow of remaining Azad (free) and died during a fierce shootout with the police at Alfred Park, Allahabad, in February 1931.

• Abbas Ali:

• A dedicated Indian freedom fighter and a captain in the Indian National Army (INA) led by Subhas Chandra Bose. He was heavily influenced by the revolutionary ideas of Bhagat Singh and was a lifelong advocate for socialist principles.

**Q66. Answer: (b) Nauseous**

The correct answer is option 2.

Key Points

The correctly spelt word is 'Nauseous'.

• The word 'Nauseous' is an adjective that means 'affected with nausea or inclined to vomit'.

• It can also mean 'causing nausea or disgust'.

• For Example: The smell of rotten food made me feel nauseous.

Therefore, the correct answer is 'Nauseous'.

Additional Information

Let's understand why the other options are incorrect:

• Option 1: Nausious - Incorrect spelling, missing 'e' in the middle.

• Option 3: Naoseous - Incorrect spelling, misplaced 'o'.
• Option 4: Nouseous - Incorrect spelling, 'u' is misplaced.

**Q67. Answer: (b) quagmire**

The correct answer is option 2, i.e. quagmire.

Key Points

• The word 'quagmire' refers to a difficult, precarious, or entangled situation.
• In the given sentence, the term 'quaghmire' is a misspelling of the correct word 'quagmire'.
• Quagmire is a noun and is commonly used to describe situations where progress or resolution is difficult due to complexity or entanglement.

Correct sentence: The project turned into a financial quagmire, trapping investors in endless losses.

Additional Information

• Quagmire - a soft, boggy area of land that gives way underfoot; metaphorically, a complex or hazardous situation.
• Example: The negotiations became a political quagmire.
• Incorrect options:
• Quakmire: Incorrect spelling.
• Quackmire: Incorrect spelling.
• No replacement required: Incorrect, as the spelling in the original sentence is wrong.

**Q68. Answer: (a) indigenious**

The solution is in Hindi. Read it online.

**Q69. Answer: (c) Opulance**

The solution is in Hindi. Read it online.

**Q70. Answer: (a) Hasten**

The solution is in Hindi. Read it online.

**Q71. Answer: (b) Ordinary**

The solution is in Hindi. Read it online.

**Q72. Answer: (b) maze**

The solution is in Hindi. Read it online.

**Q73. Answer: (b) Cinematography**

The solution is in Hindi. Read it online.

**Q74. Answer: (b) Calligraphy**

The solution is in Hindi. Read it online.

**Q75. Answer: (a) Owing to**

The correct answer is '1' i.e. Owing to.

Key Points

• The phrase "Owing to" is used to indicate a reason or cause for something.
• The sentence discusses the reason why someone could not go to the office, which was due to pain in the belly.
• Other options (Apart from, According to, and Besides) do not fit the context of the sentence.

Therefore, the correct answer is Option 1.

Complete Sentence: "Owing to some pain in his belly, he could not go to the office the day before yesterday."

Additional Information

• Option 2: "Apart from" is incorrect because it is used to indicate additional information, not a cause.
• Option 3: "According to" is incorrect because it is used to refer to someone's opinion or statement, not a cause.
• Option 4: "Besides" is incorrect because it is used to add information, not to indicate a reason or cause.

**Q76. Answer: (d) New traffic laws are implemented by the traffic department to reduce congestion.**

The correct answer is Option 4.

Key Points

• The given sentence is in the Simple Present Tense in the active voice.

• The structure for Active Voice in Simple Present is: Subject + Verb (s/es) + Object.
• The structure for Passive Voice in Simple Present is: Object + am/is/are + Past Participle (V3) + by + Subject.
• In the active voice:
• Subject: The traffic department
• Verb: implements
• Object: new traffic laws
• To convert to passive:
• The object "new traffic laws" (plural) moves to the subject position.
• Because the subject is plural, we use the auxiliary verb "are."
• The verb "implements" changes to its V3 form, "implemented."
• The original subject is added after "by."
Therefore, the correct answer is Option 4.
Correct Sentence: "New traffic laws are implemented by the traffic department to reduce congestion."
Additional Information
• Option 1: "New traffic laws were implemented..." – Incorrect because "were" is used for the Simple Past Tense.
• Option 2: "New traffic laws are being implemented..." – Incorrect because "are being" is used for the Present Continuous Tense.
• Option 3: "New traffic laws have been implemented..." – Incorrect because "have been" is used for the Present Perfect Tense.

