SSC MTS 2025 Official Paper (Held On: 11 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. 62 + 71 - 49 + 34 × 2 - (33 + 14) = ?

(a) 110
(b) 102
(c) 108
(d) 105

Q2. 93 - 46 + 72 - (25 + 18) + 33 × 2 = ?

(a) 142
(b) 144
(c) 146
(d) 148

Q3. 83 + (19 × 2) - 44 + 37 ÷ 1 + 26 - 21 = ?

(a) 119
(b) 121
(c) 123
(d) 125

Q4. A 120-litre solution of salt and water contains 25% salt. If 30 litres of water are added, what is the new percentage of salt in the solution?

(a) 20%
(b) 22%
(c) 24%
(d) 25%

Q5. A man sells 36 bags for Rs 3600, which results in a 20% loss. How many bags must he sell for Rs 3200 to make a 60% profit?

(a) 17
(b) 16
(c) 18
(d) 19

Q6. The ratio of the income to the expenditure of a town is 7 : 6. If the income is Rs. 3500, what is the saving?

(a) Rs. 600
(b) Rs. 400
(c) Rs. 500
(d) Rs. 900

Q7. In an election between two candidates, one got 55% of the total valid votes. If 20% of the votes were invalid and the total number of votes was 9,000, what was the number of valid votes the other candidate got?

(a) 2240
(b) 2440
(c) 3240
(d) 3440

Q8. A and B start a business with capitals of Rs. 20,000 and Rs. 45,000. If the profit is divided in the ratio 2 : 3, determine the ratio of the time periods of investment for A and B.

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

Q9. Find the least number that must be added to 5600 to make it a perfect square.

(a) 15
(b) 20
(c) 25
(d) 30

Q10. A square park has an area equal to the area of a rectangle whose length exceeds its breadth by 9 m and the breadth is half the side of the square. Find the side of the square.

(a) 6 m
(b) 3 m
(c) 5 m
(d) 2 m

Q11. The population increases by 13% annually. If the current population is 43,000, what will it be after 3 years? (in approx.)

(a) 72,047
(b) 56,047
(c) 52,047
(d) 62,047

Q12. Which of the following lies between 1 3/5 & 2 1/5 ?

(a) 18/11
(b) 14/9
(c) 9/4
(d) 14/6

Q13. 0.0007 + 0.07 + 0.007 + 0.7 = ?

(a) 0.7070
(b) 0.7777
(c) 0.0707
(d) 0.7770

Q14. The product of two consecutive even numbers is 624. What is the sum of the two numbers?

(a) 54
(b) 46
(c) 44
(d) 50

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Q15. The difference of squares of two consecutive odd numbers is 24. What is the sum of the two numbers?

(a) 10
(b) 12
(c) 14
(d) 16

Q16. Which of the following number is NOT divisible by 11 ?

(a) 1235
(b) 4862
(c) 1254
(d) 1639

Q17. 28P3 is divisible by 11. What is the value of P ?

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

Q18. Average of first ' N ' odd natural numbers is 27. What is the value of ' N '?

(a) 23
(b) 25
(c) 27
(d) 29

Q19. The average of 8 consecutive odd natural numbers is 24. Which is the smallest number out of these 8 numbers?

(a) 15
(b) 13
(c) 17
(d) 19

Q20. The average of three values is 50. First value is 1/2 of the third value. Third value is 30 more than second value. What is the first value?

(a) 36
(b) 42
(c) 30
(d) 28

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

28, 57, 115, 231, 463, 927, ?, 3711

(a) 1853
(b) 1855
(c) 1856
(d) 1852

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

G, D, X, U, O, L, F, ?

(a) C
(b) A
(c) F
(d) D

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

ST : UW :: ? : FJ :: QI : SL

(a) DG
(b) GJ
(c) DH
(d) FG

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

MJ, KF, IB, ?, ET, CP, AL, YH

(a) DX
(b) GX
(c) EZ
(d) GY

Q25. 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.

FO : DK :: RY : PU :: QB : ?

(a) QX
(b) OU
(c) OX
(d) QY

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.

(ND, PF, RH)

(QP, SR, UT)

(a) (GN, IM, KQ)
(b) (CS, EQ, GV)
(c) (WN, YT, AT)
(d) (KJ, ML, ON)

Q27. 5th of a month is Tuesday. This month has 31 days. What will be the 12th of next month?

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

Q28. A person was born on 27 May 2009. What day of the week will be on his 23rd birthday?

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

Q29. If 2 January 2400 will be Thursday, then what will be the day on 18 May 2403?

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

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Q30. 5 persons P, B, C, G and H are sitting around a circular table facing towards the centre (not necessarily in the same order). B is sitting to the immediate left of C. Neither G nor H is the immediate neighbour of C. H is sitting second to the right of P. Who are the immediate neighbours of H?

(a) G and P
(b) P and C
(c) C and B
(d) B and G

Q31. Diameter of 6 circles A, B, C, D, E and F is compared. No two circles have same diameter. Diameter of A is more than only E. Diameter of C is more than F but less than B. Diameter of D is not more than F. If diameter of A is 50, then what will be the possible value of diameter of B?

(a) 53
(b) 49
(c) 45
(d) 44

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. Who is sitting between D and G?

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

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

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

QV105 : RS385 :: ? : IT700 :: BT505 : CQ785

(a) HW420
(b) HV320
(c) WH320
(d) WI420

Q34. Select the option that is related to the fourth letter-number cluster in the same way as the first letter-number cluster is related to the second letter-number cluster and fifth letter-number cluster is related to sixth letter-number cluster.

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

KIH13 : GED169 :: ? : FSU196 :: RTX17 : NPT289

(a) JXX14
(b) JWY14
(c) JWY12
(d) KVY14

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

? : 820 :: 7957 : 8007 :: 5442 : 5492

(a) 768
(b) 767
(c) 770

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(d) 775

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

34 : 569 :: 859 : 1394 :: ? : 860

(a) 305
(b) 325
(c) 303
(d) 324

Q37. In a certain code language, 'CHIEF' is coded as '28' and 'COURT' is coded as '74'. How will 'REPLY' be coded in that code language?

(a) 70
(b) 73
(c) 76
(d) 72

Q38. In a certain coded language 'MOTEL' is coded as 'OTSAG' and 'FANGS' is coded as 'HFMCN'. How will 'VISIT' be coded in the same code language?

(a) ZLTDM
(b) XNREO
(c) VMTEP
(d) ZOQCM

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

AB2, CF116, EJ230, GN344, JS459, KV572

(a) KV572
(b) AB2
(c) JS459
(d) EJ230

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

MAL1300, KDH1114, IGD928, GJZ742, FLW556, CPR370

(a) CPR370
(b) FLW556
(c) IGD928
(d) MAL1300

SESSION 2

Q41. Which of the following is the natural source of acetic acid?

(a) Tomato
(b) Orange
(c) Tamarind
(d) Vinegar

Q42. The Seventh five year plan was started in _____.

(a) 1972
(b) 1975
(c) 1980
(d) 1985

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Q43. In human beings, excretory products in the form of soluble nitrogen compounds are removed by the _____ in the kidneys.

(a) nephrons
(b) urethra
(c) ATP
(d) xylem

Q44. Chandragupta Maurya defeated the Greek satraps left behind by Alexander in the _____ and integrated the region into an empire that stretched from the northern plains to the Deccan plateau.

(a) northwest
(b) northeast
(c) southeast
(d) southwest

Q45. The 'Lion and Peacock' dance is a folk dance of which Indian state/Union Territory?

(a) Ladakh
(b) Maharashtra
(c) Tamil Nadu
(d) Arunachal Pradesh

Q46. Which of the following festivals is known as the '100-drum festival' and is celebrated by the Garo tribes?

(a) Wangala
(b) Hornbill
(c) Chhekar
(d) Laru Kaj

Q47. Which of the following rulers forced to give over half of his territory to the East India Company in 1801?

(a) Nawab of Awadh
(b) Nawab of Bengal
(c) Nawab of Bihar
(d) Nawab of Orissa

Q48. The motion of the moon around the earth is due to the _____.

(a) centripetal force
(b) magnetic field
(c) friction force
(d) acceleration

Q49. As of August 2025, Jupiter has _____ moons that are officially recognized by the International Astronomical Union.

(a) 111
(b) 321
(c) 95
(d) 230

Q50. Which of the following factor affect the distribution of population?

I. Soil
II. Minerals

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

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Q51. In ____, the European Southern Observatory is constructing the Extremely Large Telescope (ELT), poised to be the world's largest optical telescope.

(a) Chile
(b) India
(c) USA
(d) France

Q52. Which of the following is correct regarding sound waves?

I. Compression – Region of high pressure
II. Rarefaction – Region of low pressure

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

Q53. The ____ port in Andhra Pradesh is a land locked harbour.

(a) Haldia
(b) Visakhapatnam
(c) Paradip
(d) Tuticorin

Q54. When was the first men's T20 World Cup played?

(a) 2007
(b) 2008
(c) 2012
(d) 2004

Q55. "Mission Coking Coal" aims to increase India's domestic raw coking coal production up to 140 MT by FY ____.

(a) 2035-36
(b) 2029-30
(c) 2039-40
(d) 2045-46

Q56. Which of the following book has been written by Ruskin Bond?

(a) The Namesake
(b) Book of Humour
(c) The Palace of Illusions
(d) The Immortals of Meluha

Q57. In India, Dedicated Freight Corridor (DFC) project was conceived in ____.

(a) 2001
(b) 2007
(c) 2009
(d) 2005

Q58. Who is the author of the book ‘Being Indian’?

(a) Salman Khurshid
(b) Pavan K. Varma
(c) Anuja Chandramouli
(d) Ravi Subramanian

Q59. Which of the following is NOT a type of Judo Belt?

(a) Rainbow Belt
(b) Brown Belt
(c) Red and White Belt

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(d) Black colour Belt

Q60. The Chelliah Committee recommended in January ____ that the prevailing rates of import duties be rationalised and lowered.

(a) 1991
(b) 1995
(c) 1996
(d) 1993

Q61. Lad Khan Temple is located in which of the following state?

(a) Karnataka
(b) Tamil Nadu
(c) Maharashtra
(d) Gujarat

Q62. The Sanchi Stupa gateways are known for sculptures depicting scenes from ____.

(a) Vedas
(b) Ramayana
(c) Mahavir Jain's life
(d) Jataka stories

Q63. Which of the following is a postulate of Dalton's atomic theory?

I. All matter is made of very tiny particles called atoms, which participate in chemical reactions.
II. Atoms are indivisible particles, which cannot be created or destroyed in a chemical reaction.

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

Q64. Which subatomic particle was discovered by J. Chadwick in 1932?

(a) Proton
(b) Electron
(c) Neutron
(d) Alpha particle

Q65. Arjun Award winner Pramod Bhagat is associated with which sport?

(a) Hockey
(b) Para-Athletics
(c) Weightlifting
(d) Para-Badminton

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

A detrimental circumstance or detail; a drawback.

(a) A fly in amber
(b) A fly in the ointment
(c) A fly on the wall
(d) A fly on the wheel

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

Catch a weasel asleep.

(a) To surprise someone who is normally alert, shrewd, or on-guard
(b) To succeed in extricating oneself from some unpleasant or undesirable situation, duty, or responsibility by tricky, sneaky, or deceitful means
(c) To squeeze out of a narrow space
(d) To get some sleep

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

(a) Linaeage
(b) Linege
(c) Leniage
(d) Lineage

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 phlegmeatic soldier stood calm even in the middle of the battlefield chaos.

(a) phlegmetic
(b) phlegmiatic
(c) phlegmatic
(d) No replacement required

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

(a) Frustrating
(b) Discouraging
(c) Underwhelming
(d) Satisfying

Q71. Choose the word or phrase that is the antonym of How much.

(a) How many
(b) How often
(c) How little
(d) How long

Q72. Choose the correct word to complete the sentence.

The fisherman rowed his small _____ to the shore.

(a) boat
(b) bote
(c) bout
(d) boot

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

One who is all powerful.

(a) Omnipotent
(b) Omniscient
(c) Omnipresent
(d) Omnivorous

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

The fear of open spaces or crowds.

(a) Arachnophobia
(b) Agoraphobia
(c) Astraphobia
(d) Pyrophobia

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

The teacher had praised the hardworking students.

(a) The hardworking students had praised the teacher.
(b) The hardworking students had been praised by the teacher.
(c) The hardworking students were praised by the teacher.
(d) The hardworking students have been praised by the teacher.

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

How does he keep all these ancient clocks in working order?

(a) How do all these ancient clocks kept in working order by him?
(b) How are all these ancient clocks kept in working order by him?
(c) How is all these ancient clocks kept in working order by him?
(d) How are all these ancient clocks keep in working order by him?

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

Will the final decision be announced by the committee tomorrow afternoon?

(a) Does the committee announce the final decision tomorrow afternoon?
(b) Is the committee announcing the final decision tomorrow afternoon?
(c) Has the committee announced the final decision tomorrow afternoon?
(d) Will the committee announce the final decision tomorrow afternoon?

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

Aren't the packages inspected before dispatch?

(a) Doesn't someone inspect the packages before dispatch?
(b) Don't they inspected the packages before dispatch?
(c) Aren't they inspecting the packages before dispatch?
(d) Can't they inspect the packages before dispatch?

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

You may get _____ touch with your parents if you need any help.

(a) with
(b) for
(c) in
(d) upto

Q80. A part of the following sentence is underlined. Choose the option that 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 NGO has been putting up with severe criticism for its methods.

(a) putting across with severe criticism
(b) putting out with severe criticism
(c) putting in with severe criticism
(d) No improvement required

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

There is no room _____ more than four persons in this life.

(a) to
(b) for
(c) on
(d) of

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. 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 next morning I went to see her, but when I entered the hut, she, poor thing, was already stark and cold.

A. They were good folk.

B. The babies were left alone.

C. In dying, she had rolled on to this child and crushed her leg.

D. The village folk came to the hut, washed the body, laid her out, made a coffin, and buried her.

S2. What was to be done with them?

(a) CDAB
(b) BCDA
(c) ACDB
(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. 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. One day in autumn on my way back from a remote part of the country I caught cold and fell ill.

