SSC MTS 2025 Official Paper (Held On: 09 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. 47 + 58 - 39 + 66 × 2 - (29 + 12) = ?

(a) 157
(b) 159
(c) 161
(d) 163

Q2. 71 + 36 - (28 + 14) + 95 - 53 + 24 = ?

(a) 131
(b) 133
(c) 135
(d) 137

Q3. 91 + (28 × 1) - 34 + 29 + 17 ÷ 1 - 26 = ?

(a) 105
(b) 107
(c) 109
(d) 111

Q4. A 40-litres mixture of acid and water contains acid and water in the ratio 3:1. 8 litres of this mixture is removed and replaced with another solution of acid and water in the ratio 1:3. What is the final ratio of acid to water in the resulting mixture?

(a) 1:1
(b) 13:7
(c) 13:5
(d) 5:3

Q5. Rajesh purchases 30 dozen pens at a rate of Rs 475 per dozen. He sells each pen for Rs 66. What is his total profit or loss percentage?

(a) 66.73%
(b) 65.78%
(c) 64.73%
(d) 56.64%

Q6. If a:b=3:4 and b:c=5:7, find the ratio a:c.

(a) 15:28
(b) 12:21
(c) 10:21
(d) 9:14

Q7. A student was supposed to multiply a number by 19/18 but instead multiplied it by 9/8. Find the percentage error in the student's calculation.

(a) 7.58%
(b) 8.58%
(c) 5.58%
(d) 6.58%

Q8. A and B start a business with investments of Rs. 18,000 and Rs. 24,000, respectively. If the profit-sharing ratio is 3 : 4, determine the ratio of the time periods for which A and B invested.

(a) 1 : 1
(b) 2 : 5
(c) 11 : 17
(d) 7 : 9

Q9. A square field has an area equal to that of a rectangle of dimensions 36 m × 49 m. Find the side of the square.

(a) 52 meters
(b) 22 meters
(c) 32 meters
(d) 42 meters

Q10. A three-digit number is such that the sum of the number and its square root is 132. Find the number.

(a) 111
(b) 101
(c) 121
(d) 123

Q11. A man spends 83% of his income. If his income increases by 23% and his expenditure increases by 13%, find the percentage increase in his savings.

(a) 61.82%
(b) 67.82%
(c) 71.82%
(d) 77.82%

Q12. Which of the following is greater than 84/108 ?

(a) 42/60
(b) 70/80
(c) 14/25
(d) 21/40

Q13. 10.5 - (9.75 - 4.25 - 3.50) = ?

(a) 8.0
(b) 7.75
(c) 8.5
(d) 8.25

Q14. The product of two consecutive odd numbers is 323. What is the sum of the two numbers?

(a) 36
(b) 34
(c) 38
(d) 30

Q15. The sum of a positive number and its square is 90. What is the value of the number?

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

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(d) 6

Q16. Which of the following number is NOT divisible by 4?

(a) 4844
(b) 4732
(c) 4612
(d) 4951

Q17. Which of the following number is divisible by both 3 and 4?

(a) 8235
(b) 8491
(c) 10320
(d) 7582

Q18. Average of first 'N' even natural numbers is 55. What is the value of 'N'?

(a) 54
(b) 56
(c) 52
(d) 50

Q19. Average of 30 observations is 60. Average of first 15 observations is 62. Average of last 16 observations is 55. What is the value of 15^(th) observation?

(a) 14
(b) 7
(c) 10
(d) 12

Q20. What will be the average of all the odd natural numbers between 6 and 44 ?

(a) 25
(b) 20
(c) 15
(d) 28

Q21. A series is given with one term wrong. Select the wrong term from the given alternatives.

-203, -206, -209, -212, -215, -218, -221, -226

(a) -226
(b) -215
(c) -206
(d) -212

Q22. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

Z, T, ?, G, Z, T, M, G, Z

(a) P
(b) K
(c) L
(d) M

Q23. Select the option that is related to the fifth letter cluster in the same way as the second letter cluster is related to the first letter cluster and fourth letter cluster is related to third letter cluster.

VD : EW :: GM : TN :: KB : ?

(a) NW
(b) PW
(c) MY
(d) PY

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

EY, HB, MF, PI, UM, XP, ?, FW

(a) ET
(b) CS
(c) CT
(d) FR

Q25. Select the option that is related to the third letter cluster in the same way as the second letter cluster is related to the first letter cluster and sixth letter cluster is related to fifth letter cluster.

EP : BK :: RK : ? :: UC : RX

(a) OI
(b) OF
(c) PG
(d) MF

Q26. 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.

(LU, OX, RA)

(WX, ZA, CD)

(a) (DQ, HS, KX)
(b) (AE, EG, HN)
(c) (BH, EK, HN)
(d) (AO, FP, IX)

Q27. If 27 May 2024 is a Sunday, then what day will 28 November 2024 be?

(a) Thursday
(b) Wednesday
(c) Friday
(d) Tuesday

Q28. The calendar for the year 1986 will be the same as which of the following years?

(a) 1998
(b) 2010
(c) 1997
(d) 2019

Q29. A person was born on 3 October 2019. What day of the week will be on his 6th birthday?

(a) Thursday
(b) Friday
(c) Wednesday
(d) Saturday

Q30. 5 boys P, Q, R, S and T are sitting in a row facing north (not necessarily in the same order). Q and R are immediate neighbours. S and R are immediate neighbours. Only P is to the left of Q. Who is sitting in the middle of the row?

(a) Q
(b) S
(c) R
(d) T

Q31. 7 males A, B, C, D, E, F and G are sitting in a row facing north (not necessarily in the same order). Only four males are to the left of A. B is the immediate neighbour of A and C. D is third to the left of E. F is not the immediate neighbour of E. What is the position of F from the right end of the row?

(a) Fifth

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(b) Fourth
(c) Sixth
(d) Seventh

Q32. 7 males A, B, C, D, E, F and G are sitting in a row facing north (not necessarily in the same order). Only four males are to the left of A. B is the immediate neighbour of A and C. D is third to the left of E. F is not the immediate neighbour of E. What is the position of D from the left end of the row?

(a) First
(b) Fourth
(c) Fifth
(d) Second

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

? : AD200 :: WK500 : UG300 :: TO700 : RK500

(a) DH300
(b) CH400
(c) HD400
(d) CG300

Q34. 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)

ADK10 : ZCJ110 :: BLP60 : AKO160 :: ? : RIL190

(a) QHK90
(b) HKQ90
(c) SJM90
(d) JSS90

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)

5165 : 5113 :: 8326 : 8274 :: 1671 : ?

(a) 1622
(b) 1619
(c) 1612
(d) 1618

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

948 : 472 :: 702 : ? :: 600 : 298

(a) 341
(b) 353
(c) 349
(d) 343

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Q37. In a certain code language, ‘SEVEN’ is coded as ‘19522514’ and ‘EIGHT’ is coded as ‘597820’. How will ‘GAME’ be coded in that code language?

(a) 57113
(b) 13715
(c) 71315
(d) 71135

Q38. In a certain coded language 'CAPUT' is coded as 'DCSQO' and 'ADOBO' is coded as 'BFRXJ'. How will 'DESKS' be coded in the same code language?

(a) CFTHN
(b) FEXHN
(c) EGVGN
(d) DIVHP

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

CD100, EH214, GM328, IP442, KT556, MX670

(a) MX670
(b) CD100
(c) GM328
(d) EH214

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

MPL50, OMP320, QJT590, SGX860, UDB1130, UZG1400

(a) OMP320
(b) UDB1130
(c) SGX860
(d) UZG1400

SESSION 2

Q41. What are the products in a reaction where an acid reacts with a base?

(a) Acid and water
(b) Base and water
(c) Salt and water
(d) Gas and water

Q42. Training of Rural Youth for Self-Employment (TRYSEM) was initiated in which year?

(a) 1965
(b) 1971
(c) 1979
(d) 1983

Q43. Which among the following gland in human body is located in lowermost part of body?

(a) Pineal gland
(b) Pituitary gland
(c) Thyroid gland
(d) Adrenal gland

Q44. Who among the following kings acquired the title of ‘Dakshinapatheshvara’ (lord of the south)?

(a) Upagupta
(b) Kharavela
(c) Pulakesin II
(d) Mahapadma Nanda

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Q45. 'Jhanjhar' is a popular dance of which of the following Indian state?

(a) Jharkhand
(b) Madhya Pradesh
(c) Maharashtra
(d) Himachal Pradesh

Q46. The 'International Kite Festival' in Gujarat coincides with which festival?

(a) Holi
(b) Diwali
(c) Krishna Janmashtami
(d) Makar Sankranti

Q47. Who was one of Sirajuddaulah's commander that played a significant role in the Sirajuddaulah's defeat at the Battle of Plassey?

(a) Alivardi Khan
(b) Mir Jafar
(c) Mulla Qutb Shah
(d) Jagat Seth

Q48. Which of the following gas is used as fuels in vehicles these days?

(a) Compressed natural gas
(b) Nitrogen gas
(c) Liquefied petroleum gas
(d) Helium gas

Q49. The International Space Station is a large space station in low earth orbit at about ____ Km from the Earth surface.

(a) 400
(b) 1000
(c) 5000
(d) 22000

Q50. The total number of women contesting general elections in the country has increased to ____ in 2024.

(a) 10%
(b) 14%
(c) 16%
(d) 21%

Q51. 'FireSat', a satellite put into orbit by Elon Musk's SpaceX, is backed by which tech company?

(a) Apple
(b) Google
(c) Amazon
(d) Infosys

Q52. Why does a paper cup not burn when filled with water and heated?

(a) The water evaporates and cools the paper
(b) The water absorbs the heat, preventing the paper from reaching its ignition temperature
(c) The paper becomes fireproof when wet
(d) The water creates steam, which extinguishes the flame

Q53. Which of the following economic activity is included in the primary sector?

(a) Trade and logistics
(b) Healthcare
(c) Manufacturing
(d) Fishing

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Q54. India qualified for the ____ FIFA World Cup in Brazil but AIFF refused to send a team citing 'disagreements over team selection and insufficient practice time.

(a) 1942
(b) 1962
(c) 1950
(d) 1954

Q55. Which of the following activity is responsible for disturbance of the balance between the process of soil formation and soil erosion?

(a) Deforestation
(b) Afforestation
(c) Organic farming
(d) Intercropping

Q56. The National Capital Goods Policy in India was launched in ____.

(a) 2013
(b) 2016
(c) 2019
(d) 2021

Q57. Who is the author of the book ‘The Day I Stopped Drinking Milk’, a collection of heartfelt episodes for young adults?

(a) Sudha Murty
(b) Chetan Bhagat
(c) Anita Desai
(d) Samit Basu

Q58. ‘Shakti: The Divine Feminine’ is written by _____.

(a) Rupa Bajwa
(b) Sudha Murty
(c) Arundhati Roy
(d) Anuja Chandramouli

Q59. "Ankle hold", "Knee hold" are the term related to which of the following sports?

(a) Basketball
(b) Gymnastics
(c) Swimming
(d) Kabaddi

Q60. FX-CLEAR, a forex dealing system, which was launched by Clearcorp on August 7, _____.

(a) 2003
(b) 2005
(c) 2007
(d) 2009

Q61. Where is the 'Thousand Pillar' Temple located?

(a) Punjab
(b) Kerala
(c) Gujarat
(d) Telangana

Q62. Where is the tomb of Sher Shah Suri located?

(a) Sikandra
(b) Sasaram
(c) Lahore
(d) Aurangabad

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Q63. In a compound like water, the mass ratio of hydrogen to oxygen is always _____.

(a) 1:14
(b) 1:8
(c) 1:2
(d) 8:1

Q64. Dmitri Mendeleev was unable to assign the correct position to which element?

(a) Helium
(b) Hydrogen
(c) Oxygen
(d) Chlorine

Q65. M.S. Subbulakshmi is the first ____ with the Bharat Ratna in 1998.

(a) musicians
(b) sportsperson
(c) painter
(d) author

Q66. Which of the following idioms given in the alternatives has the meaning?

To change or reverse something dramatically.

(a) Turn the tide
(b) Buck the tide
(c) Swim with the tide
(d) Tide one over

Q67. From the alternatives given below, select the correct meaning of the idiom.

Tick all the boxes.

(a) To irritate everyone unnecessarily
(b) Take all the belongings to a tour
(c) Get all the grocery items
(d) To satisfy or fulfill everything that is necessary or desired

Q68. Choose the correctly spelt word from the given options.

(a) Excesive
(b) Exessive
(c) Excessive
(d) Exccessive

Q69. 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 pernacious effects of smoking often remain hidden until it’s too late.

(a) pernicious
(b) pernecious
(c) pernicius
(d) No replacement required

Q70. Choose the word that is most opposite in meaning to “destruction”.

(a) Preservation
(b) Devastation
(c) Ruin
(d) Damage

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Q71. Choose the word that is the antonym of Immigration.

(a) Influx
(b) Emigration
(c) Entry
(d) Arrival

Q72. Choose the correct word to complete the sentence.

The writer often used clever ____ to hint at deeper meanings.

(a) allusions
(b) illusions
(c) elusions
(d) delusions

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

A person who is well known for their bad deeds.

(a) Indolent
(b) Versatile
(c) Eminent
(d) Notorious

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

A mental condition where a person feels an uncontrollable urge to steal.

(a) Pyromania
(b) Kleptomania
(c) Bibliomania
(d) Anglomania

Q75. Which of the following options is the most suitable conversion of the following sentence into Passive Voice?

Had they submitted the final report by the time the director arrived?

(a) Was the final report submitted by them by the time the director arrived?
(b) Had the final report been submitted by them by the time the director arrived?
(c) Had the final report submitted by them by the time the director arrived?
(d) Has the final report been submitted by them by the time the director arrived?

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

How does the detective identify the culprit so easily?

(a) How is the culprit identified by the detective so easily?
(b) How does the culprit identified by the detective so easily?
(c) How do the culprit identified by the detective so easily?
(d) How will the culprit identified by the detective so easily?

Q77. Which of the following options is the most suitable conversion of the following sentence into active voice?

The heritage manuscripts are preserved by the National Archives for future generations.

(a) The National Archives preserves the heritage manuscripts for future generations.
(b) The National Archives has preserved the heritage manuscripts for future generations.
(c) The National Archives preserved the heritage manuscripts for future generations.
(d) The National Archives is preserving the heritage manuscripts for future generations.

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

Why weren’t the authorities intimated about the theft?

(a) Why didn’t they intimate the authorities about the theft?
(b) Why haven’t they intimated the authorities about the theft?
(c) Why don’t they intimate the authorities about the theft?
(d) Why hasn’t anyone intimated the authorities about the theft?

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Q79. Select the correct alternative to fill in the blank with the correct preposition in the following sentence.

You will find the mosque _____ the right walking straight along this road.

(a) on
(b) in
(c) at
(d) by

Q80. 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 committee concluded that the measures suggested were conducive in bring stability in the financial system.

(a) conducive of bringing stability in
(b) conducive for bringing stability into
(c) conducive to bringing stability to
(d) No improvement required

Q81. Select the correct alternative to fill in the blank with the correct preposition in the following sentence.

We discussed the reaction of the farmers _____ the new policy at length.

(a) for
(b) about
(c) in
(d) to

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. As I was yesterday taking the air with my friend Sir Roger, we were met by a fresh-coloured ruddy young man who rid by us full speed, with a couple of servants behind him.