**Q77. Answer: (c) Why was salt added to the cake batter by the baker?**

The correct answer is Option 3.
Key Points
• The given sentence is in the Simple Past Tense in the active voice and is an interrogative sentence starting with "Why."
• The structure for Active Voice (Simple Past Interrogative) is: Wh-word + did + Subject + Base Verb (V1) + Object?
• The structure for Passive Voice (Simple Past Interrogative) is: Wh-word + was/were + Object + Past Participle (V3) + by + Subject?
• In the active voice:
• Subject: the baker
• Verb: add
• Object: salt
• To convert to passive:
• The interrogative word "Why" remains at the beginning.
• The object "salt" becomes the new subject. Since "salt" is uncountable/singular, we use the auxiliary verb "was."
• The verb "add" changes to its V3 form, "added."
• The agent "by the baker" is added at the end.
Therefore, the correct answer is Option 3.
Correct Sentence: "Why was salt added to the cake batter by the baker?"
Additional Information
• Option 1: "Why is salt added..." – Incorrect because "is" is used for the Simple Present Tense.
• Option 2: "Why are salt added..." – Incorrect because "are" is the plural present auxiliary; "salt" is singular and the tense should be past.
• Option 4: "Why did salt added..." – Grammatically incorrect construction. "Did" is an active voice auxiliary and cannot be paired with the V3 form "added" in this way.

**Q78. Answer: (d) Scientists have achieved major breakthroughs in renewable energy in recent decades.**

The correct answer is Option 4.
Key Points
• The given sentence is in the Passive Voice of the Present Perfect Tense.
• Passive voice structure for Present Perfect: Object + has/have + been + Past Participle (V3) + by + Subject.
• To convert it into the Active Voice, the structure should be: Subject + has/have + Past Participle (V3) + Object.
• The agent in the passive sentence "scientists" becomes the subject of the active sentence.
• The verb phrase "have been achieved" changes to its active form "have achieved" to maintain the same tense.
• The phrase "in recent decades" remains at the end of the sentence to indicate the time frame.
Therefore, the correct answer is Option 4.

Correct Sentence: "Scientists have achieved major breakthroughs in renewable energy in recent decades."

Additional Information

• Option 1: "Scientists achieve..." – Incorrect because it changes the tense to Simple Present.

• Option 2: "Scientists are achieving..." – Incorrect because it changes the tense to Present Continuous.

• Option 3: "Scientists achieved..." – Incorrect because it changes the tense to Simple Past.

**Q79. Answer: (a) Who has authorised this programme?**

The correct answer is Option 1.

Key Points

• The given sentence is in the Passive Voice of the Present Perfect Tense and is an interrogative sentence starting with "By whom."

• Passive voice structure for Present Perfect (Interrogative with 'By whom'): By whom + has/have + Object + been + Past Participle (V3)?

• To convert it into the Active Voice, the structure should be: Who + has/have + Past Participle (V3) + Object?

• In the transformation:

• "By whom" changes to "Who" (the subject pronoun).

• The auxiliary "has been authorised" (passive) changes to "has authorised" (active).

• The subject of the passive sentence, "this programme," becomes the object of the active sentence.

Therefore, the correct answer is Option 1.

Correct Sentence: "Who has authorised this programme?"

Additional Information

• Option 2: "Whom has authorised..." – Incorrect because "Whom" is an object pronoun and cannot function as the subject of the sentence.

• Option 3: "This programme has been authorised by whom?" – Incorrect because this is still the Passive Voice, simply rearranged.

• Option 4: "By who is this programme authorised?" – Incorrect because it changes the tense to Simple Present and uses "who" incorrectly after a preposition (it should be "by whom" if passive).

**Q80. Answer: (c) with**

The correct answer is '3' i.e. with.

Key Points

• The preposition "with" is used to indicate being accompanied by or associated with something.

• In this context, the crops are being affected by exotic pests, which makes "with" the correct choice.

• Option 1 (by) is incorrect because it implies an agent performing an action, which does not fit the context.

• Option 2 (along) is incorrect as it indicates movement or position, which is not applicable here.

• Option 4 (for) is incorrect because it implies purpose or intention, which does not apply to the infestation.

Therefore, the correct answer is Option 3.

Complete Sentence: "The crops are infested with exotic pests unknown to this land."

Additional Information

• Option 1: "by" is used to indicate the agent performing an action, which is not the intent in this sentence.

• Option 2: "along" is used to indicate direction or position, which is irrelevant to this context.

• Option 4: "for" is used to indicate purpose or benefit, which does not align with the meaning of the sentence.

**Q81. Answer: (c) the problem would escalate into**

The correct answer is '3' i.e. 'the problem would escalate into'.