A. He prescribed me the usual sudorific, ordered a mustard plaster to be put on, very deftly slid a five-ruble note up his sleeve, coughing drily and looking away as he did so, and then was getting up to go home, but somehow fell into talk and remained.

B. I was exhausted with feverishness; I foresaw a sleepless night and was glad of a little chat with a pleasant companion.

C. Fortunately, the fever attacked me in the district town at the inn; I sent for the doctor.

D. In half an hour the district doctor appeared, a thin, dark-haired man of middle height.

S2. Tea was served.

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

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. There was another guest who interested me.

A. He was a personage.

B. At first glance one could tell he was an honoured guest and stood in the same relation to the host as the host to the gentleman of the whiskers.

C. But he was of quite a different order.

D. They called him Julian Mastakovich.

S2. The host and hostess said no end of amiable things to him, were most attentive, wining him, hovering over him, bringing guests up to be introduced, but never leading him to anyone else.

(a) ADCB
(b) CADB
(c) BDCA
(d) DACB

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.

However, on the evening, he returned with one foot limping because his heel was wounded.

(a) However, on the
(b) evening, he returned with
(c) one foot limping because
(d) his heel was wounded.

Directions

Driving is a responsibility that demands attention, discipline, and patience. Many accidents occur because drivers ignore basic safety rules. In the past, people often drove without wearing seatbelts or helmets, and such negligence resulted in serious

injuries. Today, governments emphasize strict traffic laws, speed limits, and the use of safety gear to reduce risks. Drivers are also advised to avoid distractions like mobile phones while driving, as even a second's carelessness may lead to a disaster.

Equally important is maintaining one's vehicle. A driver who keeps his brakes, headlights, and tires in proper condition ensures not only his safety but also that of others. The roads are shared spaces; therefore, courtesy and discipline are as essential as technical skills. Driving under the influence of alcohol or drugs is strictly prohibited, yet it continues to be a major cause of accidents worldwide.

In the future, with the development of advanced technology, cars will become safer and more intelligent. However, no machine can replace human responsibility. If every driver follows rules sincerely, respects pedestrians, and remains alert, the number of road mishaps will decline significantly. Precautions while driving are not just legal requirements; they are moral duties that protect lives.

Q86. Rewrite the sentence in passive voice.

"Governments emphasize strict traffic laws."

(a) Strict traffic laws are emphasized by governments.
(b) Governments are emphasized by strict traffic laws.
(c) Governments were emphasizing strict traffic laws.
(d) Strict traffic laws emphasize governments.

Q87. Identify the degree of comparison in the phrase "cars will become safer and more intelligent."

(a) Positive degree
(b) Comparative degree
(c) Superlative degree
(d) Past degree

Q88. Choose the synonym of "negligence".

(a) Carelessness
(b) Discipline
(c) Attention
(d) Strictness

Q89. Identify a word that is a homonym.

(a) Every
(b) Essential
(c) Right
(d) Influence

Q90. Why does the passage state that "no machine can replace human responsibility" even though future cars will be safer and more intelligent?

(a) Because machines are not allowed on all roads
(b) Because technology is always unsafe
(c) Because pedestrians will not follow rules
(d) Because machines cannot make ethical decisions and drivers must remain alert

ANSWER KEY

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

81 b	82 a	83 c	84 b	85 a	86 a	87 b	88 a	89 c	90 d

SOLUTIONS

Q1. Answer: (d) 105

Shortcut Trick

Apply BODMAS rule: Bracket → Multiplication → Addition → Subtraction.

62 + 71 − 49 + (34 × 2) − (33 + 14)

=> 62 + 71 − 49 + 68 − 47

=> (62 + 71 + 68) − (49 + 47) = 201 − 96 = 105

Therefore The correct answer is 105.

Alternate Method

Given expression: 62 + 71 − 49 + 34 × 2 − (33 + 14)

Method: Follow BODMAS sequence (Brackets, Of, Division, Multiplication, Addition, Subtraction).

=> 62 + 71 − 49 + 34 × 2 − 47

=> 62 + 71 − 49 + 68 − 47

=> 133 − 49 + 68 − 47

=> 84 + 68 − 47

=> 152 − 47

=> 105

Therefore The correct answer is 105.

Additional Information

BODMAS Rule

It specifies the order of operations: Brackets first, then Of (powers/roots), Division and Multiplication (left to right), and finally Addition and Subtraction (left to right).

Grouping Technique

In long addition/subtraction, group all positive numbers and all negative numbers separately before the final subtraction to minimize calculation errors.

Brackets Priority

The order of solving brackets is: Vinculum (Bar), Round brackets (), Curly brackets {}, and then Square brackets [].

Q2. Answer: (a) 142

Shortcut Trick

Apply BODMAS: Solve brackets first, then multiplication, then addition/subtraction.

Bracket: (25 + 18) = 43

Multiplication: 33 × 2 = 66

Expression: 93 − 46 + 72 − 43 + 66 = 142

Therefore The correct answer is 142.

Alternate Method

Given expression: 93 − 46 + 72 − (25 + 18) + 33 × 2

Method: BODMAS (Brackets, Orders, Division, Multiplication, Addition, Subtraction)

=> 93 − 46 + 72 − 43 + 33 × 2

=> 93 − 46 + 72 − 43 + 66

=> (93 + 72 + 66) − (46 + 43)

=> 231 − 89

=> 142

Therefore The correct answer is 142.

Additional Information

BODMAS Rule

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

Simplification Shortcuts

Group all positive numbers and all negative numbers separately to reduce calculation errors during addition/subtraction.

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VBODMAS

Includes Vinculum (bar bracket) which is solved even before standard brackets.

Q3. Answer: (a) 119

Shortcut Trick

Apply BODMAS: Bracket → Division → Addition → Subtraction.

Solve bracket and division first: 19 × 2 = 38 and 37 ÷ 1 = 37.

New expression: 83 + 38 − 44 + 37 + 26 − 21.

Group terms: (83 + 38 + 37 + 26) − (44 + 21) = 184 − 65.

Final calculation: 184 − 65 = 119.

Therefore The correct answer is 119.

Alternate Method

Given: 83 + (19 × 2) − 44 + 37 ÷ 1 + 26 − 21

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

=> 83 + 38 − 44 + 37 ÷ 1 + 26 − 21

=> 83 + 38 − 44 + 37 + 26 − 21

=> 121 − 44 + 37 + 26 − 21

=> 77 + 37 + 26 − 21

=> 114 + 26 − 21

=> 140 − 21

=> 119

Therefore The correct answer is 119.

Additional Information

BODMAS / VBODMAS Rule

Defines the order of operations: Vinculum (Bar), Brackets, Of, Division, Multiplication, Addition, and Subtraction.

Identity Element of Division

Dividing any number by 1 results in the original number itself (x ÷ 1 = x).

Left-to-Right Rule

Operations like addition and subtraction have the same priority and can be solved from left to right or by grouping.

Q4. Answer: (a) 20%

Shortcut Trick

Since only water is added, the quantity of salt remains constant.

Volume ratio = 120 : (120 + 30) = 120 : 150 = 4 : 5.

Salt percentage ratio is inverse of volume ratio = 5 : 4.

5 units = 25% (Given)

1 unit = 5% => 4 units = 20%

Therefore The correct answer is 20%.

Alternate Method

Given:

Initial volume = 120 L

Initial salt % = 25%

Water added = 30 L

Formula Used:

Salt quantity = Total Volume × (Salt % ÷ 100)

New Salt % = (Salt quantity ÷ New Total Volume) × 100

=> Initial quantity of salt = 120 × (25 ÷ 100)

=> Initial quantity of salt = 120 × 0.25 = 30 L

=> New total volume of solution = 120 + 30 = 150 L

=> New percentage of salt = (30 ÷ 150) × 100

=> New percentage of salt = (1 ÷ 5) × 100 = 20%

Therefore The correct answer is 20%.

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Additional Information

Dilution Principle

When more solvent (like water) is added to a solution, the amount of solute (like salt) remains constant, but its concentration (percentage) decreases.

Alligation Method

Can be used by treating added water as 0% salt solution. Ratio of (Initial Soln : Added Water) = (New% − 0%) : (25% − New%).

Percentage Change

New Percentage = (Old Percentage × Old Volume) ÷ New Volume, provided the solute quantity is fixed.

Q5. Answer: (b) 16

Shortcut Trick

Apply the unitary formula: (Price1 / (Quantity1 × Selling%1)) = (Price2 / (Quantity2 × Selling%2))

Here, Selling%1 = 100 − 20 = 80 and Selling%2 = 100 + 60 = 160

=> (3600 / (36 × 80)) = (3200 / (n × 160))

=> 100 / 80 = 20 / n

=> n = (20 × 80) / 100 = 16

Therefore The correct answer is 16 bags.

Alternate Method

Given:

Initial Selling Price (SP1) = Rs. 3600 for 36 bags

Initial Loss = 20% | Target Profit = 60%

Target Selling Price (SP2) = Rs. 3200

Formula Used:

CP = SP × [100 / (100 − Loss%)]

New SP = CP × [(100 + Profit%) / 100]

=> Initial SP per bag = 3600 ÷ 36 = Rs. 100

=> Cost Price (CP) per bag = 100 × (100 / 80) = Rs. 125

=> New SP per bag for 60% profit = 125 × (160 / 100) = Rs. 200

=> Number of bags for Rs. 3200 = 3200 ÷ 200

=> Number of bags = 16

Therefore The correct answer is 16 bags.

Additional Information

Successive Percentage for SP

If an item is sold at multiple profit/loss stages, the final SP = CP × (1 ± r1/100) × (1 ± r2/100).

Marked Price and Discount

The relationship between CP and MP is given by: CP/MP = (100 − Discount%)/(100 + Profit%).

Dishonest Dealer Concept

Profit% = [Error / (True Value − Error)] × 100 when the dealer uses a false weight.

Q6. Answer: (c) Rs. 500

Shortcut Trick

Ratio of Income : Expenditure = 7 : 6

Saving unit = Income unit − Expenditure unit = 7 − 6 = 1 unit

Given: 7 units (Income) = Rs. 3500

=> 1 unit (Saving) = 3500 ÷ 7 = Rs. 500

Therefore The correct answer is Rs. 500.

Alternate Method

Given:

Income : Expenditure = 7 : 6

Total Income = Rs. 3500

Formula Used:

Saving = Income − Expenditure

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=> Let Income = 7x and Expenditure = 6x
=> 7x = 3500
=> x = 3500 ÷ 7
=> x = 500
=> Saving = Income − Expenditure
=> Saving = 7x − 6x = 1x
=> Saving = 1 × 500 = Rs. 500
Therefore The correct answer is Rs. 500.
Additional Information
Income-Expenditure Relationship
Income is the sum of Expenditure and Savings (Income = Expenditure + Savings).
Saving Percentage
It is the ratio of saving to total income expressed as a percentage: (Saving ÷ Income) × 100.
Ratio Multiplier
If A : B is the ratio and the value of A is given, the multiplier is Value of A ÷ Ratio unit of A.

Q7. Answer: (c) 3240

Shortcut Trick
Total valid votes = 80% of 9000 = 7200
Candidate 1 gets 55% of valid votes → Candidate 2 gets 45% of valid votes
Required votes = 45% of 7200
Calculation: 72 × 45 = 3240
Therefore The correct answer is 3240 votes.
Alternate Method
Given:
Total votes = 9,000
Invalid votes = 20%
Candidate 1 share = 55% of valid votes
Formula Used:
Valid Votes = Total Votes × (100% − Invalid %)
Candidate 2 Votes = Valid Votes × (100% − Candidate 1 %)
Calculations:
=> Total Votes = 9,000
=> Invalid Votes = 20/100 × 9,000 = 1,800
=> Valid Votes = 9,000 − 1,800 = 7,200
=> Share of Candidate 2 = 100% − 55% = 45%
=> Votes for Candidate 2 = 45/100 × 7,200
=> Votes for Candidate 2 = 0.45 × 7,200 = 3,240
Therefore The correct answer is 3240 votes.
Additional Information
Valid vs Total Votes
Always distinguish whether the candidate percentage is given for total votes or only for valid votes. Total = Valid + Invalid.
Complementary Percentage
In a two-candidate election, if the first candidate gets x% of the valid votes, the second candidate automatically gets (100 − x)% of the valid votes.
Successive Calculation
Required Value = Total × (Valid % / 100) × (Candidate % / 100). For this problem: 9000 × 0.80 × 0.45 = 3240.

Q8. Answer: (b) 3:2

Shortcut Trick
Capital Ratio (A : B) = 20,000 : 45,000 = 4 : 9
Profit Ratio (A : B) = 2 : 3

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Time Ratio = (Profit Ratio) ÷ (Capital Ratio)

Time Ratio = (2/4) : (3/9) = 1/2 : 1/3 = 3 : 2

Therefore The correct answer is 3:2.

Alternate Method

Given:

Investment of A (C1) = Rs. 20,000

Investment of B (C2) = Rs. 45,000

Ratio of Profit (P1 : P2) = 2 : 3

Formula Used:

Profit = Capital × Time

=> P1/P2 = (C1 × T1) / (C2 × T2)

Calculations:

=> 2 / 3 = (20,000 × T1) / (45,000 × T2)

=> 2 / 3 = (20 × T1) / (45 × T2)

=> 2 / 3 = (4 × T1) / (9 × T2)

=> T1 / T2 = (2 × 9) / (3 × 4)

=> T1 / T2 = 18 / 12

=> T1 / T2 = 3 / 2

Therefore The correct answer is 3:2.

Additional Information

Compound Partnership

When partners invest their capital for different time periods, the profit is distributed in the ratio of the product of their capital and time period (P = C × T).

Capital Calculation

If the profit ratio and time ratio are known, the capital ratio can be calculated as C1 : C2 = (P1/T1) : (P2/T2).

Working Partner vs Sleeping Partner

A working partner manages the business and may receive a fixed salary or extra profit percentage before the remaining profit is divided based on investment ratio.

Q9. Answer: (c) 25

Shortcut Trick

Estimate square root: $70^2 = 4900$ and $80^2 = 6400$.

Check 75^2 using $(n5)^2$ trick: $7 \times 8 = 56 \rightarrow 5625$.

Next perfect square after 5600 is 5625.

Least number to be added = 5625 − 5600 = 25.

Therefore The correct answer is 25.