A. She is a very good lady, says my friend, but took so much care of her son's health that she has made him good for nothing.

B. He was let loose among the woods as soon as he was able to ride on horseback or to carry a gun upon his shoulder.

C. She quickly found that reading was bad for his eyes and that writing made his headache.

D. Upon my inquiry who he was, Sir Roger told me that he was a young gentleman of a considerable estate who had been educated by a tender mother that lived not many miles from the place where we were.

S2. To be brief, I found, by my friend's account of him, that he had got a great stock of health, but nothing else; and that if it were a man's business only to live, there would not be a more accomplished young fellow in the whole country.

(a) ACBD
(b) DACB
(c) CBDA
(d) DCAB

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. While speaking he gradually held the watch nearer till it almost touched the child's pale face, which plainly showed the struggle that was going on in his soul between covetousness and respect for hospitality.

A. Meanwhile, the watch was slowly swaying and turning, sometimes brushing against his cheek.

B. The face was light blue; the cases newly burnished.

C. Finally, his right hand was gradually stretched toward it; the ends of his fingers touched it; then its whole weight

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was in his hand, the adjutant still keeping hold of the chain.

D. His breast swelled with emotion; he seemed about to suffocate.

S2. In the sunlight it seemed to be all on fire.

(a) DABC
(b) ADCB
(c) DACB
(d) BDAC

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. The procession was coming from the church in a continuous stream, breaking up into groups at the square.

A. They were: Giovanni Curo, ?Ummalido, Mattao, Vincenzo Guanno, Rocco di Ceuzo, Benedette Gallante, Biagio di Clisci, and Giovanni Senzapaura.

B. They presented a powerful group, as they stood there, ears pierced by dangling gold earrings and eyes bright with the gleam of religious fanaticism.

C. Before the altar, from which Pantaleone had been so recently dethroned, stood eight men, chosen to the rare privilege of raising the statue of St. Gonselvo.

D. Speechless they stood, conscious of their important duty, and somewhat agitated.

S2. Now and then they would feel their biceps and pulse as if to try their strength, and sometimes a faint smile would flit over their faces.

(a) CBDA
(b) DACB
(c) ACBD
(d) CADB

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.

He figured that to find a decent drum he had to go to a large flea market that is in a major city and usually gives place on weekends.

(a) He figured that to find a decent
(b) drum he had to go to a large flea
(c) market that is in a major city and
(d) usually gives place on weekends.

Directions

Novels are a diverse and expansive category of fiction characterized by lengthy narratives that explore various themes, characters, and plots. Among the many types of novels, certain genres stand out due to their popularity and distinctive features.

The mystery novel centers on a crime committed at the beginning of the story, usually a murder or theft. The narrative unfolds as characters seek to discover who committed the crime. In contrast, thriller novels focus on preventing a future crime, building suspense as protagonists race against time to stop devastating events. Both genres intrigue readers but from different narrative perspectives.

The romance novel is dedicated to exploring the development of a romantic relationship. Typically, the story involves obstacles that lovers must overcome to reach a happy or emotionally satisfying ending. The science fiction novel transports readers to futuristic or imaginative worlds, incorporating advanced technology, space exploration, or alien life forms to explore human experience in speculative contexts.

Other types include the psychological novel, which delves into the mental and emotional states of characters, often highlighting internal conflicts intertwined with thriller elements. The proletarian novel represents the working class's daily life, offering social or moral commentary without fantasy elements.

Each novel type serves a unique purpose, catering to diverse reader interests and reflecting different aspects of human nature and society.

Q86. Identify the voice of the sentence.

"The narrative unfolds as characters seek to discover who committed the crime."

(a) Causative voice
(b) Reflexive voice
(c) Active voice
(d) Passive voice

Q87. What does the word "proletarian" most nearly mean as used in the passage?

(a) Related to science and technology
(b) Focused on romantic relationships
(c) Involving working-class life and social issues
(d) Concentrating on futuristic imagination

Q88. The word "speculative" in the phrase "speculative contexts" most nearly means _____.

(a) based on facts and reality
(b) involving careful financial investments
(c) detailed and comprehensive research
(d) imaginary or theoretical, not yet proven

Q89. In the sentence "Both genres intrigue readers but from different narrative perspectives."

What is "intrigue"?

(a) Noun
(b) Verb
(c) Adjective
(d) Pronoun

Q90. According to the passage, how do mystery and thriller novels mainly differ?

(a) Mysteries look back at a crime already committed; thrillers look forward to preventing a future crime.
(b) Mysteries focus on romance; thrillers focus on technology.
(c) Both genres are concerned with romance and happy endings.
(d) Thrillers always feature aliens and futuristic settings, mysteries do not.

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) 157

Shortcut Trick

Solve the bracket and multiplication first: (29 + 12) = 41 and 66 × 2 = 132.

Group the expression: (47 + 58 + 132) − (39 + 41).

Sum of positive terms = 237 and sum of negative terms = 80.

Final calculation: 237 − 80 = 157.

Therefore The correct answer is 157.

Alternate Method

Given expression: 47 + 58 − 39 + 66 × 2 − (29 + 12)

Formula: Follow the BODMAS rule (Brackets, Of, Division, Multiplication, Addition, Subtraction).

=> 47 + 58 − 39 + 66 × 2 − 41

=> 47 + 58 − 39 + 132 − 41

=> 105 − 39 + 132 − 41

=> 66 + 132 − 41

=> 198 − 41

=> 157

Therefore The correct answer is 157.

Additional Information

VBODMAS Rule

It stands for Vinculum, Bracket, Of, Division, Multiplication, Addition, and Subtraction. It defines the order of priority for mathematical operations.

Types of Brackets

Always solve in the order: Small brackets (), then Curly brackets { }, then Square brackets [].

Signs Property

(+) × (−) = −, (−) × (−) = +, and (+) × (+) = +.

Q2. Answer: (a) 131

Shortcut Trick

Combine positive and negative numbers separately to simplify calculation.

Sum of positive terms: 71 + 36 + 95 + 24 = 226

Sum of negative terms: −(28 + 14) − 53 = −42 − 53 = −95

Final Result: 226 − 95 = 131

Therefore The correct answer is 131.

Alternate Method

Given expression: 71 + 36 − (28 + 14) + 95 − 53 + 24

Method: Follow the BODMAS rule (solve brackets first, then addition and subtraction from left to right).

=> 71 + 36 − 42 + 95 − 53 + 24

=> 107 − 42 + 95 − 53 + 24

=> 65 + 95 − 53 + 24

=> 160 − 53 + 24

=> 107 + 24

=> 131

Therefore The correct answer is 131.

Additional Information

BODMAS/VBODMAS Rule

It defines the order of operations: Vinculum, Brackets, Of, Division, Multiplication, Addition, and Subtraction.

Subtraction of Brackets

When a minus sign precedes a bracket, the sign of every term inside the bracket changes upon opening: −(a + b) = −a − b.

Left-to-Right Rule

In expressions containing only addition and subtraction, operations should be performed sequentially from left to right to maintain accuracy.

Q3. Answer: (a) 105

Shortcut Trick

Identify identity operations (multiplication or division by 1) to simplify immediately.

Expression becomes: 91 + 28 − 34 + 29 + 17 − 26

Group positive and negative values: (91 + 28 + 29 + 17) − (34 + 26)

Calculate: 165 − 60 = 105

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Therefore The correct answer is 105.

Alternate Method

Given: 91 + (28 × 1) − 34 + 29 + 17 ÷ 1 − 26

Apply BODMAS rule (Bracket, Orders, Division, Multiplication, Addition, Subtraction):

=> 91 + 28 − 34 + 29 + 17 − 26 (Solving bracket and division steps)

=> 119 − 34 + 29 + 17 − 26

=> 85 + 29 + 17 − 26

=> 114 + 17 − 26

=> 131 − 26

=> 105

Therefore The correct answer is 105.

Additional Information

BODMAS/VBODMAS Rule

It establishes the order of operations: Vinculum, Brackets, Of, Division, Multiplication, Addition, and Subtraction.

Multiplicative and Divisive Identity

The number 1 is the multiplicative identity because any number multiplied by 1 or divided by 1 remains unchanged: n × 1 = n and n ÷ 1 = n.

Grouping Technique

In long addition/subtraction, results are achieved faster by summing all positive terms and all negative terms separately before the final subtraction.

Q4. Answer: (b) 13:7

Shortcut Trick

Remaining mixture volume = 40 − 8 = 32 litres.

Acid in remaining = 32 × (3/4) = 24 litres and Water = 8 litres.

Acid in added 8 litres (1:3 ratio) = 8 × (1/4) = 2 litres.

Water in added 8 litres (1:3 ratio) = 8 × (3/4) = 6 litres.

Total Acid = 24 + 2 = 26 litres | Total Water = 8 + 6 = 14 litres.

Final Ratio = 26 : 14 = 13 : 7.

Therefore The correct answer is 13:7.

Alternate Method

Given:

Initial volume = 40 litres | Initial Ratio (A:W) = 3 : 1

Removed volume = 8 litres | Replacement Ratio (A:W) = 1 : 3

Calculations:

=> Total initial units = 3 + 1 = 4 units

=> 4 units = 40 litres => 1 unit = 10 litres

=> Remaining mixture = 40 − 8 = 32 litres

=> Acid in 32 litres = (3/4) × 32 = 24 litres

=> Water in 32 litres = (1/4) × 32 = 8 litres

=> Volume of new solution added = 8 litres (Ratio 1 : 3)

=> Acid added = (1/4) × 8 = 2 litres

=> Water added = (3/4) × 8 = 6 litres

=> Final Acid = 24 + 2 = 26 litres

=> Final Water = 8 + 6 = 14 litres

=> Final Ratio = 26 : 14 = 13 : 7

Therefore The correct answer is 13:7.

Additional Information

Rule of Alligation

It relates the quantities of two ingredients mixed in a specific ratio to produce a mixture of a desired price or concentration: (Cheaper Qty / Dearer Qty) = (Dearer Rate − Mean Rate) / (Mean Rate − Cheaper Rate).

Repeated Replacement Formula

If x units are removed from V units of mixture and replaced by water n times, final concentration of original liquid is: $C_{final} = C_{initial} \times [1 - (x/V)]^n$.

Mixture Ratio Invariance

When a portion of a mixture is removed, the ratio of ingredients in the remaining portion and the removed portion remains the same as the original ratio.

Q5. Answer: (a) 66.73%

Shortcut Trick

CP of 1 dozen = Rs. 475

SP of 1 dozen = 12 × Rs. 66 = Rs. 792

Profit = 792 − 475 = Rs. 317

Profit % = (317 ÷ 475) × 100 = 66.736...% ≈ 66.73%

Therefore The correct answer is 66.73%.

Alternate Method

Given:

Total quantity = 30 dozen

Cost Price (CP) = Rs. 475 per dozen

Selling Price (SP) = Rs. 66 per pen

Formula Used:

Total Profit = Total SP − Total CP

Profit % = (Total Profit ÷ Total CP) × 100

=> Total Cost Price = 30 × 475 = Rs. 14,250

=> Total pens = 30 × 12 = 360 pens

=> Total Selling Price = 360 × 66 = Rs. 23,760

=> Total Profit = 23,760 − 14,250 = Rs. 9,510

=> Profit % = (9,510 ÷ 14,250) × 100

=> Profit % = 0.66736... × 100 = 66.736...% ≈ 66.73%

Therefore The correct answer is 66.73%.

Additional Information

Profit and Loss Percentage

Profit or loss is always calculated on the Cost Price (CP) unless stated otherwise. Profit % = (P/CP) × 100 and Loss % = (L/CP) × 100.

Quantity Independent Percentage

The profit or loss percentage remains constant regardless of the total quantity (dozen or units) as long as the CP and SP per unit are fixed.

Successive Profit/Loss

If an item is sold through multiple parties, the effective profit is given by a + b + (a × b)/100, where a and b are successive percentages.

Q6. Answer: (a) 15:28

Shortcut Trick

To find the ratio of the first term to the last term, multiply the given ratios directly.

a/c = (a/b) × (b/c)

a/c = (3/4) × (5/7)

a/c = (3 × 5) / (4 × 7) = 15/28

Therefore The correct answer is 15:28.

Alternate Method

Given:

a : b = 3 : 4

b : c = 5 : 7

Formula Used:

To combine a:b and b:c, multiply the ratios such that the common term 'b' is eliminated or equalized.

Calculations:

=> a/b = 3/4

=> b/c = 5/7

=> (a/b) × (b/c) = (3/4) × (5/7)

=> a/c = (3 × 5) / (4 × 7)

=> a/c = 15 / 28

=> a : c = 15 : 28

Therefore The correct answer is 15:28.

Additional Information

Compound Ratio

For ratios a:b and c:d, the compound ratio is (a × c) : (b × d).

Combined Ratio (a:b:c)

To find a:b:c, equalize 'b' by multiplying the first ratio by the 'b' value of the second, and the second ratio by the 'b' value of the first. Here, a:b:c = (3×5) : (4×5) : (4×7) = 15 : 20 : 28.

Duplicate Ratio

The duplicate ratio of a:b is $a^2 : b^2$.

Q7. Answer: (d) 6.58%

Shortcut Trick

Let the base number be 72 (LCM of 18 and 8).

Correct result = 72 × 19/18 = 76 units.

Wrong result = 72 × 9/8 = 81 units.

Error % = [(81 − 76) ÷ 76] × 100 = (5 ÷ 76) × 100 ≈ 6.58%.

Therefore The correct answer is 6.58%.

Alternate Method

Given:

Correct multiplier = 19/18

Wrong multiplier = 9/8

Formula:

Percentage Error = [(Wrong Value − Correct Value) ÷ Correct Value] × 100

Calculations:

=> Let the number be x = 72

=> Correct Result = 72 × (19/18) = 76

=> Incorrect Result = 72 × (9/8) = 81

=> Absolute Error = 81 − 76 = 5

=> Percentage Error = (5 ÷ 76) × 100

=> Percentage Error = 500 ÷ 76 ≈ 6.5789%

=> Percentage Error ≈ 6.58%

Therefore The correct answer is 6.58%.

Additional Information

Percentage Error Definition

Percentage error is the difference between an approximate or measured value and an exact or known value, expressed as a percentage of the exact value.

Denominator Selection

In error calculations, the denominator must always be the original or correct value, not the mistaken one.

Rounding Off Rules

If the third decimal digit is 5 or greater, the second decimal digit is increased by 1 (e.g., 6.578... becomes 6.58).

Q8. Answer: (a) 1 : 1

Shortcut Trick

Investment Ratio of A and B = 18,000 : 24,000 = 3 : 4

Given Profit Ratio of A and B = 3 : 4

Since Profit = Investment × Time => Time = Profit ÷ Investment

Ratio of Time Periods = (3 ÷ 3) : (4 ÷ 4) = 1 : 1

Therefore The correct answer is 1 : 1.

Alternate Method

Given:

Investment of A (C1) = Rs. 18,000

Investment of B (C2) = Rs. 24,000

Profit Sharing Ratio (P1 : P2) = 3 : 4

Formula Used:

Profit Ratio = (Investment1 × Time1) : (Investment2 × Time2)

Calculations:

=> Let the time periods for A and B be T_A and T_B respectively.