Key Points

• The word "aggravate" is incorrect in this context because it means to worsen a situation, but it does not imply a progression into a crisis.

• The correct verb to use here is "escalate," which means to increase or intensify, and fits the context of the problem turning into an uncontrollable crisis.

• Option 1: "the problem would alleviate" is incorrect because "alleviate" means to reduce or ease a problem, which is opposite to the intended meaning.

• Option 2: "the problem will retaliate with" is incorrect because "retaliate" means to respond aggressively, which does not fit the scenario described.

• Option 4: "No improvement required" is incorrect because the original sentence uses "aggravate," which is not the correct choice of word in this context.

Therefore, the correct answer is Option 3.

Complete Sentence: "The report suggested that unless corrective steps are taken immediately, the problem would escalate into an uncontrollable crisis."

Additional Information

• Option 1: "the problem would alleviate" is incorrect because "alleviate" means to reduce a problem, which contradicts the idea of escalation.

• Option 2: "the problem will retaliate with" is incorrect because "retaliate" implies an aggressive response, which does not suit the context.

• Option 4: No improvement required is incorrect because the original sentence uses the word "aggravate," which is not appropriate in this context.

**Q82. Answer: (b) BADC**

The correct answer is Option 2.

Key Points

• The paragraph focuses on Ralph's unclear goals during college and his struggles with self-discovery.

• Sentence B is the first in the sequence because it introduces Ralph's initial aspirations and his realization that he lacked the qualities needed for certain professions:

• "He first thought he wanted to be a doctor, or a lawyer, and he took pre-medical courses and courses in history of jurisprudence and business-law before he decided he had neither the emotional detachment necessary for medicine, nor the ability for sustained reading and memorization in the Corpus Iuris Civilis, as well as the more modern texts on property and inheritance."

• Sentence A follows as it describes his continued indecisiveness and exploration of various subjects:

• "Though he continued to take classes here and there in the sciences and in the Department of Business, he also took some lower-division classes in history and philosophy and English."

• Sentence D is the third sentence as it reflects Ralph's internal struggle and his feeling of being on the verge of a significant realization about himself:

• "He continually felt he was on the brink of some kind of momentous discovery about himself."

• Sentence C is the last as it concludes that the anticipated discovery never happened:

• "But it never came."

• The correct sequence is BADC.

Coherent paragraph after rearrangement:

"He first thought he wanted to be a doctor, or a lawyer, and he took pre-medical courses and courses in history of jurisprudence and business-law before he decided he had neither the emotional detachment necessary for medicine, nor the ability for sustained reading and memorization in the Corpus Iuris Civilis, as well as the more modern texts on property and inheritance. Though he continued to take classes here and there in the sciences and in the Department of Business, he also took some lower-division classes in history and philosophy and English. He continually felt he was on the brink of some kind of momentous discovery about himself. But it never came."

**Q83. Answer: (c) BADC**

The correct answer is Option 3.

Key Points

• The paragraph starts with S1, which introduces the setting by describing the abundance of fish in the creek.

• Sentence B follows as it introduces the characters (Andy and Dave) and their fondness for fishing, which directly connects to the first sentence:

• "The party were fond of fish, and Andy and Dave of fishing."

• Sentence A is next because it elaborates on Andy’s fishing habits, which aligns logically after introducing the characters:

• "Andy would fish for three hours at a stretch if encouraged by a 'nibble' or a 'bite' now and then - say once in twenty minutes."

• Sentence D follows as it describes the challenges of fishing in winter and the barter system with the butcher, providing context to the fishing dynamics:

• "The butcher was always willing to give meat in exchange for fish when they caught more than they could eat; but now it was winter, and these fish wouldn't bite."

• Sentence C comes next, as it explains how they managed to catch fish despite the low creek levels, providing a solution to the challenges described in Sentence D:

• "However, the creek was low, just a chain of muddy water-holes, from the hole with a few bucketfuls in it to the sizable pool with an average depth of six or seven feet, and they could get fish by baling out the smaller holes or muddying up the water in the

larger ones till the fish rose to the surface."

• The paragraph ends with S2, which concludes by describing the cat-fish and its distinctive characteristics.

• The correct sequence is BADC.