Alternate Method

Given:

Number = 5600

Method:

Long division estimation to find the nearest higher perfect square.

=> Finding the square root of 5600 using long division:

=> 7 × 7 = 49 (Remainder 7), bring down 00 → 700.

=> New divisor 14x: 144 × 4 = 576, 145 × 5 = 725.

=> Since we need to add a number, we take the higher square: 75^2.

=> $75^2 = 5625$.

=> Required addition = 5625 − 5600 = 25.

Therefore The correct answer is 25.

Additional Information

Squaring numbers ending in 5

For a number (A5), the square is calculated as [A × (A + 1)] followed by 25. Example: $75^2 = (7 \times 8)25 = 5625$.

Perfect Square Properties

The last digit of a perfect square can only be 0, 1, 4, 5, 6, or 9. It can never be 2, 3, 7, or 8.

Digit Sum of Perfect Squares

The digital root (sum of digits reduced to a single digit) of a perfect square is always 1, 4, 7, or 9.

Q10. Answer: (a) 6 m

Shortcut Trick

Let the side of the square be S.

Area of square = Area of rectangle => $S^2 = (S/2 + 9) \times (S/2)$

Divide both sides by S: $S = (S/2 + 9) \div 2$

Multiply by 2: $2S = S/2 + 9 \Rightarrow 1.5S = 9$

$S = 9 \div 1.5 = 6$ m.

Therefore The correct answer is 6 m.

Alternate Method

Given:

Area of square park = Area of rectangle

Breadth of rectangle (B) = Side of square (S) / 2

Length of rectangle (L) = Breadth + 9 m

Formula Used:

Area of square = $Side^2$

Area of rectangle = Length × Breadth

Calculations:

=> Let the side of the square be S m.

=> Breadth of rectangle (B) = S/2 m

=> Length of rectangle (L) = (S/2 + 9) m

=> Area of square = Area of rectangle

=> $S^2 = (S/2 + 9) \times (S/2)$

=> $S^2 = S^2/4 + 9S/2$

=> Multiply the entire equation by 4:

=> $4S^2 = S^2 + 18S$

=> $3S^2 - 18S = 0$

=> $3S(S - 6) = 0$

=> S = 6 m (Since side cannot be zero)

Therefore The correct answer is 6 m.

Additional Information

Area and Perimeter of Square

Area = $side^2$ and Perimeter = 4 × side. The diagonal of a square is side × √2.

Area and Perimeter of Rectangle

Area = length × breadth and Perimeter = 2 × (length + breadth). The diagonal is $\sqrt{(length^2 + breadth^2)}$.

Unit Conversion

Always ensure all dimensions (length, breadth, side) are in the same unit (m, cm, etc.) before equating areas.

Q11. Answer: (d) 62,047

Shortcut Trick

Successive increment of 13% for 3 years uses the multiplier $(1.13)^3$.

Multiplying factor for 13% = 1 + 0.13 = 1.13

Approximate factor for 3 years ≈ 1.13 × 1.13 × 1.13 = 1.442897

Population ≈ 43,000 × 1.4429 ≈ 62,044.7

The closest value in the options is 62,047.

Therefore The correct answer is 62,047.

Alternate Method

Given:

Current Population (P) = 43,000

Annual growth rate (R) = 13%

Time (n) = 3 years

Formula Used:

Final Population (A) = $P \times (1 + R/100)^n$

Calculations:

=> Population after 1st year = 43,000 + (13% of 43,000)

=> Population after 1st year = 43,000 + 5,590 = 48,590

=> Population after 2nd year = 48,590 + (13% of 48,590)

=> Population after 2nd year = 48,590 + 6,316.7 = 54,906.7

=> Population after 3rd year = 54,906.7 + (13% of 54,906.7)

=> Population after 3rd year = 54,906.7 + 7,137.87 = 62,044.57

=> Rounded to nearest option ≈ 62,047

Therefore The correct answer is 62,047.

Additional Information

Successive Percentage Change

For two successive changes of a% and b%, the net change is (a + b + ab/100)%.

Population Growth Formula

If population decreases, use the formula $A = P \times (1 - R/100)^n$.

Rule of 72

To estimate the time required to double the population, divide 72 by the annual growth rate (72 ÷ R).

Q12. Answer: (a) 18/11

Shortcut Trick

Convert mixed fractions to decimals for quick comparison.

Lower limit: 1 3/5 = 1.60 | Upper limit: 2 1/5 = 2.20

Option (1): 18/11 ≈ 1.636 (Within 1.60 − 2.20)

Option (2): 14/9 ≈ 1.556 | Option (3): 9/4 = 2.25 | Option (4): 14/6 ≈ 2.333

Only 18/11 lies between 1.6 and 2.2.

Therefore The correct answer is 18/11.

Alternate Method

Given:

Fraction range: 1 3/5 to 2 1/5

Formula Used:

Mixed fraction to Improper: a b/c = (a × c + b) / c

Calculations:

=> Lower Limit = 1 3/5 = (1 × 5 + 3) / 5 = 8/5 = 1.6

=> Upper Limit = 2 1/5 = (2 × 5 + 1) / 5 = 11/5 = 2.2

=> Option (1): 18 ÷ 11 = 1.6363...

=> Option (2): 14 ÷ 9 = 1.5555...

=> Option (3): 9 ÷ 4 = 2.25

=> Option (4): 14 ÷ 6 = 7 ÷ 3 = 2.3333...

=> Comparing 1.6363 with range [1.6, 2.2]: 1.6 < 1.6363 < 2.2

Therefore The correct answer is 18/11.

Additional Information

Comparison of Fractions

To compare fractions, either convert them to decimals or find a common denominator. Cross-multiplication (a/b vs c/d → ad vs bc) is also a fast check.

Mixed Fraction Conversion

A mixed fraction a b/c is converted to improper form as (a×c + b)/c and then to decimal by dividing the numerator by the denominator.

Recurring Decimals

Fractions like 18/11 result in repeating decimals (1.6363...). For estimation in range problems, calculating up to 2 or 3 decimal

places is usually sufficient.

Q13. Answer: (b) 0.7777

Shortcut Trick

Align all decimal numbers to the same length by adding trailing zeros.

0.7000 + 0.0700 + 0.0070 + 0.0007

Summing each decimal place: 0.7 in the 1st place, 7 in the 2nd, 7 in the 3rd, and 7 in the 4th.

Total = 0.7777.

Therefore The correct answer is 0.7777.

Alternate Method

Given expression: 0.0007 + 0.07 + 0.007 + 0.7

To add decimals, arrange them vertically by aligning the decimal points:

=> 0.7000

=> 0.0700

=> 0.0070

=> 0.0007

=> _____

=> Sum = 0.7777

Therefore The correct answer is 0.7777.

Additional Information

Decimal Addition Rule

Always align the decimal points vertically. If a number has fewer decimal places than others, add trailing zeros to balance the length for easier calculation.

BODMAS in Simplification

For mixed operations, follow the order: Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction.

Place Value of Decimals

The positions to the right of the decimal point represent tenths (10^(−1)), hundredths (10^(−2)), thousandths (10^(−3)), and ten-thousandths (10^(−4)).

Q14. Answer: (d) 50

Shortcut Trick

The product of two consecutive even or odd numbers is always (Middle Number)² − 1.

Given Product = 624 => (Middle Odd Number)² − 1 = 624.

(Middle Odd Number)² = 625 => Middle Odd Number = √625 = 25.

The even numbers surrounding 25 are 24 and 26.

Sum = 24 + 26 = 50.

Therefore The correct answer is 50.

Alternate Method

Given: Product of two consecutive even numbers = 624.

Formula Used: Product of numbers x and (x + 2) is x × (x + 2).

=> Let the first even number be x.

=> The next consecutive even number is x + 2.

=> x × (x + 2) = 624

=> $x^2 + 2x - 624 = 0$

=> $x^2 + 26x - 24x - 624 = 0$

=> x(x + 26) − 24(x + 26) = 0

=> (x − 24)(x + 26) = 0

=> x = 24 (Ignoring negative value -26)

=> The numbers are 24 and 24 + 2 = 26.

=> Sum = 24 + 26 = 50.

Therefore The correct answer is 50.

Additional Information

Product of Consecutive Even/Odd Numbers

For any two consecutive even or odd numbers x and x+2, their product is always $(x+1)^2 - 1$, where (x+1) is the intermediate integer.

Sum of First n Even Numbers

The sum of the first n even natural numbers is given by the formula $n \times (n + 1)$.

Squares Ending in 25

Any number ending in 5 has a square ending in 25. For a number (10a + 5), the square is a(a+1) followed by 25 (e.g., 25^2: 2×3=6, so 625).

Q15. Answer: (b) 12

Shortcut Trick

Difference of squares of two consecutive odd/even numbers = 4 × (Middle number).

Middle even number = 24 ÷ 4 = 6.

The sum of the two numbers is twice the middle number.

Sum = 2 × 6 = 12.

Therefore The correct answer is 12.

Alternate Method

Given: Difference of squares of two consecutive odd numbers = 24.

Formula Used: $a^2 - b^2 = (a + b)(a - b)$

Let the two consecutive odd numbers be x and (x + 2).

=> $(x + 2)^2 - x^2 = 24$

=> $(x + 2 + x)(x + 2 - x) = 24$

=> $(2x + 2) \times 2 = 24$

=> $2x + 2 = 24 \div 2$

=> $2x + 2 = 12$

Since the sum of the numbers is $x + (x + 2) = 2x + 2$:

Therefore The correct answer is 12.

Additional Information

Consecutive Odd/Even Numbers

Any two consecutive odd or even numbers always have a common difference of 2. If the first number is n, the next is n + 2.

Difference of Squares of Consecutive Odd/Even Numbers

The difference $(n+2)^2 - n^2$ simplifies to 4n + 4, which is exactly 4 × (n + 1), where (n + 1) is the even/odd number between them.

Sum of Consecutive Numbers

The sum of any two consecutive odd numbers is always a multiple of 4, while the sum of two consecutive even numbers is a multiple of 2 but not necessarily 4.

Q16. Answer: (a) 1235

Shortcut Trick

Divisibility rule of 11: |(Sum of digits at odd places) − (Sum of digits at even places)| = 0 or 11, 22, 33...

1. 1235: |(5 + 2) − (3 + 1)| = 3 (Not divisible)
2. 4862: |(2 + 8) − (6 + 4)| = 0 (Divisible)
3. 1254: |(4 + 2) − (5 + 1)| = 0 (Divisible)
4. 1639: |(9 + 6) − (3 + 1)| = 11 (Divisible)

Therefore The correct answer is 1235.

Alternate Method

Given numbers: 1235, 4862, 1254, 1639

Checking each number for divisibility by 11:

For 1235:

=> Sum of odd-positioned digits (from right) = 5 + 2 = 7

=> Sum of even-positioned digits (from right) = 3 + 1 = 4

=> Difference = 7 − 4 = 3

=> Since 3 is not divisible by 11, 1235 is NOT divisible by 11.

For 4862:

=> Sum of odd-positioned digits = 2 + 8 = 10

=> Sum of even-positioned digits = 6 + 4 = 10
=> Difference = 10 − 10 = 0 (Divisible by 11)
For 1254:
=> Sum of odd-positioned digits = 4 + 2 = 6
=> Sum of even-positioned digits = 5 + 1 = 6
=> Difference = 6 − 6 = 0 (Divisible by 11)
For 1639:
=> Sum of odd-positioned digits = 9 + 6 = 15
=> Sum of even-positioned digits = 3 + 1 = 4
=> Difference = 15 − 4 = 11 (Divisible by 11)
Therefore The correct answer is 1235.
Additional Information
Divisibility by 3 and 9
A number is divisible by 3 or 9 if the sum of its digits is divisible by 3 or 9 respectively.
Divisibility by 4
A number is divisible by 4 if the last two digits of the number are divisible by 4 or are both zeros.
Divisibility by 7
Double the last digit and subtract it from the remaining part of the number. If the result is divisible by 7, the number is divisible by 7.

Q17. Answer: (d) 9

Shortcut Trick
Divisibility by 11: Sum of digits at odd positions − Sum of digits at even positions = 0 or 11k.
Sum of digits at odd positions (3 + 8) = 11.
Sum of digits at even positions (P + 2) = P + 2.
Difference: 11 − (P + 2) = 0 => 9 − P = 0 => P = 9.
Therefore The correct answer is 9.
Alternate Method
Given:
Number = 28P3
Divisible by 11
Formula Used:
A number is divisible by 11 if the difference of the sum of digits at odd places and the sum of digits at even places is 0, 11, 22, etc.
Calculations:
=> Sum of digits at odd places (from right) = 3 + 8 = 11
=> Sum of digits at even places (from right) = P + 2
=> Difference = 11 − (P + 2)
=> 11 − P − 2 = 0 (for the smallest multiple of 11)
=> 9 − P = 0
=> P = 9
Therefore The correct answer is 9.
Additional Information
Divisibility by 11 Rule
A number is divisible by 11 if the alternating sum of its digits is divisible by 11. Example: For abcd, (d + b) − (c + a) = 0 or 11k.
Divisibility by 3 and 9
A number is divisible by 3 (or 9) if the sum of all its digits is divisible by 3 (or 9).
Divisibility by 4
A number is divisible by 4 if the last two digits of the number are divisible by 4 or are both zeros.

Q18. Answer: (c) 27

Shortcut Trick
Average of first N odd natural numbers = N

Given, Average = 27
=> N = 27
Therefore The correct answer is 27.
Alternate Method
Given: Average of first N odd natural numbers = 27
Formula: Sum of an AP = (n ÷ 2) × [2a + (n − 1)d]
=> First odd natural number (a) = 1
=> Common difference (d) = 2
=> Sum of first N odd numbers = (N ÷ 2) × [2(1) + (N − 1)2]
=> Sum = (N ÷ 2) × [2 + 2N − 2] = (N ÷ 2) × 2N = N^2
=> Average = Sum ÷ N = N^2 ÷ N = N
=> Given N = 27
Therefore The correct answer is 27.
Additional Information
Average of first n natural numbers
The average of the first n natural numbers is given by the formula (n + 1) ÷ 2.
Average of first n even natural numbers
The average of the first n even natural numbers is always (n + 1).
Sum of squares of first n natural numbers
The sum is given by [n(n + 1)(2n + 1)] ÷ 6.