=> P_A / P_B = (C_A × T_A) / (C_B × T_B)

=> 3 / 4 = (18000 × T_A) / (24000 × T_B)

=> 3 / 4 = (3 × T_A) / (4 × T_B)

=> (3 / 4) × (4 / 3) = T_A / T_B

=> T_A / T_B = 1 / 1

=> T_A : T_B = 1 : 1

Therefore The correct answer is 1 : 1.

Additional Information

Fundamental Law of Partnership

Profit is always directly proportional to the product of capital invested and the duration of investment. Formula: P1 : P2 = C1T1 : C2T2.

Finding Unknown Investment/Time

Ratio of Capitals (C1 : C2) = (P1/T1) : (P2/T2) and Ratio of Time (T1 : T2) = (P1/C1) : (P2/C2).

Active vs. Sleeping Partner

An active partner manages the business and may receive a salary or fixed % of profit before the remaining profit is shared according to investment ratios.

Q9. Answer: (d) 42 meters

Shortcut Trick

Area of square = Area of rectangle

Side² = 36 × 49

Side = √(36 × 49)

Side = 6 × 7 = 42 meters

Therefore The correct answer is 42 meters.

Alternate Method

Given: Dimensions of rectangle = 36 m × 49 m

Formula: Area of rectangle = Length × Breadth; Area of square = Side²

=> Area of Rectangle = 36 × 49 = 1764 m²

=> According to the question, Area of Square = 1764 m²

=> Side² = 1764

=> Side = √1764

=> Side = 42 meters

Therefore The correct answer is 42 meters.

Additional Information

Area of Square and Rectangle

Area of a square is calculated as (side)² while area of a rectangle is length × breadth.

Perimeter formulas

Perimeter of square = 4 × side, and Perimeter of rectangle = 2 × (length + breadth).

Diagonal of Square

The diagonal of a square with side 's' is given by s√2.

Q10. Answer: (c) 121

Shortcut Trick

For the sum of a number and its square root to be an integer (132), the number must be a perfect square.

Perfect squares around 132 are 100 (10^2), 121 (11^2), and 144 (12^2).

Testing 121: 121 + √121 = 121 + 11 = 132.

This satisfies the condition and is a three-digit number.

Therefore The correct answer is 121.

Alternate Method

Given:

A three-digit number such that Number + √Number = 132.

Formula Used:

Let the number be x. The equation is x + √x = 132.

Calculations:

=> Let √x = y

=> $y^2 + y = 132$

=> $y^2 + y - 132 = 0$

=> $y^2 + 12y - 11y - 132 = 0$

=> $y(y + 12) - 11(y + 12) = 0$

=> $(y - 11)(y + 12) = 0$

=> y = 11 (Since square root cannot be negative for a real number sum to 132)

=> $x = y^2 = 11^2$

=> x = 121

Therefore The correct answer is 121.

Additional Information

Perfect Squares

A perfect square is an integer that is the square of an integer; for example, 121 is a perfect square because it is 11 × 11.

Quadratic Formula

For a quadratic equation $ax^2 + bx + c = 0$, the roots are given by $x = (-b \pm \sqrt{(b^2 - 4ac)}) \div 2a$.

Consecutive Integers Product

The equation $y^2 + y = k$ is equivalent to $y(y + 1) = k$, meaning k is the product of two consecutive integers.

Q11. Answer: (c) 71.82%

Shortcut Trick

Ratio of Savings : Expenditure = 17 : 83 (Total Income = 100)

Net Change × Total = (S% × S-ratio) + (E% × E-ratio)

23 × 100 = (x × 17) + (13 × 83)

2300 = 17x + 1079 => 17x = 1221 => x = 71.82%

Therefore The correct answer is 71.82%.

Alternate Method

Given:

Expenditure = 83% of Income

Income increase = 23%

Expenditure increase = 13%

Formula:

Income = Expenditure + Savings

Percentage Increase = [(New Value − Old Value) ÷ Old Value] × 100

=> Let Initial Income = Rs. 100

=> Initial Expenditure = Rs. 83 and Initial Savings = 100 − 83 = Rs. 17

=> New Income = 100 + 23% of 100 = Rs. 123

=> New Expenditure = 83 + 13% of 83 = 83 + 10.79 = Rs. 93.79

=> New Savings = 123 − 93.79 = Rs. 29.21

=> Increase in Savings = 29.21 − 17 = Rs. 12.21

=> Percentage Increase = (12.21 ÷ 17) × 100 = 71.8235... ≈ 71.82%

Therefore The correct answer is 71.82%.

Additional Information

Income-Expenditure Balance

Income is always the sum of Expenditure and Savings. Any change in Income must be balanced by the sum of changes in Expenditure and Savings: $\Delta I = \Delta E + \Delta S$.

Percentage Increase Formula

The percentage change is calculated as: % Change = (Difference ÷ Original Value) × 100.

Weighted Average Application

In problems involving components, Total % Change = (w1r1 + w2r2) ÷ (w1 + w2), where w is the weight (initial value) and r is the rate of change.

Q12. Answer: (b) 70/80

Shortcut Trick

Simplify the given fraction: 84/108 = 7/9 (dividing by 12).

Convert 7/9 to decimal: 7 ÷ 9 ≈ 0.777.

Check 70/80: 70/80 = 7/8 = 0.875.

Comparison: 0.875 > 0.777.

Therefore The correct answer is 70/80.

Alternate Method

Given Fraction: 84/108

Options: (1) 42/60, (2) 70/80, (3) 14/25, (4) 21/40

=> Step 1: Simplify 84/108 = (84 ÷ 12) / (108 ÷ 12) = 7/9 ≈ 0.777

=> Step 2: Simplify Option (1) 42/60 = (42 ÷ 6) / (60 ÷ 6) = 7/10 = 0.700

=> Step 3: Simplify Option (2) 70/80 = 7/8 = 0.875

=> Step 4: Simplify Option (3) 14/25 = (14 × 4) / (25 × 4) = 56/100 = 0.560

=> Step 5: Simplify Option (4) 21/40 = 0.525

=> Compare values: 0.875 > 0.777

Therefore The correct answer is 70/80.

Additional Information

Comparing Fractions with Same Numerators

If numerators are equal, the fraction with the smaller denominator is larger. Example: 7/8 > 7/9.

Cross-Multiplication Method

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

Fraction to Percentage Conversion

Multiplying a fraction by 100 gives its percentage equivalent, which is easy to compare (e.g., 7/8 = 87.5% and 7/9 = 77.7%).

Q13. Answer: (c) 8.5

Shortcut Trick

Group negative values inside the bracket: (9.75 − (4.25 + 3.50))

Subtract the sum: 9.75 − 7.75 = 2.0

Perform the final operation: 10.5 − 2.0 = 8.5

Therefore The correct answer is 8.5.

Alternate Method

Given expression: 10.5 − (9.75 − 4.25 − 3.50)

Method: Apply BODMAS rule (solve brackets first, moving from left to right inside the bracket).

=> 10.5 − (5.50 − 3.50)

=> 10.5 − 2.0

=> 8.5

Therefore The correct answer is 8.5.

Additional Information

VBODMAS Rule

Simplification follows the order: Vinculum, Bracket, Of, Division, Multiplication, Addition, and Subtraction.

Negative Sign Impact

A negative sign outside a bracket reverses the signs of the terms inside when the bracket is removed: − (a − b − c) = − a + b + c.

Decimal Subtraction

When subtracting decimals, align the decimal points vertically and add placeholder zeros if necessary to maintain consistent place values.

Q14. Answer: (a) 36

Shortcut Trick

The product of two consecutive odd numbers is equal to (Middle Even Number)² − 1.

Middle Even Number = √(Product + 1) = √(323 + 1) = √324 = 18.

Sum of the two numbers = 2 × Middle Even Number = 2 × 18 = 36.

Therefore The correct answer is 36.

Alternate Method

Given: Product of consecutive odd numbers = 323.

Formula: Let the two consecutive odd numbers be (x − 1) and (x + 1), where x is the middle even number.

=> (x − 1) × (x + 1) = 323

=> $x^2 - 1 = 323$

=> $x^2 = 324$

=> x = √324 = 18

=> First number = 18 − 1 = 17

=> Second number = 18 + 1 = 19

=> Sum = 17 + 19 = 36

Therefore The correct answer is 36.

Additional Information

Product of Consecutive Even Numbers

Similar to odd numbers, the product of two consecutive even numbers is (Middle Odd Number)² − 1.

Sum of Consecutive Odd Numbers

The sum of the first n consecutive odd numbers starting from 1 is always n^2.

Sum of Consecutive Numbers Property

The sum of any two consecutive odd numbers is always a multiple of 4 (e.g., 17 + 19 = 36, which is 4 × 9).

Q15. Answer: (c) 9

Shortcut Trick

The sum of a number x and its square x^2 is given as x(x + 1) = 90.

Identify two consecutive positive integers whose product is 90.

Since 9 × 10 = 90, the smaller number x must be 9.

Alternatively, check options: $9 + 9^2 = 9 + 81 = 90$. This matches.

Therefore The correct answer is 9.

Alternate Method

Given: $x + x^2 = 90$

Formula: $x^2 + x - 90 = 0$

=> $x^2 + 10x - 9x - 90 = 0$

=> x(x + 10) − 9(x + 10) = 0

=> (x − 9)(x + 10) = 0

=> x = 9 or x = −10

=> Since the question specifies a positive number, we take x = 9.

Therefore The correct answer is 9.

Additional Information

Quadratic Equation Roots

For any equation $ax^2 + bx + c = 0$, the roots are found using $x = [-b \pm \sqrt{(b^2 - 4ac)}] \div 2a$.

Nature of Roots

The discriminant $D = b^2 - 4ac$ determines root types: D > 0 (real and distinct), D = 0 (real and equal), D < 0 (imaginary).

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Sum and Product of Roots

Sum of roots (α + β) = −b/a and Product of roots (αβ) = c/a.

Q16. Answer: (d) 4951

Shortcut Trick

Divisibility rule of 4: The last two digits of the number must be divisible by 4.

Numbers ending in an odd digit can never be divisible by 4.

Last two digits check: 44, 32, and 12 are all divisible by 4.

4951 ends in 51, which is odd and not divisible by 4.

Therefore The correct answer is 4951.

Alternate Method

Given numbers: 4844, 4732, 4612, 4951

Method: Check divisibility of the last two digits of each number by 4.

=> For 4844: Last two digits = 44. Since 44 ÷ 4 = 11, it is divisible.

=> For 4732: Last two digits = 32. Since 32 ÷ 4 = 8, it is divisible.

=> For 4612: Last two digits = 12. Since 12 ÷ 4 = 3, it is divisible.

=> For 4951: Last two digits = 51. Since 51 ÷ 4 = 12 with a remainder of 3, it is not divisible.

Therefore The correct answer is 4951.

Additional Information

Divisibility by 2

A number is divisible by 2 if its last digit is an even number (0, 2, 4, 6, or 8).

Divisibility by 8

A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

Divisibility by 16

A number is divisible by 16 if the number formed by its last four digits is divisible by 16.

Divisibility by 3

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

Q17. Answer: (c) 10320

Shortcut Trick

Check Divisibility by 4: Only 10320 ends in '20', which is divisible by 4.

Check Divisibility by 3 for 10320: Sum of digits = 1 + 0 + 3 + 2 + 0 = 6.

Since 6 is divisible by 3, 10320 satisfies both conditions.

Therefore The correct answer is 10320.

Alternate Method

Given Numbers: 8235, 8491, 10320, 7582

Divisibility Rule of 4: The last two digits of the number must be divisible by 4.

=> 8235: Last digits 35 (Not divisible by 4)

=> 8491: Last digits 91 (Not divisible by 4)

=> 10320: Last digits 20 (20 ÷ 4 = 5, Divisible by 4)

=> 7582: Last digits 82 (Not divisible by 4)

Divisibility Rule of 3: The sum of all digits must be divisible by 3.

=> Sum of digits of 10320 = 1 + 0 + 3 + 2 + 0 = 6

=> 6 ÷ 3 = 2 (6 is divisible by 3)

=> Since 10320 is divisible by both 3 and 4, it is the correct number.

Therefore The correct answer is 10320.

Additional Information

Divisibility by 6

A number is divisible by 6 if it is divisible by both 2 and 3.

Divisibility by 8

A number is divisible by 8 if the last three digits are divisible by 8.

Divisibility by 9

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A number is divisible by 9 if the sum of its digits is divisible by 9.
Divisibility by 12
A number is divisible by 12 if it is divisible by both 3 and 4 simultaneously.

Q18. Answer: (a) 54

Shortcut Trick
The average of the first N even natural numbers is always (N + 1).
Given: Average = 55
=> N + 1 = 55
=> N = 55 − 1 = 54
Therefore The correct answer is 54.
Alternate Method
Given:
Average of first N even natural numbers = 55
Formula Used:
Sum of first N even numbers = N(N + 1)
Average = Sum ÷ N = [N(N + 1)] ÷ N = N + 1
Calculations:
=> First N even natural numbers: 2, 4, 6, ..., 2N
=> This is an Arithmetic Progression (AP) with first term (a) = 2 and last term (l) = 2N.
=> Average of an AP = (First term + Last term) ÷ 2
=> 55 = (2 + 2N) ÷ 2
=> 55 = 1 + N
=> N = 55 − 1
=> N = 54
Therefore The correct answer is 54.
Additional Information
Average of First N Natural Numbers
The average of the first N natural numbers (1, 2, 3, ..., N) is given by (N + 1) ÷ 2.
Average of First N Odd Numbers
The average of the first N odd natural numbers (1, 3, 5, ..., 2N − 1) is always equal to N.
Sum of First N Natural Numbers
The sum of the first N natural numbers is calculated using the formula [N × (N + 1)] ÷ 2.

Q19. Answer: (c) 10

Shortcut Trick
15^(th) observation = (Total Average) + (Sum of deviations from total average)
Deviation of first 15 = 15 × (62 − 60) = +30
Deviation of last 16 = 16 × (55 − 60) = −80
15^(th) observation = 60 + 30 − 80 = 10
Therefore The correct answer is 10.
Alternate Method
Given:
Total observations (n) = 30, Average (A) = 60
First 15 observations (n1) = 15, Average (A1) = 62
Last 16 observations (n2) = 16, Average (A2) = 55
Formula: Sum = Average × Number of observations
=> Total Sum of 30 observations = 30 × 60 = 1800
=> Sum of first 15 observations = 15 × 62 = 930
=> Sum of last 16 observations = 16 × 55 = 880
=> (Sum of first 15) + (Sum of last 16) = Total Sum + 15^(th) observation
=> 930 + 880 = 1800 + 15^(th) observation

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=> 1810 = 1800 + 15^(th) observation
=> 15^(th) observation = 1810 − 1800 = 10
Therefore The correct answer is 10.
Additional Information
Weighted Average Formula
Combined average of two groups is calculated as (n1A1 + n2A2) ÷ (n1 + n2).
Net Deviation Rule
The sum of deviations of all observations from their arithmetic mean is always zero (Σ(x_i − A) = 0).
Overlap and Exclusion Logic
In a set of n items, if the first p items and last q items are given such that (p + q) > n, the overlap consists of (p + q − n) items.