Coherent paragraph after rearrangement:

"There was plenty of fish in the creek, fresh-water bream, cod, cat-fish, and tailers. The party were fond of fish, and Andy and Dave of fishing. Andy would fish for three hours at a stretch if encouraged by a 'nibble' or a 'bite' now and then - say once in twenty minutes. The butcher was always willing to give meat in exchange for fish when they caught more than they could eat; but now it was winter, and these fish wouldn't bite. However, the creek was low, just a chain of muddy water-holes, from the hole with a few bucketfuls in it to the sizable pool with an average depth of six or seven feet, and they could get fish by baling out the smaller holes or muddying up the water in the larger ones till the fish rose to the surface. There was the cat-fish, with spikes growing out of the sides of its head, and if you got pricked you'd know it, as Dave said."

**Q84. Answer: (b) ACBD**

The correct answer is Option 2.

Key Points

• The paragraph revolves around the narrator's life and his relationship with his wife, who is described as a cultured and loving partner.

• Sentence A introduces the marriage of the narrator, which is the starting point of the story.

• Sentence C follows as it indicates the nature of the marriage, which is described as a love match.

• Sentence B comes next as it describes the wife of the narrator, emphasizing her qualities.

• Sentence D concludes the sequence before S2 by providing information about the wife's background, which complements her introduction in Sentence B.

• The correct sequence is ACBD.

Coherent paragraph after rearrangement:

"I was rich and contented; I found pleasure in everything that appeals to a man of thirty-five. I married a year ago. It was a love match. A very beautiful, kindly and cultured young lady was my wife. She had been a companion to a countess not far from my estate. She loved me, and her heart was full of gratitude."

**Q85. Answer: (c) might drive on for hours**

The correct answer is Option 3.

Key Points

• The error is found in part C of the sentence (Option 3).

• The phrasal verb "drive on" is used incorrectly in this context. It means to continue moving in the same direction or to resume a journey.

• When searching for something within an area, such as a parking spot, the correct phrasal verb is "drive around" or "drive about," which means to travel to different parts of a location.

• The sentence describes a search process, so "might drive around for hours" is the grammatically and contextually appropriate choice.

Therefore, the correct answer is Option 3.

Correct Sentence: "If you are looking for a free parking space, you might drive around for hours until you find one."

Additional Information

• Option 1: "If you are looking for" – This part is correct; the present continuous "are looking" appropriately describes an ongoing action or search.

• Option 2: "a free parking space, you" – This part is correct. "Parking space" is a singular countable noun requiring the article "a," and the comma correctly separates the "if" clause from the main clause.

• Option 4: "until you find one." – This part is correct. In time clauses (using until, when, etc.), the present simple ("find") is used to refer to the future. "One" is the correct pronoun referring back to "parking space."

**Q86. Answer: (d) is**

The correct answer is 'Option 4'.

Key Points

• Option 4: is

• The subject of the sentence is "Calcium".

• Calcium is an uncountable (mass) noun, which always takes a singular verb.

• The passage is written in the simple present tense to state scientific facts and general truths. Therefore, the singular present form of the verb "to be" (is) is the correct choice.

• Option 1: are

• This is incorrect. "Are" is the plural form and cannot be used with the singular noun "Calcium."

• Option 2: had

• This is incorrect. "Had" is a past tense auxiliary or possessive verb. It does not function as a linking verb in this context to describe a quality or association.

• Option 3: was

• This is incorrect. While "was" is singular, it is in the past tense. Since the passage discusses the ongoing biological functions of minerals, the present tense is required.

Therefore, the correct answer is Option 4.

Additional Information

• Subject-Verb Agreement: Mass nouns like water, sugar, iron, and calcium are treated as singular. (Example: Iron is essential.)

• Biological Context:

• Iron: Necessary for hemoglobin, which carries oxygen in the blood. Deficiency leads to anemia.

• Calcium: Necessary for bone density. Deficiency leads to osteoporosis, especially in women.

• Vocabulary:

• Indispensable: Absolutely necessary.

• Imperative: Of vital importance; crucial.

**Q87. Answer: (c) Declarative**

The correct answer is 'Option 3'.

Key Points

• Option 3: Declarative

• A declarative sentence is used to make a statement, provide a fact, offer an explanation, or convey information.

• The sentence "A deficiency of iron often leads to anemia" is stating a scientific fact about human health.

• Declarative sentences always end with a period (full stop). They are the "workhorses" of writing, simply declaring how things are.

• Option 1: Exclamatory

• This is incorrect. Exclamatory sentences express strong emotion or surprise and must end with an exclamation mark (!) (e.g., "How vital iron is for our survival!").

• Option 2: Interrogative

• This is incorrect. Interrogative sentences ask a direct question and end with a question mark (?) (e.g., "Does iron deficiency cause fatigue?").