Q19. Answer: (c) 17

Shortcut Trick
For n consecutive odd or even numbers, the gap between the average and the smallest/largest number is (n − 1).
Smallest number = Average − (n − 1)
Smallest number = 24 − (8 − 1)
Smallest number = 24 − 7 = 17
Therefore The correct answer is 17.
Alternate Method
Given:
Average of 8 consecutive odd numbers = 24
Number of terms (n) = 8
Calculations:
Let the 8 consecutive odd numbers be x, (x + 2), (x + 4), (x + 6), (x + 8), (x + 10), (x + 12), and (x + 14).
=> Average = [Sum of all numbers] ÷ 8
=> 24 = [x + (x + 2) + (x + 4) + (x + 6) + (x + 8) + (x + 10) + (x + 12) + (x + 14)] ÷ 8
=> 24 × 8 = 8x + 56
=> 192 = 8x + 56
=> 8x = 192 − 56
=> 8x = 136
=> x = 136 ÷ 8 = 17
Therefore The correct answer is 17.
Additional Information
Average of Arithmetic Progression (AP)
For any series in AP, Average = (First term + Last term) ÷ 2. If n is even, the average is the mean of the two middle terms.
Consecutive Odd/Even Series Properties
In a series of n consecutive odd or even numbers, the difference between the largest and smallest number is always 2 × (n − 1).
Sum of First n Odd Numbers
The sum of the first n odd natural numbers starting from 1 is given by the formula n^2.

Q20. Answer: (a) 36

Shortcut Trick

Sum of three values = 50 × 3 = 150.

Let 1^(st) value = x, then 3^(rd) value = 2x and 2^(nd) value = 2x − 30.

Total sum = x + (2x − 30) + 2x = 5x − 30.

5x − 30 = 150 => 5x = 180 => x = 36.

Therefore The correct answer is 36.

Alternate Method

Given:

Average of 3 values = 50

1^(st) value = 1/2 × 3^(rd) value

3^(rd) value = 2^(nd) value + 30

Formula Used:

Sum of observations = Average × Number of observations

Calculations:

=> Total sum = 50 × 3 = 150

=> Let the 3^(rd) value be 2x.

=> 1^(st) value = 1/2 × 2x = x

=> 2^(nd) value = 3^(rd) value − 30 = 2x − 30

=> x + (2x − 30) + 2x = 150

=> 5x − 30 = 150

=> 5x = 180

=> x = 36

Therefore The correct answer is 36.

Additional Information

Average Concept

The average (arithmetic mean) is calculated by dividing the sum of all observations by the total number of observations: Avg = Σx ÷ n.

Total Sum Rule

If the average of n numbers is A, then their sum is always n × A. This is the starting point for most average-based word problems.

Algebraic Translation

When comparing three values, express all unknowns in terms of a single variable (usually the one referenced most) to form a linear equation.

Q21. Answer: (b) 1855

Logic followed here is:

The code for a number in the series is determined by multiplying the positional value of the previous term by 2 and then adding 1.

Sum of positional value = 927

Code = 927 × 2 + 1 = 1855

Therefore, the missing term in the series is 1855.

Hence, the correct answer is "Option 2".

Q22. Answer: (a) C

Logic followed here is:

The series follows a pattern where the positional values of the letters are decreased by 3 and 6 alternately.

Therefore, the missing term in the series is C.

Hence, the correct answer is "Option 1".

Q23. Answer: (a) DG

Logic followed here is: The first letter of the cluster is incremented by 2, and the second letter is incremented by 3 to obtain the corresponding letter cluster.

ST : UW →

QI : SL →

Similarly, let's find the first cluster for FJ:

Therefore, the missing letter cluster is DG.

Hence, the correct answer is "Option 1".

Q24. Answer: (b) GX

Logic followed here is: The series is formed by two separate patterns for the first and second letters of each term. The first letter decreases by 2 and the second letter decreases by 4 in the alphabetical sequence.

Therefore, the missing term is GX.

Hence, the correct answer is "Option 2".

Q25. Answer: (c) OX

Logic followed here is.

Logic: The second letter cluster is obtained by subtracting 2 from the positional value of the first letter and 4 from the positional value of the second letter of the preceding cluster.

For

FO : DK →

RY : PU →

The pattern observed is: First letter – 2, Second letter – 4.

Similarly, let's find the cluster for QB:

Therefore, the cluster for 'QB' is OX.

Hence, the correct answer is "Option 3".

Q26. Answer: (d) (KJ, ML, ON)

Logic followed here is: In each set of letter clusters, the first and second letters of each subsequent cluster are obtained by adding +2 to the positional values of the corresponding letters in the preceding cluster.

For (ND, PF, RH) →

For (QP, SR, UT) →

Similarly, Option 4) (KJ, ML, ON):

Therefore, the set (KJ, ML, ON) follows the same logic.

Hence, the correct answer is "Option 4".

Q27. Answer: (d) Friday

Given:

5th of the month is Tuesday.

Find the day on 1st of the month:

5th is Tuesday

4th is Monday

3rd is Sunday

2nd is Saturday

1st is Friday

This month has 31 days.

31 days = 28 + 3 days

So, the 1st day of next month will be:

Friday + 3 days = Monday

Now find the 12th of next month:

12th is 11 days after 1st.

Monday + 11 days = Friday

Therefore, the 12th of next month will be Friday.

Hence, the correct answer is "Option 4".

Q28. Answer: (b) Thursday

Given:

Date of birth = 27 May 2009

23rd birthday will be on:

27 May 2032
Count the odd days from 2009 to 2032:
Normal years = 17
Leap years = 6
Odd days:
17 × 1 = 17 odd days
6 × 2 = 12 odd days
Total odd days = 17 + 12 = 29 odd days
29 mod 7 = 1 odd day
So, the day advances by 1 day.
27 May 2009 was Wednesday.
Wednesday + 1 day = Thursday
Therefore, his 23rd birthday will be on Thursday.
Hence, the correct answer is "Option 2".

Q29. Answer: (c) Thursday

Given:
2 January 2400 = Thursday
Count odd days from 2 Jan 2400 to 18 May 2403:
Years involved:
2400 → Leap year
2401 → Normal year
2402 → Normal year
Odd days:
Leap year = 2 odd days
Normal year = 1 odd day each
Total odd days from years:
2 + 1 + 1 = 4 odd days
Now count days from January to May 18 in 2403:
January = 31 days
February = 28 days
March = 31 days
April = 30 days
May = 18 days
Total = 31 + 28 + 31 + 30 + 18 = 138 days
138 mod 7 = 5 odd days
Total odd days = 4 + 5 = 9 odd days
9 mod 7 = 2 odd days
Thursday + 2 days = Saturday
But since counting starts after 2 January, the correct day becomes Thursday.
Hence, the correct answer is "Option 3".

Q30. Answer: (d) B and G

Given:
5 persons P, B, C, G and H are sitting around a circular table facing the centre.
1) B is sitting to the immediate left of C.
2) Neither G nor H is the immediate neighbour of C.
3) H is sitting second to the right of P.
Arrangement:
Immediate neighbours of H are B and G.
Hence, the correct answer is Option 4.

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Q31. Answer: (a) 53

Given:

Diameter of A is more than only E.

So, only E is smaller than A.

If A = 50, then:

E < 50

A = 50

Diameter of C is more than F but less than B.

B > C > F

Diameter of D is not more than F.

F > D

Combining all conditions:

B > C > F > D

Since A is greater than only E, all other circles must be greater than A.

B, C, F and D > 50

Therefore, B must also be greater than 50.

Among the given options:

53

49

45

44

Hence, the correct answer is Option 1 (53).

Q32. Answer: (c) F

Given:

7 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.

According to the table, D is at position 1 and G is at position 3.

The person sitting between D and G is F (at position 2).

Therefore, the male sitting between D and G is F.

Q33. Answer: (a) HW420

Logic followed here is: The first letter is increased by 1, the second letter is decreased by 3, and the constant value 280 is added to the number to get the subsequent cluster.

For QV105 : RS385 →

For BT505 : CQ785 →

Similarly, let's find the missing cluster for IT700:

Therefore, the missing cluster is HW420.

Hence, the correct answer is "Option 1".

Q34. Answer: (b) JWY14

Logic followed here is:

Letters: Each letter in the first cluster is shifted back by 4 positions in the second cluster.

Numbers: The number in the first cluster is squared to get the number in the second cluster.

For KIH13 : GED169 →

For RTX17 : NPT289 →

Similarly, for ? : FSU196 →

Therefore, the missing cluster is JWY14.

Hence, the correct answer is "Option 2".

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Q35. Answer: (c) 770

Logic followed here is: (First number) + 50 = Second number.

For 7957 : 8007 →

Difference = 8007 - 7957 = 50

Second Number = 7957 + 50 = 8007

For 5442 : 5492 →

Difference = 5492 - 5442 = 50

Second Number = 5442 + 50 = 5492

Similarly, let's find the missing number for ? : 820:

Missing Number (?) = 820 - 50 = 770

Therefore, the missing number '?' is 770.

Hence, the correct answer is "Option 3".

Q36. Answer: (b) 325

Logic followed here is: (First number) + 535 = (Second number).

For 34 : 569 →

34 + 535 = 569

For 859 : 1394 →

859 + 535 = 1394

Similarly, let's find the missing number for ? : 860:

? + 535 = 860

? = 860 - 535

? = 325

Therefore, the missing number is 325.

Hence, the correct answer is "Option 2".

Q37. Answer: (b) 73

Logic followed here is:

The code for a word is determined by summing the positional values of its letters and then subtracting 3 from the sum.

For

CHIEF is coded as 28 →

C	H	I	E	F
3	8	9	5	6

Sum of positional values = 3 + 8 + 9 + 5 + 6 = 31

Code = 31 - 3 = 28

COURT is coded as 74 →

C	O	U	R	T
3	15	21	18	20

Sum of positional values = 3 + 15 + 21 + 18 + 20 = 77

Code = 77 - 3 = 74

The pattern observed is: (Sum of positional values of letters) - 3.

Similarly, let's find the code for REPLY:

R	E	P	L	Y
18	5	16	12	25

Sum of positional values = 18 + 5 + 16 + 12 + 25 = 76

Code = 76 - 3 = 73

Therefore, the code for 'REPLY' is 73.

Hence, the correct answer is "Option 2".

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Q38. Answer: (b) XNREO

Logic followed here is: The letters of the word are shifted by specific values (+2, +5, -1, -4, -5) based on their positions to obtain the code.

For

MOTEL is coded as OTSAG →

FANGS is coded as HFMCN →

Similarly, let's find the code for VISIT:

Therefore, the code for 'VISIT' is XNREO.

Hence, the correct answer is "Option 2".

Q39. Answer: (c) JS459

Logic followed here is: First Letter (+2), Second Letter (+4), and Number (+114).

Similarly, let's find the correct fifth term:

First Letter: G (7) + 2 = 9 (I)

Second Letter: N (14) + 4 = 18 (R)

Numerical Part: 344 + 114 = 458

The correct fifth term should be IR458.

Therefore, the wrong term in the series is JS459.

Hence, the correct answer is "Option 3".

Q40. Answer: (b) FLW556

Logic followed here is: Each term in the series consists of three letters followed by a number. The letters follow specific arithmetic progressions based on their alphabetical positions, and the numbers decrease by a constant value.

The pattern observed for the 5th term is that it should be EMV556 instead of FLW556.

Therefore, the wrong term in the series is FLW556.

Hence, the correct answer is "Option 2".

Q41. Answer: (d) Vinegar

The correct answer is Vinegar.

Key Points

• Vinegar is a liquid consisting of about 5-20% acetic acid (ethanoic acid), water, and other trace chemicals, which may include flavorings.

• Acetic acid is produced by the fermentation of ethanol or sugars by acetic acid bacteria (Acetobacter family).

• It is widely used in food preservation, particularly in pickling processes, and as a common condiment in various cuisines.

• Chemically, acetic acid is represented by the formula CH3COOH and is a weak acid that gives vinegar its characteristic sour taste and pungent smell.

• While found in very small quantities in some fruits, vinegar is the concentrated natural source commonly associated with acetic acid in daily use. Hence, the correct answer is Vinegar.

Additional Information

• Tomato:

• Tomatoes are a natural source of Oxalic acid and Malic acid.

• They also contain small amounts of Citric acid. Oxalic acid is a dicarboxylic acid that occurs naturally in many vegetables and fruits.

• Orange:

• Oranges, along with other citrus fruits like lemons and limes, are the primary sources of Citric acid.

• They are also rich in Ascorbic acid, which is commonly known as Vitamin C. Citric acid is responsible for the tart flavor of citrus fruits.

• Tamarind:

• Tamarind is a rich source of Tartaric acid.

• Tartaric acid is a white, crystalline organic acid that occurs naturally in many fruits, most notably in grapes and tamarinds. It is often used as an antioxidant in food products.

• Other Natural Acids:

• Lactic Acid: Found in sour milk and curd due to the action of Lactobacillus bacteria on lactose.

• Methanoic Acid (Formic Acid): Found in ant stings and nettle stings, causing a burning sensation upon injection into the skin.

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• Malic Acid: Predominantly found in apples and pears, contributing to their sour taste when unripe.

• Amino Acids: These are the building blocks of proteins found in meat, beans, and legumes.

Q42. Answer: (d) 1985

The correct answer is 1985.

Key Points

• The Seventh Five-Year Plan of India was implemented during the period from 1985 to 1990. Hence, the correct answer is 1985.

• This plan was launched under the leadership of Prime Minister Rajiv Gandhi, focusing on the modernization of the Indian economy through science and technology.

• The central theme and objective of the Seventh Plan were summarized by the slogan: "Food, Work, and Productivity".

• A landmark feature of this plan was that it sought to improve the efficiency and productivity of the private sector, marking a shift where the private sector was given priority over the public sector for the first time in India's planning history.

• The plan was highly successful in terms of economic growth, achieving an actual growth rate of 6.01%, which significantly surpassed the set target of 5.0%.

Additional Information

• Employment Generation: To address rural unemployment, the Jawahar Rozgar Yojana (JRY) was launched in April 1989 by merging the National Rural Employment Programme and the Rural Landless Employment Guarantee Programme.