Q20. Answer: (a) 25

Shortcut Trick
In any Arithmetic Progression (AP), Average = (First term + Last term) ÷ 2.
The first odd number after 6 is 7.
The last odd number before 44 is 43.
Average = (7 + 43) ÷ 2 = 50 ÷ 2 = 25.
Therefore The correct answer is 25.
Alternate Method
Given: Range of numbers from 6 to 44.
Series: Odd numbers between 6 and 44 are 7, 9, 11, ..., 43.
Formula Used: Average of an Arithmetic Progression = (a + l) ÷ 2, where a = first term and l = last term.
=> First odd number (a) = 7
=> Last odd number (l) = 43
=> This is an Arithmetic Progression with common difference d = 2.
=> Average = (First term + Last term) ÷ 2
=> Average = (7 + 43) ÷ 2
=> Average = 50 ÷ 2 = 25.
Therefore The correct answer is 25.
Additional Information
Sum of Odd Numbers
The sum of the first n odd natural numbers is given by n^2.
Average of First n Odd Numbers
The average of the first n odd natural numbers is always equal to n.
Average of First n Natural Numbers
The average of the first n natural numbers is calculated as (n + 1) ÷ 2.
General AP Property
For any sequence in Arithmetic Progression, the average is always the middle term (if n is odd) or the mean of the two middle terms (if n is even).

Q21. Answer: (a) -226

The logic followed here is:
The difference between -221 and -226 is -5, which violates the -3 pattern.
Hence, the correct answer is "Option 1".

Q22. Answer: (d) M

The logic followed here is:
So, 'GMJ' will replace the question mark in the given series.
Hence, the correct answer is "Option 1".

Q23. Answer: (d) PY

The Logic followed here is:
For, VD : EW

For, GM : TN

Now for, KB : ?

Therefore, the code for KB is PY.

Hence, the correct answer is Option 4.

Q24. Answer: (c) CT

The logic followed here is:

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

Hence, the correct answer is "Option 3".

Q25. Answer: (b) OF

Logic followed here is.

Logic: The second letter cluster is obtained by subtracting 3 from the positional value of the first letter and 5 from the positional value of the second letter of the preceding cluster.

For

EP is related to BK →

E	P
5	16

Positional shifts:

E - 3 = 5 - 3 = 2 (B)

P - 5 = 16 - 5 = 11 (K)

UC is related to RX →

U	C
21	3

Positional shifts:

U - 3 = 21 - 3 = 18 (R)

C - 5 = 3 - 5 = -2 → (-2 + 26) = 24 (X)

The pattern observed is: (1st letter - 3), (2nd letter - 5).

Similarly, let's find the related cluster for RK:

R	K
18	11

Positional shifts:

R - 3 = 18 - 3 = 15 (O)

K - 5 = 11 - 5 = 6 (F)

Therefore, the missing cluster is 'OF'.

Q26. Answer: (c) (BH, EK, HN)

The Logic followed here is:

For, (LU, OX, RA)

For, (WX, ZA, CD)

Now checking the options:

Option 1: (DQ, HS, KX)

Option 2: (AE, EG, HN)

Option 3: (BH, EK, HN)

Option 4: (AO, FP, IX)

Therefore, the set (BH, EK, HN) follows the same logic.

Hence, the correct answer is Option 3.

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Q27. Answer: (b) Wednesday

The logic followed here is:

Given: 27 May 2024 was Sunday.

Month	Days
May (remaining)	4
June	30
July	31
August	31
September	30
October	31
November	28

Total days = 4 + 30 + 31 + 31 + 30 + 31 + 28 = 185

Now, 185 ÷ 7 = 26 weeks and 3 odd days

So, Sunday + 3 days = Wednesday

Hence, 28 November 2024 was Wednesday.

Hence, the correct answer is "Option 2".

Q28. Answer: (c) 1997

The logic followed here is:

Given: 1986 was an ordinary year.

A calendar repeats when:

Total odd days between the years are a multiple of 7.

Both years are of the same type.

From 1986 to 1996:

1 + 1 + 2 + 1 + 1 + 1 + 2 + 1 + 1 + 1 + 2 = 14 odd days

Here, 14 is a multiple of 7.

Next year = 1997

Both 1986 and 1997 are ordinary years.

Therefore, the calendar of 1986 repeats in 1997.

Hence, the correct answer is "Option 3".

Q29. Answer: (b) Friday

The logic followed here is:

Given:

Date of birth = 3 October 2019

6th birthday = 3 October 2025

3 October 2019 was Thursday.

Year Type	Count	Odd Days
Ordinary Years	4	4
Leap Years (2020, 2024)	2	4

Total odd days = 4 + 4 = 8

8 ÷ 7 = 1 odd day

So, Thursday + 1 day = Friday

Therefore, the 6th birthday will fall on Friday.

Hence, the correct answer is "Option 2".

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Q30. Answer: (c) R

Given: Five boys P, Q, R, S and T are sitting in a row facing north.
Q and R are immediate neighbours.
S and R are immediate neighbours.
Only P is to the left of Q.
Middle position (3rd) = R
Hence, the correct answer is Option 3.

Q31. Answer: (c) Sixth

Given: Seven males A, B, C, D, E, F and G are sitting in a row facing north.
Only four males are to the left of A
B is the immediate neighbour of A and C.
D is third to the left of E.
F is not the immediate neighbour of E.
So, F is 6th from the right end.
Hence, the correct answer is Option 3.

Q32. Answer: (a) First

Given: Seven males A, B, C, D, E, F and G are sitting in a row facing north.
Only four males are to the left of A
B is the immediate neighbour of A and C.
D is third to the left of E
F is not the immediate neighbour of E.
So, D is at position 1
Hence, the correct answer is Option 1.

Q33. Answer: (b) CH400

The Logic followed here is:
For, WK500 : UG300
For, TO700 : RK500
Now for, ? : AD200
Therefore, the missing cluster is CH400.
Hence, the correct answer is Option 2.

Q34. Answer: (c) SJM90

The Logic followed here is:
For, ADK10 : ZCJ110
For, BLP60 : AKO160
Now for, ? : RIL190
Therefore, the missing cluster is SJM90.
Hence, the correct answer is Option 3.

Q35. Answer: (b) 1619

The Logic followed here is:
Logic: The pattern observed is (First Number − 52) = Second Number
For, 5165 : 5113
5165 − 5113
= 52
5165 − 52
= 5113
For, 8326 : 8274
8326 − 8274
= 52

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8326 − 52
= 8274
Now for, 1671 : ?
1671 − 52
= 1619
Therefore, the related number for 1671 is 1619.
Hence, the correct answer is Option 2.

Q36. Answer: (c) 349

The Logic followed here is:
The pattern observed is: (First Number ÷ 2) − 2 = Second Number
For, 948 : 472
(948 ÷ 2) − 2
= 474 − 2
= 472
For, 600 : 298
(600 ÷ 2) − 2
= 300 − 2
= 298
Now for, 702 : ?
(702 ÷ 2) − 2
= 351 − 2
= 349
Therefore, the missing number is 349.
Hence, the correct answer is Option 3.

Q37. Answer: (d) 71135

The logic followed here is:
Logic: Code = Concatenation of the positional values of the letters in the alphabet.
Given: SEVEN →
For, EIGHT →
Now, GAME →
Hence, the correct answer is Option 4.

Q38. Answer: (c) EGVGN

The logic followed here is:
Logic: The letters are shifted by the pattern +1, +2, +3, -4 and -5 respectively.
Here, CAPUT → DCSQO
Similarly, ADOBO → BFRXJ
Now, applying the same pattern to DESKS:
So, DESKS → EGVGN
Hence, the correct answer is "Option 3".

Q39. Answer: (c) GM328

The observed discrepancy occurs in the term GM328, where the letter 'M' breaks the +4 increment pattern of the second letters.
Hence, the correct answer is Option 3.

Q40. Answer: (d) UZG1400

Therefore, the wrong term in the series is UZG1400.
Hence, the correct answer is Option 4.

Q41. Answer: (c) Salt and water

The correct answer is Salt and water.
Key Points

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• A reaction in which an acid reacts with a base is termed a Neutralization reaction.

• In this process, the hydrogen ions (H+) from the acid and the hydroxide ions (OH-) from the base combine to form water (H2O).

• The remaining part of the acid (anion) and the base (cation) combine to produce an ionic compound known as a salt.

• The general chemical equation for this reaction is: Acid + Base → Salt + Water. Hence, the correct option is Salt and water.

• Neutralization reactions are typically exothermic, meaning heat is evolved during the reaction, which often raises the temperature of the reaction mixture.

Additional Information

• Examples of Neutralization:

• The reaction between Hydrochloric acid (HCl) and Sodium hydroxide (NaOH) produces Sodium chloride (NaCl) and water. The formula is: HCl + NaOH → NaCl + H2O.

• Another common example is the reaction between Sulfuric acid (H2SO4) and Potassium hydroxide (KOH) to form Potassium sulfate (K2SO4) and water.

• Nature of Salts:

• If a strong acid reacts with a strong base, the resulting salt is neutral (pH value of 7).

• A strong acid reacting with a weak base produces an acidic salt (pH value less than 7).

• A weak acid reacting with a strong base results in a basic salt (pH value greater than 7).

• Real-world Applications:

• Indigestion: Our stomach produces hydrochloric acid to digest food. Excess acid causes acidity, which is neutralized by taking antacids like Milk of Magnesia (Magnesium hydroxide), which is a base.

• Ant Stings: The sting of an ant contains formic acid. The effect of the sting can be neutralized by rubbing moist baking soda (sodium hydrogen carbonate) or calamine solution (zinc carbonate), which are basic in nature.

• Soil Treatment: Plants do not grow well if the soil is too acidic or too basic. Acidic soil is treated with bases like quicklime (calcium oxide) or slaked lime (calcium hydroxide).

• Factory Waste: Many factories discharge acidic wastes. These are neutralized by adding basic substances before being disposed of into water bodies to protect aquatic life.

Q42. Answer: (c) 1979

The correct answer is 1979.

Key Points

• The Training of Rural Youth for Self-Employment (TRYSEM) was launched by the Government of India on 15th August 1979 as a centrally sponsored scheme.

• The primary objective of the scheme was to provide technical and entrepreneurial skills to rural youth from families living below the poverty line (BPL).

• The scheme targeted rural youth in the age group of 18 to 35 years to enable them to take up self-employment or wage employment in sectors like agriculture, industry, and services.

• It included mandatory reservations to ensure social equity, where at least 50% of the beneficiaries were required to be from Scheduled Castes (SC) and Scheduled Tribes (ST), and at least 40% were required to be women.

• The training was conducted through formal institutions like ITIs, Krishi Vigyan Kendras, or through master craftsmen and local artisans.

Additional Information

• Integrated Rural Development Programme (IRDP): TRYSEM was operated as a specialized sub-component of the IRDP. While IRDP provided the financial assets, TRYSEM focused on the human resource development and skill acquisition part of rural upliftment.

• Swarnajayanti Gram Swarozgar Yojana (SGSY): On 1st April 1999, TRYSEM was merged with other rural development programs like IRDP, DWCRA (Development of Women and Children in Rural Areas), and SITRA (Supply of Improved Toolkits to Rural Artisans) to form the SGSY.

• Financial Pattern: The expenditure for the scheme was shared between the Central Government and the State Governments on a 50:50 basis. Trainees were also provided with a stipend during their training period to cover basic costs.

• Evolution to DAY-NRLM: The SGSY was later restructured into the National Rural Livelihoods Mission (NRLM) in 2011, which is currently known as Deendayal Antyodaya Yojana (DAY-NRLM), focusing on organized Self-Help Groups (SHGs).

• Implementation Agency: The implementation of the scheme at the ground level was the responsibility of the District Rural Development Agencies (DRDA).

Q43. Answer: (d) Adrenal gland

The correct answer is Adrenal gland.

Key Points

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• The Adrenal glands, also known as suprarenal glands, are small, triangular glands located on top of both kidneys. Since the kidneys are situated in the abdominal cavity, these glands are the lowermost among the given options (Pineal, Pituitary, Thyroid, and Adrenal). Hence, the option Adrenal gland is the correct answer.

• The Thyroid gland is a butterfly-shaped organ located at the base of the neck, specifically in front of the trachea (windpipe). It is situated higher than the adrenal glands but lower than the brain-based glands. Hence, statement 3 is incorrect in the context of being lowermost.

• The Pituitary gland is a pea-sized endocrine gland located at the base of the brain, resting within a bony hollow called the sella turcica. It is located significantly higher in the body than the thyroid and adrenal glands. Hence, statement 2 is incorrect.

• The Pineal gland is a tiny, pinecone-shaped gland located deep in the center of the brain, specifically in the epithalamus. It is often regarded as the most superiorly (uppermost) located endocrine gland in the human body. Hence, statement 1 is incorrect.

Additional Information

• Functions of the Adrenal Glands: They produce vital hormones such as cortisol (the stress hormone), aldosterone (regulates blood pressure), and adrenaline (epinephrine), which triggers the fight-or-flight response. They are composed of two parts: the adrenal cortex and the adrenal medulla.

• Functions of the Thyroid Gland: It primary secretes thyroxine (T4) and triiodothyronine (T3), which are essential for regulating the body's metabolic rate, heart functions, and digestive health. Iodine is a crucial element required for the synthesis of these hormones.

• Functions of the Pituitary Gland: Often called the "Master Gland," it secretes hormones like Growth Hormone (GH), Thyroid-Stimulating Hormone (TSH), and Prolactin. It controls the activity of most other hormone-secreting glands in the body.

• Functions of the Pineal Gland: Its main function is to receive information about the state of the light-dark cycle from the environment and convey this information by the production and secretion of the hormone melatonin. This regulates the body's circadian rhythm (sleep-wake cycle).

Important Points

• Vertical Hierarchy of Endocrine Glands: When arranged from the top (head) to the bottom (pelvis), the order is: Pineal Gland > Pituitary Gland > Thyroid Gland > Thymus > Adrenal Gland > Pancreas > Gonads (Ovaries/Testes).

• The Lowest Glands: While the Adrenal gland is the lowermost among the four options provided, the absolute lowermost endocrine glands in the human body are the Gonads (Testes in males and Ovaries in females), which are located in the pelvic region.

• Mixed Glands: The Pancreas is unique because it functions as both an exocrine gland (secreting digestive enzymes) and an endocrine gland (secreting insulin and glucagon). It is located in the abdomen, similar to the adrenal glands but slightly more central.

Q44. Answer: (c) Pulakesin II

The correct answer is Pulakesin II.

Key Points

• Pulakesin II was the most illustrious and powerful ruler of the Chalukya dynasty of Vatapi (modern-day Badami in Karnataka). He reigned from approximately 610 CE to 642 CE.

• He is most famously known for acquiring the title Dakshinapatheshvara (Lord of the South) after his decisive victory over Harshavardhana, the ruler of Kanauj, on the banks of the Narmada River around 618-619 CE.

• The primary source of information regarding his reign is the Aihole inscription, which was composed in Sanskrit by his court poet Ravikirti. This eulogy (Prashasti) details his military campaigns and the extent of his empire.

• By defeating Harsha, who was known as Uttarapatheshvara (Lord of the North), Pulakesin II established the Narmada River as the boundary between the northern and southern empires of India.

• Apart from Dakshinapatheshvara, he assumed other grand titles such as Parameshwara (Supreme Lord), Satyashraya (Abode of Truth), and Prithvivallabha (Lover of the Earth).

Additional Information

• Upagupta:

• Upagupta was a famous Buddhist monk who lived during the 3rd century BCE.

• Historical traditions suggest that he was the spiritual teacher of the Mauryan Emperor Ashoka and influenced him to embrace Buddhism following the Kalinga War. Unlike the other options, he was a religious figure rather than a king.