• Option 4: Imperative

• This is incorrect. Imperative sentences give a command, a request, or an instruction. They often omit the subject "you" (e.g., "Eat more green leafy vegetables to prevent anemia.").

Therefore, the correct answer is Option 3.

Additional Information

• Sentence Functions: Most formal writing (like the passage on iron and calcium) relies heavily on declarative sentences because they are the most effective way to transmit data and logical arguments.

• Grammar Note: Even though "leads" is the verb here, the entire sentence functions as a single declaration.

• Vocabulary Connection: The word "deficiency" means a lack or shortage. In this declarative context, it is the subject of the sentence that "leads" to the result (anemia).

**Q88. Answer: (b) essential**

The correct answer is 'Option 2'.

Key Points

• Option 2: essential

• In the context of the sentence, "indispensable" describes minerals that are "required for the healthy growth of the human body."

• The word "indispensable" means absolutely necessary, essential, or something that cannot be done without.

• If a substance is "required" for health, it is by definition essential to the body's functioning.

• Option 1: harmful

• This is incorrect. "Harmful" would mean the minerals cause damage, which contradicts the statement that they are needed for "healthy growth."

• Option 3: temporary

• This is incorrect. "Temporary" refers to something that lasts for a limited time, which does not fit the description of a fundamental

requirement for growth.

• Option 4: avoidable

• This is incorrect. "Avoidable" is an antonym (opposite) of indispensable. If something is required, it cannot be avoided if one wishes to remain healthy.

Therefore, the correct answer is Option 2.

Additional Information

• Etymology: The word comes from the prefix "in-" (meaning "not") + "dispensable" (meaning "able to be set aside or done without"). Combined, it means "not able to be set aside."

• Synonyms: Crucial, vital, necessary, imperative, requisite.

• Contextual Usage: In nutrition, "essential" minerals are those the body cannot produce on its own and must obtain from the diet. Iron and calcium fall into this "indispensable" category because they are structural and functional cornerstones of human biology.

**Q89. Answer: (d) strong**

The correct answer is 'Option 4'.

Key Points

• Option 4: strong

• An antonym is a word that has the opposite meaning of another word.

• In the passage, "fragile" describes bones that are "porous" and easily broken or damaged due to a lack of density.

• "Strong" is the direct opposite, as it refers to something that is powerful, sturdy, and able to withstand pressure without breaking.

• Option 1, 2, & 3: weak, delicate, and brittle

• These words are synonyms (words with similar meanings) of fragile.

• Weak: Lacking physical strength.

• Delicate: Very fine in texture or easily broken.

• Brittle: Hard but liable to shatter easily.

Therefore, the correct answer is Option 4.

Additional Information

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• Context Clues: The sentence uses the word "porous" (full of holes) to define the condition. In a building or a bone, a structure with more holes is "fragile," while a dense, solid structure is strong.

• Osteoporosis: This condition literally translates to "porous bones." It highlights the importance of calcium in maintaining a "strong" skeletal system.

• Vocabulary Tip: When faced with a question asking for an antonym, look at the group of words provided. If three options (weak, delicate, brittle) share a similar theme of "easiness to break," the outlier (strong) is almost certainly the correct opposite.

**Q90. Answer: (c) Because their bodies support both their own needs and those of the growing child**

The correct answer is 'Option 3'.

Key Points

• Option 3: Because their bodies support both their own needs and those of the growing child

• The passage explicitly states: "Pregnant and lactating mothers require additional calcium, as their bodies support not only their own needs but also those of the growing child."

• During pregnancy, the mother's body must provide enough calcium to develop the skeletal system of the fetus.

• During lactation (breastfeeding), the mother loses calcium through her milk, which is essential for the infant's bone growth and development.

• Option 1: Because they eat less food

• This is incorrect. The passage does not mention food quantity for mothers, but rather the increased nutritional demand placed on their bodies.

• Option 2: Because of their role in household work

• This is incorrect. While physical activity can influence health, the passage links the need for calcium to biological support for the child, not physical labor.

• Option 4: Because they avoid dairy products

• This is incorrect. The passage suggests that a lack of dairy products contributes to deficiency, but it does not say that mothers specifically avoid them.

Therefore, the correct answer is Option 3.

Additional Information

• Calcium and Bone Density: If a mother does not consume enough calcium, her body will actually leach calcium from her own bones to provide for the baby, increasing her risk of osteoporosis later in life.

• Lactation: A lactating mother provides approximately 200–300 mg of calcium per day to her infant through breast milk, making daily replenishment critical.

• Nutritional Synergy: Vitamin D is often required alongside calcium to ensure the body can effectively absorb the mineral into the bones.

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