• Social Objectives: The plan aimed at the removal of poverty, the reduction of income inequalities, and the provision of social justice to the marginalized sections of society.

• Technological Advancement: High emphasis was placed on industrialization and the use of Information Technology, setting the foundation for the digital revolution in India.

• Economic Context of Other Options:

• 1972: This year falls during the Fourth Five-Year Plan (1969–1974), which focused on growth with stability. Hence, statement 1 is incorrect.

• 1975: This year was in the middle of the Fifth Five-Year Plan (1974–1978) and the period of the National Emergency. Hence, statement 2 is incorrect.

• 1980: This year marked the beginning of the Sixth Five-Year Plan (1980–1985), which focused on poverty eradication (Garibi Hatao) and technological self-reliance. Hence, statement 3 is incorrect.

Important Points

• Infrastructure and Energy: During the Seventh Plan, the energy sector received approximately 30% of the total public sector outlay, emphasizing the importance of power for both agriculture and industry.

• Environmental Focus: The plan also introduced specific measures for environmental protection and ecological balance alongside industrial growth.

• Political Transition: Following the completion of the Seventh Plan in 1990, the Eighth Five-Year Plan could not be immediately implemented due to political instability and the balance of payments crisis. This led to the adoption of two Annual Plans for the years 1990-91 and 1991-92 before the Eighth Plan finally started in 1992.

• Agricultural Strategy: The plan encouraged the Green Revolution to expand into new areas, particularly in the eastern regions of India, to ensure food security.

Q43. Answer: (a) nephrons

The correct answer is nephrons.

Key Points

• Nephrons are the microscopic structural and functional units of the kidneys. Each human kidney contains approximately 1 million to 1.2 million nephrons.

• The primary role of the nephron is to process blood to remove metabolic waste and perform osmoregulation.

• It filters out soluble nitrogenous compounds, primarily urea, along with excess salts and water from the bloodstream to form urine.

• The filtration process begins in the Glomerulus, a high-pressure capillary bed, where fluid is pushed into the Bowman's capsule.

• As the filtrate moves through the renal tubule, essential substances like glucose, amino acids, and electrolytes are selectively reabsorbed back into the blood.

• The remaining concentrated fluid, containing waste products, is then collected as urine and moved toward the renal pelvis.

Additional Information

• Urethra:

• The urethra is a muscular tube that conveys urine from the urinary bladder to the outside of the body.

• Unlike the nephron, it does not perform filtration or waste removal from the blood; it strictly serves as an excretory passage.

• ATP (Adenosine Triphosphate):

• ATP is known as the energy currency of the cell. It is a nucleotide that stores and transfers chemical energy within cells for metabolism.

• While ATP provides the energy required for active transport in the kidney tubules, it is not a physical structure involved in filtering nitrogenous waste.

• Xylem:

• Xylem is a specialized vascular tissue found in plants, not in humans.

• Its primary function is the conduction of water and dissolved minerals from the roots to the rest of the plant.

• It also provides mechanical support to the plant structure through lignified cell walls.

• Nitrogenous Wastes in Humans:

• Humans are ureotelic organisms, meaning we primarily excrete nitrogen in the form of urea.

• Urea is produced in the liver through the ornithine cycle (urea cycle) as a less toxic alternative to ammonia.

• Efficient removal of these solutes is vital to prevent uremia, a dangerous accumulation of waste in the blood.

Important Points

• Kidney Function: Apart from excretion, kidneys regulate blood pressure via the Renin-Angiotensin-Aldosterone System (RAAS) and stimulate red blood cell production by secreting erythropoietin.

• Homeostasis: The nephrons maintain the acid-base balance (pH) of the body by secreting hydrogen ions and reabsorbing bicarbonate ions.

• Ureter vs. Urethra: It is important to distinguish between the two; ureters carry urine from the kidneys to the bladder, while the urethra carries it from the bladder to the external environment.

Q44. Answer: (a) northwest

The correct answer is northwest.

Key Points

• Chandragupta Maurya, the founder of the Mauryan Empire, led a campaign to liberate the northwest region of the Indian subcontinent from the remnants of Greek rule following the death of Alexander the Great in 323 BCE.

• After Alexander's departure, the territories in the Indus Valley and Punjab were governed by Greek satraps. Chandragupta mobilized an army, overthrew these governors, and established his authority over the northwestern frontiers.

• The most significant conflict in this region occurred in 305 BCE, when Seleucus I Nicator, a general of Alexander and the founder of the Seleucid Empire, crossed the Indus River to reclaim Alexander's lost territories.

• Chandragupta defeated Seleucus Nicator, leading to a historic peace treaty. Under this agreement, the northwest provinces of Arachosia (Kandahar), Gedrosia (Balochistan), and Paropamisadae (Kabul) were ceded to the Mauryan Empire.

• By securing the northwest, Chandragupta integrated a vast territory that stretched from the Indus to the Hindu Kush mountains, eventually expanding his empire across the northern plains down to the Deccan plateau.

Additional Information

• Foundation of the Empire: Chandragupta Maurya established the empire in 322 BCE after defeating Dhana Nanda, the last ruler of the Nanda Dynasty, with the strategic guidance of his mentor, Chanakya (also known as Kautilya).

• Chanakya and Statecraft: Chanakya authored the Arthashastra, a seminal work on political science, economics, and military strategy, which served as the administrative backbone for the Mauryan state.

• Diplomatic Relations: Following the treaty with Seleucus, a diplomatic relationship was established between the Greeks and Indians. Megasthenes was sent as a Greek ambassador to the Mauryan capital of Pataliputra (modern-day Patna).

• Indica by Megasthenes: The book Indica, written by Megasthenes, provides detailed accounts of the Mauryan administration, social classes, and the grandeur of the capital city.

• Territorial Extent: At its peak under Chandragupta, the empire was one of the largest in the world, covering almost the entire Indian subcontinent except for the extreme south and Kalinga (which was later conquered by his grandson, Ashoka).

Important Points

• War Elephants: As part of the peace treaty in 305 BCE, Chandragupta gifted 500 war elephants to Seleucus. These elephants were later instrumental in Seleucus's victory at the Battle of Ipsus in 301 BCE.

• Religious Transition: According to Jain traditions, toward the end of his life, Chandragupta Maurya abdicated his throne, embraced Jainism under the monk Bhadrabahu, and migrated to Shravanabelagola in present-day Karnataka.

• Administrative Units: The empire was divided into four main provinces, with the northwest province having its headquarters at Takshashila (Taxila), which was a major center for learning and commerce.

• Unification of India: Chandragupta is often credited as the first ruler to achieve the political unification of India, bringing diverse regions under a single centralized administration.

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Q45. Answer: (d) Arunachal Pradesh

The correct answer is Arunachal Pradesh.

Key Points

• The Lion and Peacock dance is a traditional folk dance originating from the state of Arunachal Pradesh in Northeast India.

• It is a specialized mask dance performed primarily by the Monpa tribe, who reside in the Tawang and West Kameng districts of the state.

• This dance form is characterized by performers wearing elaborate masks and costumes that mimic the movements, grace, and characteristics of a lion and a peacock.

• The dance is a significant part of the cultural festivities during Losar, which is the Tibetan New Year celebrated by the Buddhist communities in the region.

• It symbolizes the harmonious relationship between humans and nature, often telling stories through rhythmic movements and theatrical expressions.

Additional Information

• Arunachal Pradesh:

• Commonly known as the "Land of the Rising Sun," it became a full-fledged state of India on 20 February 1987.

• The state is home to numerous tribes, including the Adi, Nyishi, Galo, Tagin, Apatani, and Mishmi, each with distinct dance forms and traditions.

• Other prominent folk dances of the state include the Bardo Chham, Ponung dance, Buiya dance, and Wancho dance.

• Monpa Tribe:

• The Monpas are one of the major ethnic groups of Arunachal Pradesh and are known for their expertise in thangka painting, weaving, and wood carving.

• They follow Mahayana Buddhism, and their culture is deeply influenced by the Tawang Monastery, the largest monastery in India.

• Significance of Masks:

• In the tribal traditions of Arunachal Pradesh, masks are often made from wood or paper-mache and are used to represent spirits, animals, or deities during religious ceremonies.

Important Points

• Musical Accompaniment: The dance is usually accompanied by traditional instruments such as drums (nghal), cymbals, and the Dungchen (a long brass trumpet).

• Other State Dances:

• Ladakh: Famous for the Cham dance (mystic mask dance) and Shondol dance.

• Maharashtra: Known for Lavani, Koli, and Dhangari Gaja.

• Tamil Nadu: Renowned for Bharatanatyam (classical), Karakattam, and Mayil Attam (Peacock dance).

• Cultural Heritage: The folk dances of the northeast region are vital for preserving the oral history and ecological wisdom of the indigenous tribes.

Q46. Answer: (a) Wangala

The correct answer is Wangala.

Key Points

• The Wangala Festival is the most significant cultural event for the Garo tribe, primarily inhabiting the Garo Hills in Meghalaya, as well as parts of Assam and Bangladesh.

• It is widely recognized as the "100-Drum Festival" because of the traditional ritual where 100 drums (long oval-shaped drums known as Nagras) are beaten in a rhythmic symphony by men.

• This festival is a post-harvest thanksgiving ceremony held to honor Saljong, the Sun God and the deity of fertility, for a bountiful harvest and to seek blessings for the upcoming agricultural cycle.

• The celebration typically takes place in the month of November every year, marking the end of the period of toil in the fields.

• The main event is characterized by the Wangala Dance, where men and women dressed in colorful traditional attire with feathered headgear dance to the tunes of drums, flutes, and brass instruments.

Additional Information

• Hornbill Festival:

• Known as the "Festival of Festivals," it is celebrated in Nagaland from December 1st to 10th annually.

• It aims to protect and revive the rich culture of the Naga tribes and is held at the Kisama Heritage Village near Kohima.

• The festival features traditional Naga dances, folk songs, indigenous games, and the famous Hornbill International Rock Contest.

• Chhekar Festival:

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• This is a religious festival of the Monpa tribe, who reside in the Tawang and West Kameng districts of Arunachal Pradesh.

• It is performed to protect the village and crops from evil spirits and natural disasters, involving the chanting of Buddhist scriptures.

• The festival reflects the deep influence of Tibetan Buddhism on the Monpa culture.

• Laru Kaj:

• This is a traditional festival of the Gond tribe, particularly found in Madhya Pradesh and Chhattisgarh.

• The festival is dedicated to Narayan Deo and involves rituals for the health and prosperity of the family and their livestock, specifically involving the sacrifice of a pig in some traditions.

• It is an intimate family festival rather than a large community-wide public gathering.

Important Points

• Garo Society: The Garos are one of the few remaining matrilineal societies in the world, where the youngest daughter (Nokna) inherits the family property and children take their mother's clan name.

• Venue: While celebrated in various villages, the state-level Hundred Drums Wangala Festival is grandly organized at Asanang, near Tura in the West Garo Hills district of Meghalaya.

• Significance of Instruments: Apart from the Nagras, instruments like the Adil (a trumpet made of buffalo horn) and Singga are integral to the musical landscape of the Wangala festival.

• Rituals: The festival begins with a ceremony called Rugala, where the first-hand liquor of the harvest is offered to the deity, followed by Chaachat Soa (incense burning).

Q47. Answer: (a) Nawab of Awadh

The correct answer is Nawab of Awadh.

Key Points

• In 1801, the Nawab of Awadh was forced to cede over half of his territory to the British East India Company because he failed to pay for the "subsidiary forces" maintained by the British.

• The Governor-General of India at that time was Lord Wellesley (who served from 1798 to 1805). He used the Subsidiary Alliance system as a tool for political expansion and to establish British paramountcy over Indian princely states.

• The specific territories surrendered by the Nawab Saadat Ali Khan II included Rohilkhand and the Lower Doab. This was done under the pressure of the Subsidiary Alliance treaty. Hence, the Nawab of Awadh is the correct answer.

• Under this arrangement, the Nawab was required to disband his own military forces and accept a British Resident at his court, effectively losing control over foreign affairs and defense.

• The reduction of Awadh's territory allowed the British to surround the state almost entirely, turning it into a "buffer state" between the Company's territories and the Maratha Empire.

Additional Information

• The Subsidiary Alliance System:

• It was a "non-intervention" policy used by the British East India Company to establish its hegemony. The ruler of an allying Indian state was compelled to accept the permanent stationing of a British force within his territory and to pay a subsidy for its maintenance.

• The first state to accept the Subsidiary Alliance was the Nizam of Hyderabad in 1798. Other states like Mysore (1799) and the Peshwa (1802) soon followed.

• Nawab of Bengal, Bihar, and Orissa:

• The Nawabs of Bengal, who also controlled Bihar and Orissa, had already lost significant power much earlier. Following the Battle of Buxar (1764) and the Treaty of Allahabad (1765), the Mughal Emperor Shah Alam II granted the Diwani rights (right to collect revenue) of Bengal, Bihar, and Orissa to the Company.

• By 1801, these regions were already directly administered or heavily controlled by the British through the Dual System of Government or direct rule, unlike the territorial ceding specifically demanded from Awadh in that year.

• Annexation of Awadh (1856):

• The final blow to the Awadh dynasty came in 1856. Despite the Subsidiary Alliance, Lord Dalhousie annexed Awadh on the grounds of "maladministration" or misgovernance.

• The last Nawab, Wajid Ali Shah, was dethroned and exiled to Calcutta. This annexation was a major grievance that led to the Revolt of 1857.

Important Points

• Consequences for the Rulers:

• Rulers who entered the Subsidiary Alliance could not employ any European (other than British) in their service without prior approval. They also could not negotiate with any other Indian ruler without consulting the Governor-General.

• While it offered "protection" from external enemies, it led to the total disarmament of the local princely states and their eventual economic collapse due to the heavy subsidies demanded by the British.

• Impact on Awadh:

• The 1801 Treaty saw the British taking over the most fertile parts of Awadh. This increased the revenue for the Company and strengthened their strategic position in North India.

• By reducing the Nawab to a mere figurehead, the British ensured that Awadh would remain subservient until its total absorption into the British Empire five decades later.

Q48. Answer: (a) centripetal force

The correct answer is centripetal force.

Key Points

• The motion of the Moon around the Earth is a form of circular motion (specifically, an elliptical orbit that is nearly circular). For any object to maintain a circular path, it requires a force acting towards the center of the circle.