• Kharavela:

• Kharavela was the third ruler of the Mahameghavahana dynasty of Kalinga (modern-day Odisha) during the 1st or 2nd century BCE.

• He is known through the Hathigumpha inscription at Udayagiri. He was a follower of Jainism and assumed titles like Kalinga-adhipati (Lord of Kalinga) and Chakravartin.

• Mahapadma Nanda:

• Mahapadma Nanda was the founder of the Nanda dynasty in Magadha in the 4th century BCE.

• He is described in the Puranas as Sarvakshatrantaka (uprooter of all Kshatriyas) and Ekarat (the sole monarch). He is often credited with creating the first great empire in North Indian history.

Important Points

• Conflict with the Pallavas: While Pulakesin II dominated much of the Deccan, his reign ended in a tragic conflict with the Pallava dynasty. He was eventually defeated and killed by the Pallava king Narasimhavarman I, who subsequently took the title Vatapikonda (Conqueror of Vatapi).

• Diplomatic Relations: Pulakesin II is noted for his international diplomacy; he reportedly sent an embassy to the court of the Persian King Khusrau II in 625 CE, highlighting the global reach of the Chalukyan Empire.

• Xuanzang's Visit: The famous Chinese pilgrim Xuanzang visited the kingdom of Pulakesin II in 641 CE and left detailed accounts praising the king's power, the efficiency of his administration, and the bravery of his subjects.

Q45. Answer: (a) Jharkhand

The correct answer is Jharkhand.

Key Points

• The Jhanjhar dance is a vibrant and rhythmic folk dance primarily performed in the state of Jharkhand, specifically within the tribal regions.

• It is traditionally associated with the Munda and Santhal tribes, who use this dance form to celebrate social gatherings and seasonal changes.

• The dance derives its name from the Jhanjh, which is a traditional musical instrument consisting of a pair of brass cymbals that produce a rhythmic metallic sound.

• The performance is characterized by the high-energy movements of the dancers who move in circular or semi-circular formations, mirroring the unity and collective spirit of the tribal community.

• It is often performed during significant cultural festivals such as Sarhul and Karma, which are dedicated to nature and the deities of the forest.

Additional Information

• Folk Dances of Jharkhand:

• Chhau Dance: Specifically the Seraikella Chhau, it is a famous masked dance that depicts stories from the Mahabharata and Ramayana. It was added to the UNESCO Representative List of the Intangible Cultural Heritage of Humanity in 2010.

• Paika Dance: A martial folk dance performed by the Munda community, where dancers carry swords and shields to display military bravery.

• Karma Dance: Performed during the Karma festival in the month of Bhado (August-September), it involves the worshipping of the Karam tree which symbolizes fertility and prosperity.

• Santhali Dance: Usually performed by the Santhal tribe during the Sohrai and Baha festivals, characterized by intricate footwork and the use of the Madar (drum).

• Geographical and Cultural Context:

• Jharkhand was officially formed on 15 November 2000, after being carved out from the southern part of Bihar.

• The state is known as the "Land of Forests" and is situated on the Chota Nagpur Plateau, which influences its unique tribal art forms and lifestyle.

• The primary musical instruments used in Jharkhand folk music include the Nagada, Dhol, Bansi (flute), and Turi.

Important Points

• Tribal Festivals: The Sarhul festival is the most popular tribal festival in Jharkhand, celebrated when the Sal trees get new flowers, marking the beginning of the New Year for the tribes.

• Socio-Economic Significance: These folk dances like Jhanjhar are not merely entertainment but are essential for maintaining the oral traditions and cultural history of the 32 recognized tribes of the state.

• Global Recognition: Tribal art from Jharkhand, including Sohrai and Khovar painting, received the Geographical Indication (GI) tag in 2020, further highlighting the state's rich heritage alongside its performing arts.

Q46. Answer: (d) Makar Sankranti

The correct answer is Makar Sankranti.

Key Points

• The International Kite Festival, also known as Uttarayan, is one of the most vibrant festivals celebrated in the state of Gujarat. It marks the day when winter begins to turn into summer.

• This festival specifically coincides with Makar Sankranti, which is the day the Sun transitions into the zodiac sign of Makara (Capricorn).

• Since 1989, the city of Ahmedabad has hosted the International Kite Festival, which attracts professional kite flyers and enthusiasts from various countries across the globe.

• The festival is typically observed on January 14 every year. During this time, the skies over cities like Ahmedabad, Surat, Vadodara, and Rajkot are filled with thousands of colorful kites from dawn until late at night.

• Hence, the correct answer is Makar Sankranti.

Additional Information

• Makar Sankranti Significance:

• It is a harvest festival celebrated in almost all parts of India under different names. In Tamil Nadu, it is celebrated as Pongal; in Punjab, as Maghi; and in Assam, as Magh Bihu.

• The festival marks the solstice and the beginning of the Sun's six-month-long journey towards the north (Uttarayan).

• Description of Other Options:

• Holi: Known as the Festival of Colors, it celebrates the arrival of spring and the victory of good over evil. It usually falls in the month of March (Phalguna). Hence, statement 1 is incorrect.

• Diwali: The Festival of Lights, signifying the return of Lord Rama to Ayodhya. It is celebrated in October or November (Kartika). Hence, statement 2 is incorrect.

• Krishna Janmashtami: This festival marks the birth of Lord Krishna, the eighth avatar of Vishnu. It is usually celebrated in August or September. Hence, statement 3 is incorrect.

• Cultural Impact:

• The International Kite Festival provides a massive boost to the local economy. The kite-making industry in Gujarat provides employment to thousands of artisans who create specialized kites and Manja (the thread coated with powdered glass).

• Special delicacies like Undhiyu (a spicy, baked mix of winter vegetables), Jalebi, and Til Laddu (sesame sweets) are traditionally prepared and consumed during this period.

Important Points

• Venue: While the entire state celebrates, the Sabarmati Riverfront in Ahmedabad is the primary venue for the official international event organized by the Gujarat Tourism Board.

• Tukkal: At night, people fly kites with lanterns attached to them, known as Tukkals, which create a spectacular view of the night sky.

• Global Participation: In recent years, the festival has seen participation from over 50 countries, including USA, UK, Canada, Brazil, Australia, and Japan, showcasing unique kite designs like dragon kites and sculptural kites.

Q47. Answer: (b) Mir Jafar

The correct answer is Mir Jafar.

Key Points

• Mir Jafar (Mir Muhammad Jafar Ali Khan) served as the Commander-in-Chief of the Bengal army under Nawab Sirajuddaulah.

• He played a treacherous role during the Battle of Plassey, which took place on June 23, 1757. He had entered into a secret pact with the British East India Company, represented by Robert Clive.

• During the battle, a large section of the Nawab's army under Mir Jafar's command did not take part in the fighting, ensuring the Nawab's defeat.

• In exchange for his betrayal, the British promised to make him the next Nawab of Bengal. After the victory, he was installed as a puppet ruler by the company.

• His name has since become synonymous with treachery in the Indian subcontinent due to his role in facilitating British colonial rule in India.

Additional Information

• Alivardi Khan:

• He was the Nawab of Bengal from 1740 to 1756.

• He was the grandfather of Sirajuddaulah and successfully defended his territory against Maratha invasions multiple times.

• Jagat Seth:

• He was a title held by a very wealthy banking family in Murshidabad, Bengal.

• The Jagat Seth of the time, Mehtab Chand, was a key conspirator alongside Mir Jafar and the British to overthrow Sirajuddaulah due to the Nawab's strained relations with the merchant class.

• Sirajuddaulah:

• He was the last independent Nawab of Bengal.

• His reign was marked by conflict with the British over the misuse of trade privileges (Dastaks) and the fortification of Fort William in Calcutta without his permission.

Important Points

• The Battle of Plassey: This was a decisive victory of the British East India Company over the Nawab of Bengal and his French allies. It is considered the starting point of British political supremacy in India.

• Robert Clive: Often called Clive of India, he was the primary architect of the British victory at Plassey through military strategy and political intrigue.

• Mir Madan and Mohan Lal: Unlike Mir Jafar, these were the loyal commanders of Sirajuddaulah who fought bravely and died on the battlefield defending the Nawab.

• Consequences: After the battle, the British gained the Diwani rights (right to collect revenue) in Bengal, Bihar, and Odisha following the subsequent Battle of Buxar in 1764, solidifying their control over the richest province of India.

Q48. Answer: (a) Compressed natural gas

The correct answer is Compressed natural gas.

Key Points

• Compressed Natural Gas (CNG) is the primary gas used as a fuel in vehicles these days due to its eco-friendly nature. It is primarily composed of methane (CH4). Hence, option 1 is correct.

• It is produced by compressing natural gas to less than 1% of its standard atmospheric volume. This compression is usually done at a pressure of 20 to 25 MegaPascals (MPa).

• CNG is considered a "clean fuel" because it emits significantly lower levels of harmful pollutants such as carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter compared to petrol or diesel.

• In India, the transition to CNG was significantly accelerated following a Supreme Court mandate in 1998, which required all public transport in Delhi to switch to CNG to combat rising air pollution levels.

• The ignition temperature of CNG is approximately 540°C, which is much higher than that of liquid fuels, making it a safer option as it is less likely to ignite accidentally in the event of a leak.

Additional Information

• Nitrogen gas:

• While not used as a fuel, Nitrogen is increasingly used to inflate vehicle tires. Unlike regular air, nitrogen does not leak through tire walls as easily and helps maintain tire pressure for longer periods. Hence, option 2 is incorrect.

• It also keeps tires cooler during long drives, which improves fuel efficiency and extends the life of the rubber.

• Liquefied petroleum gas (LPG):

• LPG is a mixture of propane and butane. While it is used as "Auto LPG" in some light vehicles, it is more commonly used as a domestic fuel for cooking (LPG cylinders) and heating. Hence, option 3 is incorrect in the context of the most prominent modern vehicle fuel.

• It is stored under moderate pressure in liquid form and has a high calorific value.

• Helium gas:

• Helium is an inert, noble gas that does not burn and cannot be used as a fuel. Hence, option 4 is incorrect.

• Its applications include weather balloons, MRI scanners (as a coolant), and cryogenics due to its extremely low boiling point.

Important Points

• Environmental Impact: CNG reduces carbon dioxide (CO2) emissions by about 20-30% compared to traditional fossil fuels, aiding in the reduction of the carbon footprint.

• Fuel Economics: CNG is generally much cheaper than petrol and diesel, providing better mileage and reducing the overall running cost of the vehicle.

• Bharat Stage (BS) Norms: In India, the government has implemented Bharat Stage VI (BS-VI) emission standards since April 2020, which further encourages the use of cleaner fuels like CNG and Electric Vehicles (EVs) to meet stringent environmental targets.

• Safety Features: Because CNG is lighter than air, it dissipates quickly upward in the event of a leak, unlike LPG which is heavier and tends to settle near the ground, creating a fire hazard.

Q49. Answer: (a) 400

The correct answer is 400.

Key Points

• The International Space Station (ISS) is a modular space station located in Low Earth Orbit (LEO). It orbits at an average altitude of approximately 400 kilometers (roughly 250 miles) above the Earth's surface.

• It travels at a velocity of approximately 28,000 kilometers per hour (17,500 miles per hour). At this incredible speed, the ISS completes one full orbit of the Earth every 90 to 93 minutes, meaning the astronauts on board witness about 16 sunrises and sunsets every 24 hours.

• The construction of the station began in 1998 with the launch of the Russian module Zarya. Since then, various modules have been added by different participating nations to expand its living and laboratory space.

• The altitude of the ISS is not fixed; it fluctuates between 330 km and 435 km due to atmospheric drag. To maintain its orbit and prevent it from crashing into the atmosphere, the station requires periodic "re-boosts" using its own engines or those of docked

spacecraft.

• The ISS serves as a unique microgravity and space environment research laboratory where scientific contributions are made in astrobiology, astronomy, meteorology, and physics.

Additional Information

• International Collaboration: The ISS is a joint project involving five participating space agencies: NASA (United States), Roscosmos (Russia), JAXA (Japan), ESA (Europe), and CSA (Canada). The ownership and use of the station are established by intergovernmental treaties and agreements.

• Physical Characteristics: The station is roughly the size of a football field, measuring about 109 meters in length. It features large solar arrays that collect energy from the Sun to power its various systems and scientific experiments.

• Human Occupation: The ISS has been continuously inhabited since November 2, 2000. This represents the longest continuous human presence in space, surpassing the previous record held by the Russian space station Mir.

• Scientific Utility: One of the primary goals of the ISS is to provide a platform for long-term research that cannot be performed on Earth. This includes studying the effects of long-term spaceflight on the human body, which is critical for future missions to the Moon and Mars.

• Observation from Earth: Due to its size and the reflectivity of its solar panels, the ISS is the third brightest object in the night sky after the Moon and Venus. It can be seen with the naked eye from the ground as a steady, moving point of light.

• Comparison with Other Orbits:

• Low Earth Orbit (LEO): Extends up to 2,000 km. This is where most satellites and the ISS reside.

• Medium Earth Orbit (MEO): Ranges from 2,000 km to 35,786 km. GPS satellites typically operate here at about 20,200 km.

• Geostationary Orbit (GEO): Located at exactly 35,786 km. Satellites here appear stationary over a fixed point on Earth, used mostly for telecommunications and weather monitoring.

Important Points

• Microgravity: Often mistakenly called "zero gravity," the ISS is actually in a state of freefall. The gravity at that altitude is still about 90% of that on Earth's surface, but the station's forward motion keeps it falling "around" the planet rather than into it.

• Water Recycling: Because resources are limited, the ISS uses advanced life support systems that recycle about 93% of all water on board, including urine and sweat, converting it back into drinkable water.

• Zvezda Module: This is the functional center of the Russian segment, providing life support systems and the engines used for orbital altitude adjustments.

Q50. Answer: (a) 10%

The correct answer is 10%.

Key Points

• During the 18th Lok Sabha Elections held in 2024, the proportion of women candidates contesting the polls reached approximately 10% of the total candidates.

• Out of a total of 8,360 candidates who participated in the general elections across the country, 797 were women.

• This marks a progressive increase from the 2019 General Elections, where the total number of women candidates was 726, accounting for about 9% of the total contestants.

• The Election Commission of India data indicates that while the absolute number of women participants has risen, they still represent a relatively small fraction of the total political field.

• Major political parties showed varying levels of representation; the Bharatiya Janata Party (BJP) fielded 69 women, while the Indian National Congress (INC) fielded 41 women candidates.

Additional Information

• Historical Representation Trends:

• In the 1st Lok Sabha elections in 1952, women candidates were only about 4.4% of the total pool.

• The 2024 mark of 10% is one of the highest recorded in Indian parliamentary history, though it falls short of the proposed legislative targets.

• Legislative Framework:

• The Nari Shakti Vandan Adhiniyam (the 128th Constitutional Amendment Bill) was passed in September 2023.

• This landmark legislation mandates 33% reservation for women in the Lok Sabha and State Legislative Assemblies, but its implementation is tied to the next delimitation exercise.

• Electoral Outcomes:

• Despite the increase in contestants to 10%, the number of women actually elected to the Lok Sabha in 2024 stood at 74.

• This is a slight decrease from the 2019 elections, where 78 women were elected to the lower house of Parliament.

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Q51. Answer: (b) Google

The correct answer is Google.

Key Points

• FireSat is a groundbreaking satellite constellation initiative designed to detect and track wildfires with high precision, primarily backed by Google.org, the philanthropic arm of Google.

• The project is led by the Earth Fire Alliance (EFA), a non-profit organization established to provide real-time data on global fire activity to emergency responders and forest management agencies.

• The mission reached a significant milestone when its first demonstration satellite was launched into Low Earth Orbit (LEO) aboard a SpaceX rocket during the Transporter-11 mission.

• The satellites are equipped with specialized multispectral infrared sensors that can identify fires as small as 5 × 5 meters (roughly the size of a classroom), which is a significant improvement over traditional weather satellites.

• Google contributes not only financial support (totaling approximately $13 million) but also its advanced Artificial Intelligence (AI) and machine learning algorithms to process vast amounts of imagery data rapidly.

• The AI integration allows the system to compare images across time to confirm new fire ignitions while filtering out false positives like industrial heat or volcanic activity.

Additional Information

• Partnership Ecosystem:

• Muon Space: This aerospace manufacturer is responsible for building and operating the FireSat constellation, ensuring the sensors meet the rigorous demands of wildfire detection.

• Environmental Defense Fund (EDF): A key partner assisting in the scientific validation and policy outreach for the project.

• SpaceX: Acts as the primary launch provider, utilizing its Falcon 9 reusable rocket technology to deploy the constellation efficiently.

• Global Impact:

• The goal is to deploy a full constellation of 50+ satellites to provide global coverage with a revisit time of every 20 minutes.

• This high-cadence monitoring is critical for early suppression, potentially preventing small brush fires from becoming catastrophic mega-fires that release massive amounts of carbon dioxide into the atmosphere.

• The data generated by FireSat will be made available for free to fire agencies worldwide, democratizing access to high-resolution geospatial intelligence.

Q52. Answer: (b) The water absorbs the heat, preventing the paper from reaching its ignition temperature

The correct answer is The water absorbs the heat, preventing the paper from reaching its ignition temperature.

Key Points

• The phenomenon is primarily governed by the principles of heat transfer and the specific ignition temperature of materials.

• Ignition temperature is defined as the minimum temperature at which a combustible substance catches fire; for ordinary paper, this is approximately 233 degrees Celsius (451 degrees Fahrenheit).

• When a paper cup is filled with water, the heat energy supplied by the flame is rapidly conducted through the thin paper to the water inside.

• Water has an exceptionally high specific heat capacity, meaning it can absorb a large amount of thermal energy before its own temperature rises significantly.

• As long as there is water present, the heat is used to raise the water temperature or maintain it at the boiling point of 100 degrees Celsius.

• Because 100 degrees Celsius is much lower than the paper's ignition threshold, the paper never becomes hot enough to burn.

• The process of conduction ensures that the paper and water remain in thermal equilibrium, effectively cooling the paper surface.

Additional Information

• Phase Change and Latent Heat:

• Once the water reaches its boiling point, any additional heat supplied is consumed as latent heat of vaporization to convert liquid water into steam.

• This phase transition happens at a constant temperature of 100 degrees Celsius, providing a thermal ceiling that protects the paper from charring.

• The Fire Triangle:

• Combustion requires three components: Fuel, Oxygen, and Heat (sufficient to reach the ignition point). By removing the accumulation of heat, the fire triangle is broken.

• Thermal Conductivity:

• While paper itself is not a great conductor, its thickness is minimal in a cup, allowing heat to pass through it almost instantly into the liquid medium.

Q53. Answer: (d) Fishing

The correct answer is Fishing.

Key Points

• The primary sector of the economy is based on the direct extraction and use of natural resources from the environment.

• It forms the base for all other products that we subsequently make, acting as the provider of raw materials for the industrial sector.

• Fishing is a quintessential primary activity because it involves the harvesting of biological resources directly from water bodies like oceans, rivers, and lakes.

• Other major activities included in this sector are agriculture, forestry, mining, and animal husbandry.

• In developing nations like India, the primary sector remains a significant contributor to employment, even as its share in the Gross Domestic Product (GDP) may fluctuate compared to the service sector.

Additional Information

• Manufacturing:

• Belongs to the secondary sector, which involves the transformation of raw materials into finished goods.

• It utilizes industrial processes and machinery to add value to primary products, such as turning cotton into fabric.

• Healthcare:

• Classified under the tertiary sector, also known as the service sector.

• It provides essential intangible services to individuals rather than producing physical commodities.

• Trade and Logistics:

• These are also tertiary sector activities that facilitate the distribution and exchange of goods.

• Logistics focuses on the transportation and storage of products, ensuring they reach the consumer efficiently from the point of production.

Q54. Answer: (c) 1950

The correct answer is 1950.

Key Points

• India qualified for the 1950 FIFA World Cup, which was hosted by Brazil, marking the first time the tournament was held after World War II.

• The Indian team earned their spot automatically after other nations in the Asian qualification group, including Burma, Indonesia, and the Philippines, withdrew from the competition.

• Despite the historic opportunity, the All India Football Federation (AIFF) declined the invitation, officially citing insufficient practice time and disagreements over team selection as the primary reasons.

• Historical records suggest that the AIFF also prioritized the Olympics and the Asian Games over the World Cup during that era, viewing the latter as less significant.

• Logistical challenges, such as the long travel distance to South America and foreign exchange constraints in the newly independent nation, further complicated the decision to participate.

Additional Information

• Tournament Significance:

• The 1950 World Cup was the fourth edition of the event and featured a unique final round-robin format rather than a standard knockout final.

• India's withdrawal left Group 3 with only three teams: Italy, Paraguay, and Sweden.

• The Barefoot Myth:

• A widespread legend claims India was banned because they wanted to play barefoot; however, players had already used boots in the 1948 London Olympics.

• While FIFA did mandate footwear, this was a secondary factor compared to the internal administrative and financial hurdles faced by the AIFF.

• Golden Era of Indian Football:

• Following the 1950 incident, India enjoyed success under coach Syed Abdul Rahim, winning gold at the 1951 and 1962 Asian Games.

• India also became the first Asian nation to reach the semi-finals of an Olympic football tournament at the 1956 Melbourne Games.

Q55. Answer: (a) Deforestation

The correct answer is Deforestation.

Key Points

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• Deforestation involves the large-scale removal of forest cover, which serves as a natural protective shield for the earth's surface.

• The root systems of trees play a critical role in soil conservation by binding soil particles together, thereby preventing them from being washed away by surface runoff or blown away by wind.

• When vegetation is removed, the topsoil is exposed to the direct impact of heavy rainfall, which leads to sheet erosion and gully erosion, significantly accelerating the rate of soil loss.

• While soil formation is a slow geological process taking hundreds of years to produce a thin layer of fertile soil, deforestation can lead to the removal of this layer in a very short span, thus disturbing the natural equilibrium.

• Human activities like overgrazing, construction, and mining often accompany deforestation, further aggravating the imbalance between soil accumulation and degradation.

Additional Information

• Afforestation:

• Refers to the process of planting trees on land that has not been recently forested.

• It acts as a remedial measure to restore the balance by increasing canopy cover and anchoring the soil.

• Organic Farming:

• A method of crop production that avoids synthetic fertilizers and pesticides.

• It improves soil texture and moisture retention, which naturally reduces the risk of erosion.

• Intercropping:

• The practice of growing two or more crops in proximity in the same field.

• This ensures the ground is covered throughout the year, protecting it from weathering agents.

Q56. Answer: (b) 2016

The correct answer is 2016.

Key Points

• The National Capital Goods Policy was officially launched by the Ministry of Heavy Industries and Public Enterprises in February 2016.

• It serves as the first-ever integrated policy for the Capital Goods sector in India, aimed at making the country a global hub for the design, manufacture, and assembly of capital goods.

• The policy envisions increasing the total production of capital goods from approximately Rs 2,30,000 crore in 2014-15 to Rs 7,50,000 crore by the year 2025.

• A critical objective of the policy is to improve the export share of the sector from the current 27% to at least 40% of the total production.

• It aims to generate significant employment opportunities, targeting an increase in the workforce from 8.4 million to 30 million by 2025.

• The policy focuses on various sub-sectors including machine tools, textile machinery, earthmoving and mining equipment, and power equipment.

Additional Information

• Strategic Importance of Capital Goods:

• Capital goods are the machinery and equipment used to produce other goods; therefore, they are often referred to as the mother of all manufacturing sectors.

• The sector contributes roughly 12% to the total manufacturing output in India.

• Policy Implementation & Initiatives:

• Technology Acquisition Fund Scheme (TAFS): Designed to help MSMEs acquire advanced technologies from abroad or through domestic R&D.

• Skill Development: Creation of specialized Sector Skill Councils to provide high-end technical training.

• Standardization: Mandatory adoption of International Standards to ensure Indian products are competitive in the global market.

• Vision Alignment:

• The policy is a crucial component of the Make in India initiative, aiming to increase the manufacturing sector's contribution to the Gross Domestic Product (GDP) to 25%.

Q57. Answer: (a) Sudha Murty

The correct answer is Sudha Murty.

Key Points

• The book titled 'The Day I Stopped Drinking Milk' is a poignant collection of real-life stories and personal reflections authored by Sudha Murty.

• Published in 2012 by Penguin Books, the work comprises 23 chapters that explore diverse human emotions and moral dilemmas

through the author's encounters with people from various walks of life.

• The narrative is celebrated for its simplicity and ethical depth, specifically targeting young adults and readers interested in life lessons derived from social work and travel.

• The title story revolves around a village girl named Chitra in Odisha, whose selfless hospitality profoundly impacts the author's perspective on sacrifice and gratitude.

• The book highlights themes of honesty, courage, and the transformation of character, reflecting Sudha Murty's signature style of storytelling that blends realism with social messaging.

Additional Information

• Sudha Murty:

• She is a distinguished Indian educator, author, and the former chairperson of the Infosys Foundation.

• Her notable literary contributions include 'Wise and Otherwise', 'Three Thousand Stitches', and 'The Old Man and His God'.

• In recognition of her extensive philanthropy and literary work, she was conferred with the Padma Shri in 2006 and the Padma Bhushan in 2023.

• Chetan Bhagat:

• An influential Indian novelist known for contemporary fiction like 'Five Point Someone', which focuses on the lives of engineering students.

• Anita Desai:

• A prominent figure in Indian English literature and a multiple-time Booker Prize finalist, renowned for her psychological novels such as 'Clear Light of Day'.

• Samit Basu:

• An Indian novelist and screenwriter who pioneered speculative fiction and fantasy genres in India with works like 'The Simoqin Prophecies'.

Q58. Answer: (d) Anuja Chandramouli

The correct answer is Anuja Chandramouli.

Key Points

• Anuja Chandramouli is a prominent Indian author known for her work in the mytho-fantasy and historical fiction genres.

• 'Shakti: The Divine Feminine', published in 2015, is one of her most acclaimed books, focusing on the various manifestations of the supreme goddess in Hindu mythology.

• The narrative explores the concept of Shakti as the primordial cosmic energy and the personification of divine feminine creative power.

• The book chronicles the lives and legends of Sati, Parvati, Durga, and Kali, emphasizing their role in maintaining the balance of the universe and their interactions with Lord Shiva.

• It delves into the philosophical aspects of the Shakta tradition, illustrating the strength, wisdom, and ferocity of the feminine spirit in ancient Indian lore.

Additional Information

• Rupa Bajwa:

• She is an Indian writer whose debut novel, The Sari Shop (2004), won the Commonwealth Writers' Prize and the Sahitya Akademi Award in 2006.

• Sudha Murty:

• An educator, philanthropist, and former chairperson of the Infosys Foundation.

• Her notable literary contributions include Wise and Otherwise, The Mother I Never Knew, and Dollar Bahu.

• She was honored with the Padma Bhushan in 2023 for her distinguished service in social work.

• Arundhati Roy:

• A globally recognized novelist and political activist best known for The God of Small Things, which won the Man Booker Prize in 1997.

• Her other significant works include The Ministry of Utmost Happiness and non-fiction essays like The Algebra of Infinite Justice.

Q59. Answer: (d) Kabaddi

The correct answer is Kabaddi.

Key Points

• Kabaddi is a prominent contact team sport originating from ancient India, requiring high levels of agility, muscular strength, and breath control.

• The Ankle hold is a defensive tactic primarily executed by corner defenders (Right Corner or Left Corner). It involves the defender catching the raider's ankle with a firm grip to prevent them from reaching the midline.

• The Knee hold is another specialized defensive maneuver where the defender targets the raider's knee to lock their movement, making it difficult for the raider to escape or use their leg strength to pull towards safety.

• These techniques are essential components of the scoring system in professional leagues like the Pro Kabaddi League (PKL), where successful tackles earn the defending team one point.

• Defenders use these maneuvers collectively to execute a Chain Tackle or a Block, which are critical strategies used to neutralize the offensive raider.

Additional Information

• Basketball:

• Common terminologies include Dribbling, Layup, Free throw, Rebounding, and Three-pointer.

• Gymnastics:

• Involves terms related to apparatus and movements like Vault, Pommel horse, Dismount, Salto, and Somersault.

• Swimming:

• Includes various strokes and technical terms such as Freestyle, Butterfly, Backstroke, Breaststroke, and Flip turn.

Q60. Answer: (a) 2003

The correct answer is 2003.

Key Points

• FX-CLEAR is an electronic, anonymous order-matching system for the Inter-bank Foreign Exchange market in India.

• The platform was officially launched on August 7, 2003, to facilitate efficient and transparent trading in the USD/INR currency pair.

• It was developed and is managed by Clearcorp Dealing Systems (India) Limited, which is a wholly-owned subsidiary of the Clearing Corporation of India Limited (CCIL).

• The system provides a blind order-matching environment where the identities of the buying and selling banks are kept confidential until the trade is executed, thereby minimizing market impact costs.

• The launch of FX-CLEAR marked a significant shift from traditional voice-based brokering to a technologically advanced electronic trading infrastructure for the Indian banking sector.

Additional Information

• Clearing Corporation of India Limited (CCIL):

• Established in April 2001 to provide institutional infrastructure for clearing and settlement of transactions in Government Securities, Money Market, and Foreign Exchange instruments.

• It functions under the regulatory oversight of the Reserve Bank of India (RBI).

• It provides guaranteed settlement for trades executed on the FX-CLEAR platform, acting as a Central Counterparty (CCP) to mitigate settlement risk.

• Clearcorp Dealing Systems (India) Limited:

• A subsidiary formed to manage various trading platforms like FX-SWAP (launched in 2007) and TREPS (Tri-party Repo).

• It ensures high system availability and low latency for inter-bank liquidity providers.

Q61. Answer: (d) Telangana

The correct answer is Telangana.

Key Points

• The Thousand Pillar Temple, also known as the Rudreshwara Swamy Temple, is a historic Hindu temple located in the town of Hanamkonda, which is part of the Warangal district in the state of Telangana, India.

• It was constructed in 1163 AD by the great King Rudra Deva of the Kakatiya Dynasty, representing the peak of Kakatiyan architectural brilliance.

• The temple is dedicated to three primary deities: Lord Shiva (Rudreshwara), Lord Vishnu, and Lord Surya. Because it houses three shrines, it is technically known as a Trikutalyam.

• The structure is famous for its star-shaped architecture and contains one thousand pillars, which are intricately carved. Remarkably, the pillars are arranged such that they do not obstruct the view of the central deity from any point within the temple.

• The temple was built in the Chalukyan style of architecture and is adorned with perforated stone screens and exquisite sculptures of elephants and other mythical creatures.