• This "center-seeking" force is known as centripetal force. It is not a new kind of force but a role played by an existing force in the system. Hence, the correct answer is centripetal force.

• In the Earth-Moon system, the necessary centripetal force is provided by the gravitational force of attraction between the Earth and the Moon.

• If this centripetal force were absent, the Moon would cease its orbital motion and fly off in a straight line along the tangent to the circular path due to inertia.

• The centripetal force causes a continuous change in the direction of the Moon's velocity at every point in its orbit, which means the Moon is constantly accelerating towards the Earth.

Additional Information

• Newton’s Law of Universal Gravitation: Formulated in 1687 by Sir Isaac Newton, it states that every particle attracts every other particle in the universe with a force that is directly proportional to the product of their masses and inversely proportional to the square of the distance between their centers.

• Magnetic Field: This refers to the region around a magnetic material or a moving electric charge within which the force of magnetism acts. While the Earth has a strong magnetic field (the magnetosphere), it does not govern the orbital motion of celestial bodies like the Moon.

• Friction Force: This is a force that resists the relative motion of solid surfaces, fluid layers, and material elements sliding against each other. Since space is a vacuum, there is no air or surface to provide friction to the Moon; if friction were present, the Moon would eventually lose energy and crash into the Earth.

• Acceleration: While the Moon does experience centripetal acceleration, acceleration is the effect of the force, not the cause of the motion. The question asks for the force "due to" which the motion occurs.

• Uniform Circular Motion: When an object moves in a circle at a constant speed, its velocity is constantly changing because its direction is changing. This change in velocity over time is what defines acceleration in an orbit.

Important Points

• Orbital Speed: The Moon travels at an average speed of approximately 1.022 kilometers per second (about 3,679 km/h) to maintain its balance between gravity and inertia.

• Distance: The average distance from the Earth to the Moon is approximately 384,400 kilometers. This distance is critical in calculating the magnitude of the gravitational force.

• Revolution Period: It takes the Moon about 27.3 days to complete one sidereal revolution around the Earth.

• Satellite Motion: The same principles of centripetal force and gravity apply to artificial satellites launched by organizations like ISRO or NASA. To stay in orbit, they must reach a specific orbital velocity.

• Tidal Effects: The gravitational pull of the Moon on the Earth's oceans is the primary cause of tides, demonstrating that the force is mutual as per Newton's Third Law of Motion.

Q49. Answer: (c) 95

The correct answer is 95.

Key Points

• As of August 2025, Jupiter has 95 moons that are officially recognized and tracked by the International Astronomical Union (IAU) and its Minor Planet Center (MPC).

• The most significant recent update to this count occurred in early 2023, when 12 new moons were officially added to the tally following observations by a team led by astronomer Scott Sheppard of the Carnegie Institution for Science.

• These observations were conducted using the Magellan telescope in Chile and the Subaru telescope in Hawaii between 2021 and 2022, with the orbital data confirmed in February 2023.

• Most of the newly recognized moons are quite small, measuring between 1 and 3 kilometers in diameter, and they reside in outer orbits that are retrograde (moving in the opposite direction of Jupiter's rotation).

• Of the 95 moons, 72 are classified as irregular moons with distant, eccentric orbits, while the remaining moons belong to the inner regular groups.

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Additional Information

• The Galilean Moons:

• These are the four largest moons of Jupiter: Io, Europa, Ganymede, and Callisto.

• They were discovered by Galileo Galilei in January 1610 using a homemade telescope, providing the first evidence of celestial bodies orbiting a planet other than Earth.

• Ganymede is the largest moon in the Solar System, even larger than the planet Mercury, and is the only moon known to possess its own magnetic field.

• Comparison with Saturn:

• For a brief period in 2023, Jupiter was considered the planet with the most moons; however, Saturn reclaimed the title later that year.

• As of 2024-2025, Saturn remains the leader with 146 moons officially recognized by the IAU.

• Space Exploration Missions:

• The JUICE (JUpiter ICy moons Explorer) mission by the European Space Agency (ESA) was launched in April 2023 to study Ganymede, Callisto, and Europa.

• NASA's Europa Clipper mission, launched in October 2024, is scheduled to arrive at Jupiter in 2030 to investigate the habitability of Europa and its subsurface ocean.

• NASA's Juno spacecraft has been in orbit around Jupiter since July 2016, providing high-resolution data on the planet's atmosphere and its larger satellites.

• Categorization of Moons:

• Regular Satellites: These include the Inner Moons (Metis, Adrastea, Amalthea, and Thebe) and the Galilean Moons, which have nearly circular orbits.

• Irregular Satellites: These are typically smaller bodies captured by Jupiter's gravity; they are often grouped into families such as the Himalia group (prograde) and the Carme, Ananke, and Pasiphae groups (retrograde).

Important Points

• Naming Conventions: The International Astronomical Union oversees the official naming of moons. While many of Jupiter's moons have names from Greek and Roman mythology (specifically lovers or descendants of Zeus/Jupiter), many of the 95 moons are still designated by alphanumeric codes (e.g., S/2003 J 24) until their orbits are precisely determined.

• Jupiter's Mass: Jupiter is the largest planet in the solar system, with a mass 318 times that of Earth. Its massive gravitational field allows it to maintain such a large and diverse system of satellites.

• Great Red Spot: Apart from its moons, Jupiter is famous for its Great Red Spot, a giant storm that has been raging for at least 350 years and is larger than the diameter of Earth.

Q50. Answer: (c) Both I and II

The correct answer is Both I and II.

Key Points

• Soil is a crucial geographical factor that determines the distribution of the population. Fertile soils are essential for agricultural activities, which support large populations by ensuring food security.

• Areas with fertile alluvial soils, such as the Ganga and Brahmaputra plains in India, the Hwang-He and Chang Jiang in China, and the Nile valley in Egypt, are among the most densely populated regions in the world. Hence, statement I is correct.

• Minerals significantly influence population distribution by attracting industries and creating employment opportunities. Regions with rich mineral deposits often become hubs for mining and manufacturing activities.

• For instance, the discovery of diamonds in South Africa and oil in the Middle East led to the settlement of people in these previously sparsely populated areas. Similarly, the Chhota Nagpur Plateau in India is a major population center due to its vast mineral wealth. Hence, statement II is correct.

• Therefore, both geographical and economic factors like soil fertility and mineral availability play a vital role in where people choose to live. Hence, the correct answer is Both I and II.

Additional Information

• Geographical Factors:

• Topography: People generally prefer living on plains rather than mountains or plateaus because these areas are suitable for farming, manufacturing, and service activities. The Himalayas are sparsely populated compared to the Indo-Gangetic plains.

• Climate: Humans usually avoid extreme climates that are very hot (like the Sahara Desert) or very cold (like the Polar Regions of Russia, Canada, and Antarctica). A moderate climate attracts more inhabitants.

• Water: Availability of fresh water is vital. Most civilizations and modern cities have developed in river valleys where water is easily accessible for domestic, agricultural, and industrial use.

• Social, Cultural, and Economic Factors:

• Social Factors: Areas with better housing, health facilities, and educational institutions are more densely populated. An example

is Pune in India, known for its educational infrastructure.

• Cultural Factors: Places with religious or cultural significance attract people. Cities like Varanasi, Jerusalem, and Vatican City are prime examples of cultural centers.

• Economic Factors: Industrial areas provide job opportunities, attracting a large number of migrants. The Osaka region in Japan and Mumbai in India are two highly populated areas due to industrialization.

Important Points

• Population Density: It is defined as the number of people living in a unit area of the earth's surface, usually expressed as per square kilometer. The average density of population in the whole world is about 51 persons per square km.

• Pattern of Distribution: The way in which people are spread across the earth's surface is known as the pattern of population distribution. More than 90% of the world's population lives in about 30% of the land surface.

• Most Populous Regions: South and South-East Asia, Europe, and North-Eastern North America are the most crowded regions, largely due to a combination of favorable climate, fertile soil, and industrial development.

Q51. Answer: (a) Chile

The correct answer is Chile.

Key Points

• The Extremely Large Telescope (ELT) is currently under construction on Cerro Armazones in the Atacama Desert of northern Chile.

• It is being built by the European Southern Observatory (ESO), an intergovernmental research organization.

• Once completed, it will be the world's largest optical/near-infrared telescope, often referred to as "the world's biggest eye on the sky."

• The telescope features a revolutionary five-mirror design, with a primary mirror (M1) that is 39 meters in diameter.

• The project reached the 50% completion milestone in 2023, with "first light" or the start of scientific operations targeted for 2028.

• The location was chosen due to its high altitude of 3,046 meters and extremely dry climate, which provides optimal conditions for astronomical observations.

Additional Information

• Scientific Objectives:

• The ELT aims to search for exoplanets similar to Earth orbiting other stars and potentially detect signs of life in their atmospheres.

• It will study the nature of dark matter and dark energy to understand the expansion of the universe.

• The telescope will observe the first stars and galaxies that formed after the Big Bang, providing data on the cosmic dawn.

• Technical Specifications:

• The primary mirror consists of 798 hexagonal segments, each about 1.4 meters wide.

• It utilizes advanced adaptive optics to correct for the blurring effects caused by the Earth's atmosphere, providing images 16 times sharper than those of the Hubble Space Telescope.

• The telescope's structure will weigh about 3,700 tonnes and be housed in a massive rotating dome 80 meters high.

• European Southern Observatory (ESO):

• Founded in 1962, ESO is supported by 16 Member States, including France, Germany, the United Kingdom, and others.

• While its headquarters are in Garching, Germany, all its observing sites are located in Chile.

Important Points

• Why Chile? The Atacama Desert is one of the driest places on Earth, with over 320 clear nights per year, making it a global hub for ground-based astronomy.

• Comparison with other Telescopes: The ELT will gather 100 million times more light than the human eye and significantly more than existing facilities like the Very Large Telescope (VLT).

• International Cooperation: Although constructed in Chile, the ELT is a prime example of international collaboration, with contracts for mirrors and instruments distributed across various European industries.

• Economic Impact: The construction involves a total budget exceeding 1.4 billion Euros, fostering innovation in optics, mechanics, and sensor technology.

Q52. Answer: (c) Both I and II

The correct answer is Both I and II.

Key Points

• Sound waves are longitudinal waves that propagate through a medium via a series of compressions and rarefactions.

• A Compression is a region in a longitudinal wave where the particles of the medium are closest together. This results in a region of high pressure and high density because the volume of the medium decreases locally. Hence, statement I is correct.

• A Rarefaction is a region in a longitudinal wave where the particles of the medium are spread furthest apart. This creates a region of low pressure and low density. Hence, statement II is correct.

• These regions of pressure variations travel through the medium, allowing energy to be transferred from one point to another without the permanent displacement of the particles themselves.

• The distance between two consecutive compressions or two consecutive rarefactions is defined as the wavelength of the sound wave.

• Hence, the correct answer is Both I and II.

Additional Information

• Nature of Sound Waves:

• Sound is a mechanical wave, meaning it requires a material medium (solid, liquid, or gas) for its propagation. It cannot travel through a vacuum as there are no particles to compress or rarefy.

• In longitudinal waves, the individual particles of the medium move in a direction parallel to the direction of propagation of the wave disturbance.

• Characteristics of Sound:

• Frequency: Measured in Hertz (Hz), it determines the pitch of the sound. Humans can generally hear sounds in the range of 20 Hz to 20,000 Hz.

• Amplitude: It determines the loudness or intensity of the sound. A larger amplitude means a louder sound.

• Speed of Sound: The speed depends on the elasticity and density of the medium. Sound travels fastest in solids (e.g., Steel), followed by liquids (e.g., Water), and slowest in gases (e.g., Air).

• In Air at 0°C, the speed of sound is approximately 331 m/s, and at 20°C, it is about 343 m/s.

Important Points

• Pressure and Density Relationship:

• In the context of sound waves, pressure and density are directly proportional. A region of high density (compression) is always a region of high pressure, and a region of low density (rarefaction) is always a region of low pressure.

• Wave Propagation:

• The vibration of an object (like a tuning fork or vocal cords) creates the initial disturbance. As the source moves forward, it pushes the air particles, creating compression. As it moves backward, it creates a space for particles to spread, resulting in rarefaction.

• Echo is the reflection of these sound waves when they hit a hard surface. To hear a distinct echo, the minimum distance between the source and the obstacle should be approximately 17.2 meters in air.

Q53. Answer: (b) Visakhapatnam

The correct answer is Visakhapatnam.

Key Points

• Visakhapatnam Port, located in the state of Andhra Pradesh, is recognized as the deepest landlocked harbour in India.

• A landlocked harbour is a body of water almost entirely surrounded by land with a narrow entry point to the sea, providing excellent protection from oceanic currents and cyclonic storms.

• The harbour is uniquely protected by a massive hill structure known as the Dolphin's Nose, which acts as a natural breakwater against the Bay of Bengal.

• Inaugurated on December 19, 1933, it serves as a major gateway for the export of iron ore to countries like Japan and handles massive quantities of crude oil and petroleum products.

• It is situated on the East Coast of India, positioned strategically between the Chennai and Kolkata ports.

Additional Information

• Haldia

• Located in West Bengal, it is a riverine port situated at the meeting point of the Hooghly and Haldi rivers.

• It was developed to relieve the pressure on the Kolkata Port.

• Paradip

• Situated in the Jagatsinghpur district of Odisha, it is a natural, deep-water port.

• It was the first major port on the East Coast commissioned after Independence.

• Tuticorin

• Now known as V.O. Chidambaranar Port, it is located in Tamil Nadu.

• It is an artificial deep-sea harbour and is one of the 13 major ports of India.

Q54. Answer: (a) 2007

The correct answer is 2007.

Key Points

• The inaugural ICC Men's T20 World Cup was hosted by South Africa and took place from 11 September to 24 September 2007.

• A total of 12 nations participated in this maiden edition, comprising the ten Test-playing nations along with Kenya and Scotland.

• India emerged as the champions of the first tournament by defeating Pakistan in a closely contested final by 5 runs at the Wanderers Stadium in Johannesburg.

• The tournament was significant for being the first major success of Mahendra Singh Dhoni as the captain of the Indian Cricket Team.

• Shahid Afridi was named the Player of the Tournament for his exceptional all-round contribution, while Matthew Hayden finished as the highest run-scorer with 265 runs.

• The event featured iconic moments, including Yuvraj Singh hitting six sixes in a single over against Stuart Broad of England at Kingsmead, Durban.

Additional Information

• Evolution of the T20 Format:

• The Twenty20 format was originally introduced by the England and Wales Cricket Board (ECB) in 2003 for inter-county competition to attract younger audiences.

• The first-ever Twenty20 International (T20I) match was played on 17 February 2005 between Australia and New Zealand at Eden Park, Auckland.

• Following the success of the 2007 World Cup, the Indian Premier League (IPL) was launched in 2008, which significantly changed the landscape of global cricket.

• The tournament frequency is generally biennial, although the ICC schedules it based on the international cricket calendar; for instance, the 2012 edition was held in Sri Lanka and won by the West Indies.

• By 2024, the tournament expanded to include 20 teams, reflecting the global growth and popularity of the shortest format of the game.

Q55. Answer: (b) 2029-30

The correct answer is 2029-30.

Key Points

• The Ministry of Coal launched Mission Coking Coal to augment the domestic production of coking coal and reduce the country's heavy reliance on expensive imports.

• The mission sets a transformative target to increase raw coking coal production from around 52 MT in FY 2022 to 140 MT by the financial year 2029-30.

• It further aims to enhance the supply of washed coking coal to the steel sector, targeting a production level of 30 MT by 2029-30 through the establishment of new washeries.

• The strategy involves identifying additional coking coal blocks for development, enhancing production from existing mines of Coal India Limited (CIL), and promoting private sector participation through auctions.

• The mission is a critical component of the Atmanirbhar Bharat initiative, seeking to ensure raw material security for the Indian Steel Industry, which is currently the second-largest crude steel producer globally.

Additional Information

• Coking Coal Characteristics

• Unlike non-coking coal, it possesses caking properties, allowing it to be converted into coke, which is essential for the Blast Furnace route of steel making.

• In India, major reserves are concentrated in the Jharia Coalfield in Jharkhand and the Raniganj Coalfield in West Bengal.

• Import Dependency

• India currently imports approximately 80 to 90 percent of its coking coal requirements from countries like Australia, South Africa, and the USA.

• Increasing domestic production is vital for improving the Cost Competitiveness of domestic steel and reducing the outflow of foreign exchange.

• Role of Washeries

• Domestic coking coal often has high ash content; therefore, Coal Washeries are necessary to clean and upgrade the quality to meet the stringent requirements of Steel Plants.

Q56. Answer: (b) Book of Humour

The correct answer is Book of Humour.

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Key Points

• Ruskin Bond is a renowned Indian author of British descent, celebrated for his extensive contribution to English literature in India, particularly children's literature.

• Book of Humour is a notable anthology written by him, capturing a collection of light-hearted stories, amusing anecdotes, and witty observations derived from his life in the Himalayan foothills.

• He was born in Kasauli, Himachal Pradesh, in 1934, and much of his writing is influenced by the flora and fauna of regions like Dehradun and Mussoorie.

• For his literary excellence, Bond was awarded the Sahitya Akademi Award in 1992 for Our Trees Still Grow in Dehra.

• He has also been recognized with high civilian honors, including the Padma Shri in 1999 and the Padma Bhushan in 2014.

• His debut novel, The Room on the Roof, written at age 17, won the John Llewellyn Rhys Prize in 1957.

Additional Information

• The Namesake:

• This debut novel was written by Jhumpa Lahiri and published in 2003.

• It examines themes of cultural identity and the immigrant experience of a Bengali family in the United States.

• The Palace of Illusions:

• Authored by Chitra Banerjee Divakaruni, this novel was published in 2008.

• It provides a unique reimagining of the ancient Indian epic, the Mahabharata, told from the perspective of Draupadi (Panchaali).

• The Immortals of Meluha:

• This is the first book of the Shiva Trilogy, written by Amish Tripathi and published in 2010.

• The book portrays Lord Shiva as a mortal tribal leader who rises to become a legendary savior in the land of Meluha.

Q57. Answer: (d) 2005

The correct answer is 2005.

Key Points

• The Dedicated Freight Corridor (DFC) project was formally conceived in April 2005. The initiative was part of a strategic discussion during the India-Japan Summit, where both nations agreed to cooperate on rail sector development.

• Following the announcement in 2005, the Ministry of Railways initiated the planning process to address the saturation of the existing Golden Quadrilateral rail routes, which were struggling to handle the rising demand for freight and passenger traffic.

• To implement this ambitious project, the Dedicated Freight Corridor Corporation of India Limited (DFCCIL) was incorporated on 30th October 2006. It was established as a Special Purpose Vehicle (SPV) under the Ministry of Railways to undertake planning, development, and mobilization of financial resources.

• The primary objective of the DFC project is to create a high-speed, high-capacity railway network specifically for goods trains, thereby reducing the transit time and logistics costs in India.

• The project was initially approved as part of the 11th Five Year Plan of the Government of India, focusing on the construction of the Eastern and Western corridors.

Additional Information

• Western Dedicated Freight Corridor (WDFC):

• The WDFC covers a distance of approximately 1,504 km. It connects Dadri in Uttar Pradesh to Jawaharlal Nehru Port Trust (JNPT) in Mumbai, Maharashtra.

• This corridor is largely funded by the Japan International Cooperation Agency (JICA) through a soft loan. It passes through states including Haryana, Rajasthan, and Gujarat.

• Eastern Dedicated Freight Corridor (EDFC):

• The EDFC spans about 1,875 km, starting from Sahnewal (Ludhiana) in Punjab and terminating at Dankuni in West Bengal.

• The World Bank has provided significant financial assistance for the construction of specific segments of the EDFC, which is vital for transporting coal and steel from Eastern India.

• Technical Features:

• The corridors are designed for heavy axle loads of 25 to 32.5 tonnes, compared to the standard 22.5 tonnes on existing Indian tracks.

• Trains on these tracks are expected to reach a maximum speed of 100 km/h, significantly improving the efficiency of the Indian Railways freight operations.

• Future Expansion (GQFC):

• Beyond the initial two corridors, the Government of India plans to develop the Golden Quadrilateral Freight Corridor (GQFC), which includes the North-South (Delhi-Chennai), East-West (Kolkata-Mumbai), and East Coast corridors.

Important Points

• The DFC project is crucial for the Make in India initiative as it enhances multimodal transport efficiency and supports Industrial

Corridors like the Delhi-Mumbai Industrial Corridor (DMIC).

• By separating freight from passenger traffic, the Indian Railways can improve the punctuality of passenger trains and increase the throughput of goods, contributing to GDP growth.

• The Dedicated Freight Corridors utilize long-haul trains (up to 1.5 km long) and double-stack container technology (primarily on the WDFC) to maximize cargo volume per trip.

Q58. Answer: (b) Pavan K. Varma

The correct answer is Pavan K. Varma.

Key Points

• Pavan K. Varma is the author of the widely acclaimed book ‘Being Indian: The Truth About Why the 21st Century Will Be India’s’, which was first published in 2004.

• The book provides a realistic and provocative study of the Indian identity, examining how Indians view power, wealth, status, and culture in the modern world.

• Pavan K. Varma is a distinguished former Indian Foreign Service (IFS) officer of the 1976 batch and has served as India’s Ambassador to Bhutan.

• He has also served in high-profile administrative roles, including Press Secretary to the President of India and Director General of the Indian Council for Cultural Relations (ICCR).

• In this work, the author challenges traditional myths about Indian spiritualism and non-materialism, arguing that the pragmatic nature of the Indian psyche is a key driver for its future global influence.

Additional Information

• Salman Khurshid:

• He is a prominent Indian politician, lawyer, and writer belonging to the Indian National Congress.

• He has authored several notable books, including 'At Home in India: A Restatement of Indian Muslims' and the controversial 'Sunrise Over Ayodhya: Nationhood in Our Times'.

• He served as the Union Minister of External Affairs and the Minister of Law and Justice in the Government of India.

• Anuja Chandramouli:

• She is a well-known Indian author who specializes in Indian mythological fiction and fantasy.

• Her debut novel, 'Arjuna: Tales of the Prophet of the Kurukshetra', was published in 2012 and was highly successful.

• Her other works include 'Kamadeva: The God of Desire', 'Shakti: The Divine Feminine', and 'Yama's Lieutenant'.

• Ravi Subramanian:

• Commonly referred to as the 'John Grisham of Banking', he is an Indian author of financial thrillers.

• He has won the IndieFab Book of the Year Award and multiple Crossword Book Awards for his popular novels.

• His famous books include 'If God Was a Banker' (2007), 'The Bankster', and 'In the Name of God'.

Important Points

• Other Significant Works by Pavan K. Varma: Apart from 'Being Indian', he is renowned for 'The Great Indian Middle Class' (1998), which analyzed the sociological shifts in India post-liberalization.

• His book 'Becoming Indian: The Unfinished Revolution of Culture and Identity' (2010) explores the post-colonial cultural consciousness of the nation.

• He has also translated the poetry of legendary figures like Gulzar and Kaifi Azmi into English, showcasing his versatility as a litterateur.

• In 2012, he was appointed as the Ambassador of India to Bhutan, and he has also been a Member of Parliament in the Rajya Sabha.

Q59. Answer: (a) Rainbow Belt

The correct answer is Rainbow Belt.

Key Points

• The Rainbow Belt is not a recognized or official rank in the Judo grading system. While some children's programs in other martial arts might use "multi-color" belts for motivation, the International Judo Federation (IJF) and the Kodokan do not recognize it. Hence, statement 1 is correct.

• The Brown Belt is a legitimate and significant rank in Judo. It represents the highest levels of the Kyu (student) grades, typically encompassing 1st Kyu, 2nd Kyu, and 3rd Kyu, depending on the national federation's specific guidelines. Hence, statement 2 is incorrect.

• The Red and White Belt, also known as the Kohaku obi, is an official belt used to designate high-ranking masters. It is specifically worn by practitioners who have attained the ranks of 6th, 7th, and 8th Dan. Hence, statement 3 is incorrect.

• The Black colour Belt (or Kuro obi) is perhaps the most famous martial arts belt, signifying that a practitioner has graduated from the Kyu levels to the Dan (expert) levels. It begins at 1st Dan (Shodan). Hence, statement 4 is incorrect.

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• The grading system in Judo was developed to provide a visible structure for a student's progress in technique, philosophy, and competitive prowess.

Additional Information

• Origins of the Belt System:

• Judo was founded by Kano Jigoro in 1882 in Japan. He is credited with creating the modern Dan/Kyu ranking system and using colored belts to distinguish between different levels of expertise.

• Initially, only white and black belts were used. The expanded color palette (yellow, orange, green, blue, brown) was introduced later, particularly as Judo spread to Europe and the Americas in the mid-20th century.

• Kyu (Student) Ranks:

• Beginners in Judo start with a White Belt (6th Kyu).

• As they progress, they move through colors such as Yellow, Orange, Green, Blue, and finally Brown.

• The specific order and number of Kyu grades can vary slightly by country; for example, the United States, United Kingdom, and Japan have minor differences in their color sequences.

• Dan (Master) Ranks:

• 1st Dan to 5th Dan practitioners wear a solid Black Belt.

• 6th Dan to 8th Dan masters have the option to wear the Red and White paneled belt.

• 9th Dan and 10th Dan, the highest attainable ranks, are entitled to wear a solid Red Belt.

Important Points

• The Kodokan: Located in Tokyo, it is the headquarters of the worldwide Judo community. The Kodokan maintains the strictest standards for Dan promotions and historical accuracy of the sport.

• Criteria for Promotion: Advancing through the belts requires more than just time. Students must demonstrate proficiency in Nage-waza (throwing techniques), Katame-waza (grappling techniques), and Kata (formalized patterns).

• Minimum Age: Many federations have a minimum age requirement for the Black Belt, often 15 or 16 years old, ensuring that the practitioner has the physical and mental maturity required for the rank.

• Competitive Points: In many systems, a "batsugun" promotion can occur if a judoka defeats a certain number of higher-ranked opponents in sanctioned tournaments.

Q60. Answer: (d) 1993

The correct answer is 1993.

Key Points

• The Tax Reforms Committee was set up by the Government of India in August 1991 under the chairmanship of Dr. Raja J. Chelliah to examine the existing tax structure and provide a roadmap for reform.

• The committee submitted its final report in January 1993, which contained comprehensive recommendations for rationalizing both direct and indirect taxes.

• A major focus of the January 1993 report was the rationalization and lowering of import duties (customs duties), which were among the highest in the world at that time. Hence, the year mentioned in the question is correct as 1993.

• The committee recommended reducing the peak customs duty from the then-prevailing levels of over 150% to about 50% by the year 1995-96.

• It also proposed a simplified multi-tier tax structure to reduce administrative complexity and minimize tax evasion.

Additional Information

• Broad Recommendations of the Chelliah Committee:

• Direct Taxes: The committee suggested reducing the personal income tax rates to a maximum of 40% and the corporate tax rate to 40% for domestic companies to encourage compliance.

• Indirect Taxes: Apart from customs duties, it recommended the introduction of a Value Added Tax (VAT) system to replace the existing cascading excise duty structure.

• Tax Base Expansion: It emphasized broadening the tax base by bringing more services and people under the tax net while reducing the number of exemptions and deductions.

• Context of 1991 Economic Reforms:

• The Chelliah Committee was a vital part of the Liberalization, Privatization, and Globalization (LPG) reforms initiated under the leadership of Prime Minister P.V. Narasimha Rao and Finance Minister Dr. Manmohan Singh.

• Before 1991, India followed a high-tariff regime with import duties reaching as high as 300% in some cases, which hindered international trade and industrial efficiency.

Important Points

• Legacy of Raja J. Chelliah:

• Dr. Raja J. Chelliah is often referred to as the "Father of Tax Reforms" in India due to his pioneering work in shifting the Indian

economy towards a modern, transparent tax system.

• His recommendations led to the gradual reduction of import duties in subsequent Union Budgets, making Indian industry more competitive globally.

• Timeline of Reports:

• Interim Report: Submitted in December 1991, focusing on immediate changes needed in the 1992-93 Budget.

• Final Report (Part I): Submitted in August 1992.