Additional Information

• Kakatiya Dynasty:

• The Kakatiyas were a prominent South Indian dynasty that ruled most of the eastern Deccan region comprising modern-day Telangana and Andhra Pradesh between the 12th and 14th centuries.

• Their capital was Orugallu, now known as Warangal. They were great patrons of art and architecture, responsible for other

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monuments like the Warangal Fort and the Ramappa Temple.

• Architecture and Material:

• The temple is built on a 1-meter high platform. It features a massive monolithic Nandi (bull) carved out of a single piece of black basalt stone.

• This Nandi is unique because it faces the Lord Shiva shrine, which is a common feature in Shaivite temples, but the craftsmanship here is considered among the finest in India.

• Historical Significance:

• The temple faced significant destruction during the invasion of the Deccan by the Delhi Sultanate (led by the Tughlaq dynasty) in the 14th century.

• The Archaeological Survey of India (ASI) has undertaken extensive restoration projects, particularly for the Kalyana Mandapam (marriage hall), to preserve its structural integrity.

Important Points

• Ramappa Temple Connection:

• While the Thousand Pillar Temple is a major landmark, its contemporary, the Ramappa Temple in Palampet, was inscribed as a UNESCO World Heritage Site in 2021. Both share the distinct Kakatiya style of using sandbox foundations and floating bricks.

• Tourism and Culture:

• The temple remains an active place of worship and a major tourist attraction in the Deccan Plateau. It is located approximately 150 km from Hyderabad.

• The Kala Thoranam (ornamental gateway) found in the nearby Warangal Fort is so iconic that it has been adopted as the official State Emblem of Telangana.

Q62. Answer: (b) Sasaram

The correct answer is Sasaram.

Key Points

• The tomb of Sher Shah Suri is a magnificent example of Indo-Islamic architecture located in Sasaram, in the Rohtas district of Bihar.

• It was constructed in memory of Emperor Sher Shah Suri, a Pathan from Bihar who founded the Suri Empire in northern India after defeating the Mughal Empire.

• The structure was designed by the renowned architect Mir Muhammad Aliwal Khan and was completed between 1540 and 1545 AD.

• It is famously known as a "water tomb" because it is situated in the middle of a large, artificial square lake, standing on a stone plinth with domes and kiosks.

• The tomb is built of red sandstone and features an octagonal plan, which was a signature style of the Lodi and Suri dynasties, and it is often described as the second Taj Mahal of India due to its grandeur.

Additional Information

• Sher Shah Suri (Reign: 1540–1545):

• Born as Farid Khan, he assumed the title Sher Shah after killing a tiger single-handedly.

• He defeated the Mughal Emperor Humayun in the Battle of Chausa (1539) and the Battle of Kannauj (1540), forcing him into exile.

• He is credited with the introduction of the Rupiya, which is the precursor to the modern Indian Rupee.

• He reconstructed and extended the Grand Trunk Road (then known as Sadak-e-Azam), connecting Chittagong (Bangladesh) to Kabul (Afghanistan).

• Other Options Analysis:

• Sikandra: Located in Agra, Uttar Pradesh, it is the site of the Tomb of Akbar, the third Mughal Emperor. It features a unique blend of Hindu, Christian, Islamic, Buddhist, and Jain architectural motifs.

• Lahore: This city in Pakistan houses the Tomb of Jahangir, located in Shahdara Bagh. It also contains the tombs of Nur Jahan and Asif Khan.

• Aurangabad: Located in Maharashtra, it is home to the Bibi Ka Maqbara, which is the tomb of Dilras Banu Begum, the wife of Mughal Emperor Aurangzeb. It was commissioned in 1660.

• Important Points:

• Sher Shah Suri died in a gunpowder explosion during the siege of Kalinjar Fort in 1545.

• His tomb represents a transitional phase in Indian architecture, moving from the simpler Sultanate styles to the more decorative Mughal era structures.

• The tomb was designated as a site of national importance under the Ancient Monuments and Archaeological Sites and Remains Act.

Q63. Answer: (b) 1:8

The correct answer is 1:8.

Key Points

• In a chemical compound like water (H2O), the elements hydrogen and oxygen are always combined in a fixed proportion by mass, regardless of the source of the water.

• A single molecule of water consists of two atoms of hydrogen and one atom of oxygen.

• To find the mass ratio, we use the atomic masses of the constituent elements: the atomic mass of Hydrogen (H) is approximately 1 unit (u), and the atomic mass of Oxygen (O) is approximately 16 units (u).

• The total mass of hydrogen in the molecule is 2 x 1 = 2 units, and the total mass of oxygen is 16 units.

• The ratio of the mass of hydrogen to the mass of oxygen is 2:16. When simplified by dividing both sides by 2, the ratio becomes 1:8. Hence, the ratio of hydrogen to oxygen by mass is always 1:8.

• This implies that if 9 grams of water is decomposed, 1 gram of hydrogen gas and 8 grams of oxygen gas will always be obtained.

Additional Information

• Law of Constant Proportions: This principle is also known as the Law of Definite Proportions. It was formulated by the French chemist Joseph Proust in 1799. The law states that a given chemical compound always contains its component elements in a fixed ratio by mass and does not depend on its source or method of preparation.

• Ammonia (NH3): Another classic example is ammonia. In NH3, nitrogen and hydrogen are always present in the ratio 14:3 by mass. This is because the atomic mass of Nitrogen is 14 and there are three hydrogen atoms with a total mass of 3.

• Carbon Dioxide (CO2): In carbon dioxide, the ratio of carbon to oxygen by mass is 12:32 (since C=12 and O=16x2=32), which simplifies to 3:8.

• Dalton's Atomic Theory: This law provided significant evidence for John Dalton's atomic theory, specifically the postulate that compounds are formed by the combination of atoms of different elements in simple whole-number ratios.

• Fundamental Laws of Chemical Combination: The Law of Constant Proportions is one of the three basic laws of stoichiometry, alongside the Law of Conservation of Mass (proposed by Antoine Lavoisier) and the Law of Multiple Proportions.

Important Points

• It is important to distinguish between the ratio by number of atoms and the ratio by mass. In water, the ratio by number of atoms is 2:1 (Hydrogen to Oxygen), while the ratio by mass is 1:8.

• The discovery of isotopes later showed that the law is not strictly universal in all cases, as different isotopes of the same element have different masses. However, for most practical chemical calculations and naturally occurring mixtures of isotopes, the law remains highly accurate.

• In modern chemistry, these mass ratios are essential for determining the empirical formulas and molecular formulas of unknown substances during chemical analysis.

Q64. Answer: (b) Hydrogen

The correct answer is Hydrogen.

Key Points

• Dmitri Mendeleev was unable to assign a fixed or correct position to Hydrogen in his Periodic Table because of its unique electronic configuration and dual chemical nature.

• Hydrogen resembles Alkali Metals (Group 1) because, like Lithium, Sodium, and Potassium, it combines with Halogens, Oxygen, and Sulphur to form compounds having similar formulas.

• On the other hand, Hydrogen also resembles Halogens (Group 17) because it exists as a diatomic molecule (H2) and forms covalent compounds with metals and non-metals.

• Just like Halogens, it requires only one electron to attain the stable configuration of the nearest noble gas (Helium).

• Due to these similarities with two different groups, Mendeleev could not justify a single specific position for Hydrogen based on his periodic law of atomic masses.

Additional Information

• Mendeleev's Periodic Law: Formulated in 1869, it stated that the physical and chemical properties of elements are a periodic function of their atomic masses. At that time, only 63 elements were known.

• Limitations of Mendeleev's Table:

• Position of Isotopes: Since isotopes of an element have different atomic masses, they should have been placed in different slots, but they weren't.

• Anomalous Pairs: In some cases, an element with a higher atomic mass was placed before an element with a lower atomic mass (e.g., Cobalt before Nickel) to maintain chemical similarity.

• Modern Periodic Table: This issue was largely resolved in 1913 when Henry Moseley showed that atomic number (the number of protons) is a more fundamental property than atomic mass.

• In the Modern Periodic Table, Hydrogen is usually placed at the top of Group 1, but it is often treated as a unique element

because it does not fit perfectly with any single group.

Important Points

• Hydrogen (H): It is the first element in the periodic table with an atomic number of 1. It is the lightest and most abundant chemical substance in the universe, constituting roughly 75% of all normal matter.

• Helium (He): Unlike Hydrogen, Helium is a noble gas with a completely filled valence shell. It was discovered in 1868 and was later assigned to Group 18 (or Group 0) of the periodic table due to its inertness.

• Chlorine (Cl): It is a member of the Halogen family (Group 17) with atomic number 17. It is a highly reactive gas and was well-placed in Mendeleev's table based on its valency of 1.

• Oxygen (O): With atomic number 8, it belongs to the Chalcogen group. Mendeleev used the formulas of oxides as a primary criterion for classifying elements in his table.

Q65. Answer: (a) musicians

The correct answer is musicians.

Key Points

• M.S. Subbulakshmi (Madurai Shanmukhavadivu Subbulakshmi) was a legendary Carnatic singer from India.

• In 1998, she became the first musician to be ever honored with the Bharat Ratna, which is India's highest civilian award. Hence, the correct answer is musicians.

• She was a pioneer in the field of music and was also the first Indian musician to receive the Ramon Magsaysay Award in 1974, often considered Asia's Nobel Prize.

• She made history by being the first Indian musician to perform at the United Nations General Assembly in 1966.

• Her contribution to the classical music of South India and her spiritual renderings of hymns and bhajans earned her the title of "Queen of Music," a name given to her by Pandit Jawaharlal Nehru.

Additional Information

• Early Life and Background:

• She was born on September 16, 1916, in Madurai, Tamil Nadu.

• She grew up in a family of musicians and started her training in Carnatic music at a very young age under the guidance of her mother, Shanmukhavadivu.

• Musical Career and Contributions:

• She was known for her exceptional mastery over Sanskrit, Tamil, Telugu, Kannada, and Hindi compositions.

• Her most famous recitals include the Venkateswara Suprabhatam, Vishnu Sahasranamam, and Bhajagovindam, which are still widely played across Indian households.

• She also acted in a few films, most notably Meera (1945), which brought her national fame across both North and South India.

• Other Notable Awards:

• She received the Padma Bhushan in 1954.

• She was awarded the Sangeet Natak Akademi Award in 1956.

• In 1975, she was honored with the Padma Vibhushan, the second-highest civilian award in India.

• Contrast with Other Options:

• Sportsperson: Sachin Tendulkar was the first sportsperson to receive the Bharat Ratna in 2014.

• Painter: As of now, no painter has been awarded the Bharat Ratna for their work primarily in fine arts/painting.

• Author: While many recipients like Rabindranath Tagore (Nobel laureate) were writers, Subbulakshmi is specifically recognized as the first recipient from the musical fraternity.

Important Points

• Other Musicians with Bharat Ratna:

• Following M.S. Subbulakshmi, other notable musicians who received the award include Pandit Ravi Shankar (1999), Lata Mangeshkar (2001), Ustad Bismillah Khan (2001), Pandit Bhimsen Joshi (2009), and Bhupen Hazarika (2019, posthumously).

• Bharat Ratna Facts:

• The Bharat Ratna was instituted in 1954.

• It is awarded for exceptional service/performance of the highest order in any field of human endeavor.

• The recommendations for Bharat Ratna are made by the Prime Minister to the President of India.

Q66. Answer: (a) Turn the tide

The solution is in Hindi. Read it online.

Q67. Answer: (d) To satisfy or fulfill everything that is necessary or desired

The solution is in Hindi. Read it online.

Q68. Answer: (c) Excessive

The correct answer is option 3.

Key Points

The correctly spelt word is 'Excessive'.

• The word 'Excessive' is an adjective that means 'more than is necessary, normal, or desirable; immoderate'.

• Example: The excessive use of plastic is harmful to the environment.

• Other options like 'Excesive', 'Exessive', and 'Exccessive' are incorrect spellings of the word.

Therefore, the correct answer is 'Excessive'.

Additional Information

Explanation of the incorrect options:

• Excesive: Misspelled version of 'Excessive' - missing one 's'.

• Exessive: Misspelled version of 'Excessive' - missing one 'c'.

• Exccessive: Misspelled version of 'Excessive' - contains an extra 'c'.

Q69. Answer: (a) pernicious

The solution is in Hindi. Read it online.

Q70. Answer: (a) Preservation

The solution is in Hindi. Read it online.

Q71. Answer: (b) Emigration

The solution is in Hindi. Read it online.

Q72. Answer: (a) allusions

The correct answer is 'allusions'.

Key Points

• The word "allusions" refers to indirect references or mentions, often hinting at deeper meanings or connections.

• In the context of writing, "allusions" are often used to subtly suggest or reference well-known works, events, or ideas.

• Options 2, 3, and 4 are incorrect as they do not align with the meaning of the sentence.

Therefore, the correct answer is Option 1.

Complete Sentence: "The writer often used clever allusions to hint at deeper meanings."

Additional Information

• Option 2: "illusions" is incorrect as it refers to false perceptions or deceptive appearances, which do not fit the context.

• Option 3: "elusions" is incorrect because it means evasion or escape, which is unrelated to the sentence.

• Option 4: "delusions" is incorrect because it refers to false beliefs or misconceptions, which do not align with the intended meaning.

Q73. Answer: (d) Notorious

The solution is in Hindi. Read it online.

Q74. Answer: (b) Kleptomania

The solution is in Hindi. Read it online.

Q75. Answer: (b) Had the final report been submitted by them by the time the director arrived?

The correct answer is Option 2.

Key Points

• Identify the Tense: The sentence "Had they submitted the final report...?" is in the Past Perfect Tense (Interrogative form).

• Passive Voice Structure (Past Perfect Interrogative): The structure follows: Had + Object + been + V3 (past participle) + by + Subject?

• Conversion: The auxiliary verb "Had" remains at the beginning. The object "the final report" becomes the new subject. The word "been" is added to indicate the passive state of a perfect tense.

• Verb Form: The past participle "submitted" (V3) is used.

• Time Clause: The secondary clause "by the time the director arrived" remains unchanged as it provides the context of the action.

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Therefore, the correct answer is Option 2.

Correct Sentence: "Had the final report been submitted by them by the time the director arrived?"

Additional Information

• Option 1: "Was the final report submitted..." – Incorrect because it changes the tense to the Simple Past.

• Option 3: "Had the final report submitted..." – Incorrect because it lacks the helping verb "been," making it grammatically incomplete in the passive voice.

• Option 4: "Has the final report been submitted..." – Incorrect because it changes the tense to the Present Perfect.

Q76. Answer: (a) How is the culprit identified by the detective so easily?

The correct answer is Option 1.

Key Points

• Identify the Tense: The active sentence "How does the detective identify the culprit so easily?" is in the Simple Present Tense (Interrogative form).

• Passive Voice Structure (Simple Present Interrogative): For questions starting with "How," the structure is: How + is/am/are + Object + V3 (past participle) + by + Subject?

• Subject-Verb Agreement: The object "the culprit" is singular, so the auxiliary verb "is" is used instead of "do/does."

• Verb Form: The base verb "identify" (V1) changes to its past participle form, "identified" (V3).

• Agent: The original subject "the detective" is introduced with the preposition "by."

Therefore, the correct answer is Option 1.

Correct Sentence: "How is the culprit identified by the detective so easily?"

Additional Information

• Option 2: "How does the culprit identified..." – Incorrect because "does" should be replaced by "is" in the passive voice.

• Option 3: "How do the culprit identified..." – Incorrect grammar; "do" is used for plural subjects in active voice, but passive requires "is/am/are."

• Option 4: "How will the culprit identified..." – Incorrect because it changes the tense from Simple Present to Simple Future.

Q77. Answer: (a) The National Archives preserves the heritage manuscripts for future generations.

The correct answer is Option 1.

Key Points

• Identify the Tense: The sentence "The heritage manuscripts are preserved by the National Archives..." uses the auxiliary verb "are" followed by the past participle "preserved," which indicates the Simple Present Tense in passive voice.

• Passive to Active Conversion: For the Simple Present tense, the passive structure "is/am/are + V3 " changes to the active structure "Subject + V1 (s/es) + Object."

• Identify Subject and Object: In the passive sentence, the agent (the one performing the action) is "the National Archives" and the receiver is "the heritage manuscripts."

• Verb Agreement: "The National Archives" is a singular collective entity, so the verb "preserve" takes the "s" suffix to become "preserves."

Therefore, the correct answer is Option 1.

Correct Sentence: "The National Archives preserves the heritage manuscripts for future generations."

Additional Information

• Option 2: "The National Archives has preserved..." – Incorrect because it uses the Present Perfect Tense.

• Option 3: "The National Archives preserved..." – Incorrect because it uses the Simple Past Tense.

• Option 4: "The National Archives is preserving..." – Incorrect because it uses the Present Continuous Tense.

Q78. Answer: (a) Why didn’t they intimate the authorities about the theft?

The correct answer is Option 1.

Key Points

• Identify the Tense: The passive sentence "Why weren’t the authorities intimated...?" is in the Simple Past Tense (Interrogative Negative form).

• Passive to Active Structure: The passive structure "Why + wasn't/weren't + Object + V3 ?" converts to the active structure: "Why + didn't + Subject + V1 + Object?"

• Identify the Subject: Since the agent is not mentioned in the passive voice, we use a generic subject like "they" or "anyone" in the active voice.

• Verb Change: The past participle "intimated" (V3) changes back to its base form "intimate" (V1) because "didn't" already carries the past tense.

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Therefore, the correct answer is Option 1.

Correct Sentence: "Why didn't they intimate the authorities about the theft?"

Additional Information

• Option 2: "Why haven't they intimated..." – Incorrect because it uses the Present Perfect Tense.

• Option 3: "Why don't they intimate..." – Incorrect because it uses the Simple Present Tense.

• Option 4: "Why hasn't anyone intimated..." – Incorrect because it uses the Present Perfect Tense and singular verb agreement.

Q79. Answer: (a) on

The correct answer is 'on'.

Key Points

• The preposition "on" is used to indicate a specific location or position, often in relation to a surface or line.

• In this sentence, the phrase "on the right" indicates the specific side where the mosque is located, making "on" the correct choice.

• Options 2, 3, and 4 are incorrect as they do not fit the context of indicating a location relative to the road.

Therefore, the correct answer is Option 1.

Complete Sentence: "You will find the mosque on the right walking straight along this road."

Additional Information

• Option 2: "in" is incorrect because it is used to describe being inside a space, not a relative position.

• Option 3: "at" is incorrect as it implies a specific point, not a directional indication like "on the right."

• Option 4: "by" is incorrect as it suggests proximity rather than a specific side or position.

Q80. Answer: (c) conducive to bringing stability to

The correct answer is '3'.

Key Points

• The phrase "conducive to" is the correct collocation in English, which means "making a certain situation or outcome likely or possible."

• The preposition "to" is used correctly with the word "conducive" to link it with the action or effect (in this case, "bringing stability to").

• Options 1 and 2 use incorrect prepositions ("of" and "for") that do not fit the phrase "conducive to."

• Option 4, "No improvement required," is incorrect because the underlined phrase is grammatically incorrect and requires correction.

Therefore, the correct answer is Option 3.

Complete Sentence: "The committee concluded that the measures suggested were conducive to bringing stability to the financial system."

Additional Information

• Option 1: "conducive of bringing stability in" is incorrect because "conducive of" is not a valid collocation, and "in" does not fit the context of the sentence.

• Option 2: "conducive for bringing stability into" is incorrect because "conducive for" is not a standard phrase in English, and "into" is not appropriate in this context.

• Option 4: "No improvement required" is incorrect as the original sentence contains errors in preposition usage and does not follow correct grammar rules.

Q81. Answer: (d) to

The correct answer is 'to'.

Key Points

• The sentence discusses the farmers' reaction in relation to the new policy.

• The correct preposition to use when referring to someone's reaction to something is "to."

• Options 1 (for), 2 (about), and 3 (in) are not suitable in this context as they do not convey the intended meaning.

Therefore, the correct answer is Option 4.

Complete Sentence: "We discussed the reaction of the farmers to the new policy at length."

Additional Information

• Option 1: "for" is incorrect because it implies purpose or benefit, which does not fit here.

• Option 2: "about" is incorrect because it indicates the topic of discussion, not the relationship between the reaction and the policy.

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• Option 3: "in" is incorrect because it does not convey the correct relationship between the reaction and the policy.

Q82. Answer: (b) DACB

The correct answer is Option 2.

Key Points

• The paragraph begins with the introduction of Sir Roger and the young man they encounter.

• Sentence D comes first after S1 as it introduces the identity of the young man and provides context about his upbringing:

• "Upon my inquiry who he was, Sir Roger told me that he was a young gentleman of a considerable estate who had been educated by a tender mother that lived not many miles from the place where we were."

• Sentence A follows as it elaborates on the overprotective nature of the young man's mother:

• "She is a very good lady, says my friend, but took so much care of her son's health that she has made him good for nothing."

• Sentence C is next as it describes how the mother restricted the young man's intellectual activities:

• "She quickly found that reading was bad for his eyes and that writing made his headache."

• Sentence B is last as it depicts the young man's outdoorsy upbringing, contrasting the earlier description of his sheltered lifestyle:

• "He was let loose among the woods as soon as he was able to ride on horseback or to carry a gun upon his shoulder."

• The correct sequence is DACB.

Coherent paragraph after rearrangement:

"As I was yesterday taking the air with my friend Sir Roger, we were met by a fresh-coloured ruddy young man who rid by us full speed, with a couple of servants behind him. Upon my inquiry who he was, Sir Roger told me that he was a young gentleman of a considerable estate who had been educated by a tender mother that lived not many miles from the place where we were. She is a very good lady, says my friend, but took so much care of her son's health that she has made him good for nothing. She quickly found that reading was bad for his eyes and that writing made his headache. He was let loose among the woods as soon as he was able to ride on horseback or to carry a gun upon his shoulder. To be brief, I found, by my friend's account of him, that he had got a great stock of health, but nothing else; and that if it were a man's business only to live, there would not be a more accomplished young fellow in the whole country."

Q83. Answer: (c) DACB

The correct answer is Option 3.

Key Points

• The paragraph revolves around the scene where a child is captivated by a watch and the emotions that unfold during the interaction.

• Sentence D is the first in the sequence as it describes the emotional state of the child, setting the tone for what follows:

• "His breast swelled with emotion; he seemed about to suffocate."

• Sentence A comes next, showing the adjutant’s action of holding the watch closer to the child:

• "Meanwhile, the watch was slowly swaying and turning, sometimes brushing against his cheek."

• Sentence C follows, describing the child’s hesitant but irresistible action of taking the watch:

• "Finally, his right hand was gradually stretched toward it; the ends of his fingers touched it; then its whole weight was in his hand, the adjutant still keeping hold of the chain."

• Sentence B is the last in the sequence, providing a vivid description of the watch that held the child’s fascination:

• "The face was light blue; the cases newly burnished."

• The correct sequence is DABC.

Coherent paragraph after rearrangement:

"His breast swelled with emotion; he seemed about to suffocate. Meanwhile, the watch was slowly swaying and turning, sometimes brushing against his cheek. Finally, his right hand was gradually stretched toward it; the ends of his fingers touched it; then its whole weight was in his hand, the adjutant still keeping hold of the chain. The face was light blue; the cases newly burnished."

Q84. Answer: (a) CBDA

The correct answer is Option 1.

Key Points

• The paragraph begins with S1, which describes the procession breaking up into groups at the square. This introduces the setting and the context.

• Sentence C follows as it introduces the eight men standing before the altar, setting the stage for the description of their duty:

• "Before the altar, from which Pantaleone had been so recently dethroned, stood eight men, chosen to the rare privilege of raising the statue of St. Gonselvo."

• Sentence B comes next as it describes the powerful group of eight men, elaborating on their appearance and demeanor:

• "They presented a powerful group, as they stood there, ears pierced by dangling gold earrings and eyes bright with the gleam of religious fanaticism."

• Sentence D follows as it adds details about their consciousness of their important duty and their agitation:

• "Speechless they stood, conscious of their important duty, and somewhat agitated."

• Sentence A comes next as it lists the names of the eight men, providing a conclusive detail about the group:

• "They were: Giovanni Curo, ?Ummalido, Mattao, Vincenzo Guanno, Rocco di Ceuzo, Benedette Gallante, Biagio di Clisci, and Giovanni Senzapaura."

• The paragraph concludes with S2, which describes how the men tested their strength and smiled faintly, adding a human touch to the scene.

• The correct sequence is CBDA.

Coherent paragraph after rearrangement:

"The procession was coming from the church in a continuous stream, breaking up into groups at the square. Before the altar, from which Pantaleone had been so recently dethroned, stood eight men, chosen to the rare privilege of raising the statue of St. Gonselvo. They presented a powerful group, as they stood there, ears pierced by dangling gold earrings and eyes bright with the gleam of religious fanaticism. Speechless they stood, conscious of their important duty, and somewhat agitated. They were: Giovanni Curo, ?Ummalido, Mattao, Vincenzo Guanno, Rocco di Ceuzo, Benedette Gallante, Biagio di Clisci, and Giovanni Senzapaura. Now and then they would feel their biceps and pulse as if to try their strength, and sometimes a faint smile would flit over their faces."

Q85. Answer: (d) usually gives place on weekends.

The correct answer is Option 4.

Key Points

• The error lies in the incorrect use of the idiom "gives place" in the final part of the sentence.

• The phrase "give place" generally means to be replaced by something else or to yield.

• In the context of an event or market being held or occurring, the correct idiomatic expression is "takes place."

• Therefore, "gives place on weekends" should be corrected to "takes place on weekends" to convey that the market occurs during that time.

Therefore, the correct answer is Option 4.

Correct Sentence: "He figured that to find a decent drum he had to go to a large flea market that is in a major city and usually takes place on weekends."

Additional Information

• Option 1: "He figured that to find a decent" – This part is grammatically correct as it sets up the objective of the subject.

• Option 2: "drum he had to go to a large flea" – This part is grammatically correct, identifying the object (drum) and the destination (flea market).

• Option 3: "market that is in a major city and" – This part correctly describes the location of the market using a relative clause.

Q86. Answer: (c) Active voice

The correct answer is 'Option 3'.

Key Points

• Option 3: Active voice

• In the active voice, the subject of the sentence performs the action expressed by the verb.

• In the provided sentence, there are three clauses, all of which use the active voice:

• "The narrative unfolds": The subject (narrative) is performing the action of unfolding.

• "characters seek": The subject (characters) is performing the action of seeking.

• "who committed the crime": The subject (who) is performing the action of committing.

• Since the subjects are the "doers" of the actions and the verbs do not follow the "be + past participle" pattern, the sentence is in the active voice.

• Option 4: Passive voice

• This is incorrect. In the passive voice, the subject receives the action (e.g., "The crime was committed by someone"). The sentence does not use this structure.

• Option 1 & 2: Causative and Reflexive voice

• These are incorrect. The causative voice involves one person causing another to do something (e.g., "She had him discover the crime"). The reflexive voice involves a subject performing an action on itself (e.g., "The narrative unfolded itself"). Neither applies here.

Therefore, the correct answer is Option 3.

Additional Information

• Active Voice: Focuses on the "doer." It is generally more direct, concise, and vigorous than the passive voice. (Example: The detective solved the mystery.)

• Passive Voice: Focuses on the "receiver" or the action itself. It is often used when the doer is unknown or less important. (Example: The mystery was solved by the detective.)

• Middle Voice: Sometimes, verbs like "unfold" or "open" are used in a way that is neither strictly active nor passive (e.g., "The door opened"). While linguistically distinct in some languages, in standard English grammar tests, "The narrative unfolds" is categorized under Active Voice because it lacks passive markers.

Q87. Answer: (c) Involving working-class life and social issues

The solution is in Hindi. Read it online.

Q88. Answer: (d) imaginary or theoretical, not yet proven

The solution is in Hindi. Read it online.

Q89. Answer: (b) Verb

The correct answer is Option 2 i.e 'Verb'.

Key Points

• The word "intrigue" functions as the verb in the sentence because it expresses the action being performed by the subject ("Both genres") toward the object ("readers").

• A verb is a word that conveys an action, an occurrence, or a state of being. In this context, "intrigue" means to arouse the curiosity or interest of someone.

• The word "intrigue" follows the subject and precedes the object, which is the standard placement for a transitive verb in an English declarative sentence.

• You can verify its role by changing the tense: "Both genres intrigued readers" (past tense) or "Both genres will intrigue readers" (future tense).

Therefore, the correct answer is- Option 2.

Additional Information

• Noun: A noun refers to a person, place, or thing. While "intrigue" can be a noun (meaning a secret scheme, e.g., "The story was full of political intrigue"), it is not functioning as a thing in the target sentence.

• Adjective: An adjective modifies a noun. To use this word as a descriptor, one would typically use the participial form "intriguing" (e.g., "The plot was very intriguing").

• Pronoun: A pronoun is used in place of a noun (like he, she, or it). "Intrigue" does not substitute for a noun and therefore cannot be a pronoun.

Q90. Answer: (a) Mysteries look back at a crime already committed; thrillers look forward to preventing a future crime.

The correct answer is 'Option 1'.

Key Points

• Option 1: Mysteries look back at a crime already committed; thrillers look forward to preventing a future crime.

• The passage explicitly contrasts the two genres based on their temporal focus.

• It states that mystery novels center on a "crime committed at the beginning," meaning the plot is about solving a past event.

• Conversely, thrillers "focus on preventing a future crime," creating suspense as characters "race against time" to stop something from happening.

• Option 2: Mysteries focus on romance; thrillers focus on technology.

• This is incorrect. According to the text, romance is the focus of romance novels, and advanced technology is a feature of science fiction.

• Option 3: Both genres are concerned with romance and happy endings.

• This is incorrect. The passage attributes the exploration of "romantic relationships" and "happy or emotionally satisfying endings" specifically to the romance novel.

• Option 4: Thrillers always feature aliens and futuristic settings...

• This is incorrect. The text clarifies that "futuristic or imaginative worlds" and "alien life forms" are the hallmarks of science fiction novels.

Therefore, the correct answer is Option 1.

Additional Information

• Mystery (Whodunit): The primary question is "Who did it?" The intellectual puzzle is the main attraction, and the protagonist is

often a detective or investigator looking for clues.

• Thriller: The primary question is "Can they stop it?" The focus is on pacing and stakes. While a mystery is often a "mental" journey, a thriller is usually an "action-oriented" race.

• Overlap: The passage mentions the psychological novel can sometimes intertwine with thriller elements, showing that these genres are not always strictly separated and can blend to focus on a character's mental state.

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