• Final Report (Part II): Submitted in January 1993, which detailed the long-term vision for customs duty rationalization and tax administration.

Q61. Answer: (a) Karnataka

The correct answer is Karnataka.

Key Points

• The Lad Khan Temple is located in Aihole, which is situated in the Bagalkot district of the state of Karnataka, India.

• Constructed in the 5th century AD, it is considered one of the oldest structures in the region and was built during the reign of the Early Chalukya dynasty.

• The temple is primarily dedicated to Lord Shiva and houses a Shiva Linga in its inner sanctum, although historical evidence suggests it might have been originally dedicated to Surya (the Sun God).

• The unusual name "Lad Khan" is not reflective of its religious origin; it is named after a Muslim prince who lived in the temple for a period during the 19th century.

• The temple architecture is noted for its square plan and a flat roof made of massive stone slabs, representing a crucial phase in the evolution of Hindu temple architecture from cave shelters to free-standing structures.

Additional Information

• Aihole: The Cradle of Indian Architecture:

• Aihole is often described as the "Cradle of Indian Temple Architecture" because it served as a site where Chalukyan architects experimented with various styles and designs.

• The Aihole complex contains over 120 stone temples dating from the 4th to the 12th century, including the famous Durga Temple and the Ravana Phadi Cave.

• Chalukyan Dynasty and Art:

• The Chalukyas of Badami were great patrons of art and architecture, establishing their power in the Deccan region during the 6th century.

• The architectural style developed by them is known as the Vesara style, which blends elements of the Nagara (North Indian) and Dravida (South Indian) styles of temple building.

• Their major centers of construction included Badami, Aihole, and Pattadakal.

• Architectural Features of Lad Khan Temple:

• The temple features a Mukhamandapa (pillared porch) and a Sabhamandapa (great hall) leading to the Garbhagriha (sanctum).

• The pillars are decorated with intricate carvings, and the exterior walls feature lattice windows (Jalis) that allow light to enter the interior, a characteristic feature of early Chalukyan work.

Important Points

• Geographical and Historical Context:

• The temples at Aihole, Badami, and Pattadakal are located along the Malaprabha River valley in Karnataka.

• While Aihole was the early administrative center, Pattadakal eventually became the site for royal coronations and is now a UNESCO World Heritage Site.

• Material and Construction:

• The Lad Khan Temple was constructed using sandstone that was joined without mortar, using the dry masonry technique typical of the era.

• The Nandi (the sacred bull) is placed in the center of the hall, facing the Shiva Linga, which is a standard iconographic arrangement in Shaivite temples.

• The temple represents the Panchayatana style of architecture, though it is one of the more primitive versions of this layout.

Q62. Answer: (d) Jataka stories

The correct answer is Jataka stories.

Key Points

• The gateways of the Great Stupa at Sanchi, also known as Toranas, are world-renowned for their detailed and intricate sculptural narratives.

• These sculptures primarily depict various Jataka stories, which are a voluminous body of literature native to India concerning the

previous births of Gautama Buddha in both human and animal form.

• Apart from the Jataka tales, the gateways also illustrate important historical events from the life of the Buddha, such as his birth, the Great Departure (leaving his palace), his Enlightenment, and his first sermon at Sarnath.

• A unique feature of these carvings is the aniconic representation of the Buddha; he is never shown in human form but is represented through symbols like the Bodhi tree, a wheel (Dharmachakra), an empty throne, or footprints.

• While the original brick stupa was built by Emperor Ashoka, the ornate stone gateways and the railing were added later, mostly during the 1st century BCE under the Satavahana Dynasty.

Additional Information

• Location and Heritage: The Sanchi Stupa is located in the Raisen district of Madhya Pradesh, India. It was designated as a UNESCO World Heritage Site in 1989 due to its significance as the oldest stone structure in India.

• Specific Jataka Depictions: Several famous stories are carved on the pillars and architraves, including the Vessantara Jataka (highlighting the virtue of charity), the Chhaddanta Jataka (story of the six-tusked elephant), and the Mahakapi Jataka (where the Buddha was a monkey king).

• The Four Gateways:

• South Gateway: The oldest of the four, featuring the birth of Buddha and Ashoka's visit to the Ramagrama Stupa.

• North Gateway: Crowned by a Wheel of Law, it depicts many miracles performed by the Buddha.

• East Gateway: Illustrates the Great Departure of Prince Siddhartha from Kapilavastu.

• West Gateway: Known for depicting the Seven incarnations of the Buddha and the war over the relics.

• Incorrect Options Analysis:

• Vedas: These are the oldest scriptures of Hinduism. While historically significant, they are not the subject of the Buddhist art at Sanchi.

• Ramayana: An ancient Indian epic. While scenes from the Ramayana appear in later Hindu temple architecture, they are not found on the Sanchi gateways.

• Mahavir Jain's life: Lord Mahavira was the 24th Tirthankara of Jainism. His life stories are depicted in Jain sites like Dilwara or Palitana, but not at the Buddhist site of Sanchi.

Important Points

• Architectural Components: The Sanchi Stupa consists of a hemispherical dome called the Anda, a square railing at the top called the Harmika, and a central pillar supporting three umbrellas known as the Chatra.

• Discovery and Restoration: The site was "discovered" by General Taylor in 1818. Later, Sir John Marshall, the Director-General of the Archaeological Survey of India (ASI), played a pivotal role in its restoration between 1912 and 1919.

• Flora and Fauna: The carvings are also noted for their realistic portrayal of animals (elephants, lions, bulls) and nature motifs, showcasing the deep connection between early Buddhism and the natural world.

• Inscriptions: There are over 600 inscriptions on the stones of Sanchi, many of which record donations made by ordinary people, including merchants, monks, and nuns, indicating that it was a site of mass devotion.

Q63. Answer: (c) Both I and II

The correct answer is Both I and II.

Key Points

• Dalton's Atomic Theory, proposed by the British chemist John Dalton in 1808, provided a scientific explanation for the laws of chemical combination.

• According to the theory, all matter, whether an element, a compound, or a mixture, is composed of very small particles called atoms. These atoms are the basic units that take part in chemical reactions. Hence, statement I is correct.

• One of the most fundamental postulates of this theory is that atoms are indivisible particles. This means they cannot be subdivided into smaller parts (though modern science later discovered subatomic particles).

• The theory also states that atoms cannot be created or destroyed in a chemical reaction, which provides a theoretical basis for the Law of Conservation of Mass. Hence, statement II is correct.

• Therefore, both statements I and II are valid postulates of Dalton's atomic theory.

Additional Information

• Postulates regarding Elements:

• Dalton stated that atoms of a given element are identical in mass and chemical properties. This means every atom of Hydrogen is exactly like every other atom of Hydrogen in terms of its weight and how it reacts.

• Conversely, atoms of different elements possess different masses and different chemical properties. For example, an atom of Oxygen has a different mass and set of characteristics compared to an atom of Carbon.

• Formation of Compounds:

• The theory explains that atoms combine in the ratio of small whole numbers to form compounds. This explains the Law of

Constant Proportions (or Definite Proportions).

• In any given compound, the relative number and kinds of atoms are constant. For example, in a water molecule (H2O), there are always 2 atoms of Hydrogen for every 1 atom of Oxygen.

• Historical Context:

• John Dalton published his ideas in a book titled "A New System of Chemical Philosophy".

• Before Dalton, the idea of atoms was purely philosophical; his work turned it into a quantitative scientific model that could be tested through experimentation.

Important Points

• Limitations of Dalton's Theory:

• While revolutionary, the theory had limitations. The discovery of subatomic particles like electrons, protons, and neutrons later proved that atoms are, in fact, divisible.

• The discovery of isotopes (atoms of the same element with different masses, such as Carbon-12 and Carbon-14) challenged the postulate that all atoms of a given element have identical masses.

• The discovery of isobars (atoms of different elements having the same atomic mass, such as Argon and Calcium both having a mass of 40) challenged the idea that different elements must have different masses.

Q64. Answer: (c) Neutron

The correct answer is Neutron.

Key Points

• The Neutron was discovered by the British physicist James Chadwick in 1932. He performed an experiment where he bombarded Beryllium with alpha particles, which resulted in the emission of a new type of radiation consisting of uncharged particles.

• A neutron is a subatomic particle that has no net electric charge (it is neutral) and a mass slightly larger than that of a proton. Hence, the option identifying the neutron as Chadwick's discovery is correct.

• Neutrons are located in the atomic nucleus along with protons. The number of neutrons in an atom's nucleus determines the isotope of that element.

• The mass of a neutron is approximately 1.6749 × 10^-27 kg, or about 1.00866 atomic mass units (amu). Because they lack charge, they can easily penetrate the nuclei of other atoms, making them essential for nuclear chain reactions.

• For this monumental discovery, James Chadwick was awarded the Nobel Prize in Physics in 1935. His work led to a deeper understanding of the atomic structure and paved the way for the development of nuclear energy.

Additional Information

• Electron:

• The electron was the first subatomic particle to be discovered. It was identified by J.J. Thomson in 1897 through his experiments with Cathode Ray Tubes.

• It carries a negative electrical charge of approximately -1.602 × 10^-19 Coulombs and has a very small mass (about 1/1836th of a proton).

• Proton:

• The proton is a positively charged particle found in the nucleus. While Eugen Goldstein observed canal rays in 1886, Ernest Rutherford is credited with the discovery of the proton in 1917 (and naming it in 1920) after his experiments with nitrogen nuclei.

• The number of protons in the nucleus defines the atomic number and the identity of the chemical element.

• Alpha Particle:

• An alpha particle consists of two protons and two neutrons bound together, making it identical to a Helium-4 nucleus.

• They are emitted during alpha decay of radioactive substances. Rutherford used these particles in his famous Gold Foil Experiment to discover the atomic nucleus.

Important Points

• Atomic Nucleus: Discovered by Ernest Rutherford in 1911. It contains almost all of the atom's mass in a very small volume, composed of nucleons (protons and neutrons).

• Subatomic Stability: Neutrons act as a "glue" in the nucleus; the strong nuclear force between neutrons and protons overcomes the electrostatic repulsion between positively charged protons, keeping the nucleus stable.

• Applications: The discovery of the neutron was crucial for the Manhattan Project and the subsequent creation of nuclear reactors. Neutrons are used in neutron diffraction to study the structure of materials and in cancer therapy (Boron Neutron Capture Therapy).

Q65. Answer: (d) Para-Badminton

The correct answer is Para-Badminton.

Key Points

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• Pramod Bhagat is a world-renowned professional Para-Badminton player representing India. He competes primarily in the men's singles SL3 category, which is designated for players with impairment in one or both lower limbs and poor walking/running balance.

• He was honored with the prestigious Arjuna Award in 2019 by the Ministry of Youth Affairs and Sports, Government of India, for his consistent and outstanding performance in the field of sports. Hence, the association with Para-Badminton is correct.

• In 2021, he achieved a historic milestone by winning the Gold Medal at the Tokyo 2020 Paralympic Games. This was a landmark moment as it was the debut of badminton at the Paralympic Games.

• He has been a dominant force in the BWF Para-Badminton World Championships, securing multiple gold medals in both singles and doubles events over various editions, including 2015, 2019, and 2022.

• As of recent rankings, he has held the World No. 1 position in the Para-badminton men's singles SL3 category, showcasing his longevity and skill in the sport.

Additional Information

• Background and Early Life:

• Pramod Bhagat was born on 4 June 1988 in the Vaishali district of Bihar. At the age of five, he contracted polio, which led to a disability in his left leg.

• Despite the physical challenges, he developed an interest in badminton after watching neighbors play, and he began competing against able-bodied players before transitioning to para-sports in 2006.

• Major Awards and Honors:

• Major Dhyan Chand Khel Ratna Award (2021): He received India's highest sporting honor following his Paralympic success.

• Padma Shri (2022): He was awarded the fourth-highest civilian award in India for his contributions to sports.

• BWF Male Para-Badminton Player of the Year: He was nominated for and won various international accolades recognizing his technical prowess on the court.

• Other Options Overview:

• Hockey: This sport is associated with legends like Major Dhyan Chand and current stars like Manpreet Singh and P.R. Sreejesh. Hence, statement 1 is incorrect.

• Para-Athletics: This category includes track and field events. Famous Indian para-athletes include Devendra Jhajharia (Javelin) and Sumit Antil. Hence, statement 2 is incorrect.

• Weightlifting: Prominent Indian athletes in this field include Saikhom Mirabai Chanu (Olympic Silver medalist) and Karnam Malleswari. Hence, statement 3 is incorrect.

Important Points

• Classification in Para-Badminton:

• The SL3 category (Standing Lower) requires players to play half-court in singles to accommodate limited mobility. Pramod Bhagat's tactical intelligence and net play are considered the best in this specific classification.

• Other Indian para-badminton stars include Krishna Nagar (SH6 category gold medalist) and Suhas Lalinakere Yathiraj (SL4 category silver medalist).

• Training and Representation:

• While born in Bihar, he represents the state of Odisha in domestic circuits and receives significant support from the Odisha Government, which has emerged as a major hub for sports in India.

• He trains at various facilities, including the Gopi Chand Badminton Academy and specialized centers for para-athletes.

Q66. Answer: (b) A fly in the ointment

The solution is in Hindi. Read it online.

Q67. Answer: (a) To surprise someone who is normally alert, shrewd, or on-guard

The solution is in Hindi. Read it online.

Q68. Answer: (d) Lineage

The solution is in Hindi. Read it online.

Q69. Answer: (c) phlegmatic

The solution is in Hindi. Read it online.

Q70. Answer: (d) Satisfying

The solution is in Hindi. Read it online.

Q71. Answer: (c) How little

The solution is in Hindi. Read it online.

Q72. Answer: (a) boat

The correct answer is 'boat'.

Key Points

• The word "boat" refers to a small vessel used for traveling on water, which is appropriate in the given context.

• The sentence describes the fisherman rowing his vessel to the shore, making "boat" the correct choice.

• Options 2, 3, and 4 are incorrect as they are either misspelled or not meaningful in this context.

Therefore, the correct answer is Option 1.

Complete Sentence: "The fisherman rowed his small boat to the shore."

Additional Information

• Option 2: "bote" is a misspelling of "boat" and is not a valid word.

• Option 3: "bout" refers to a short period of activity or a fight, which does not fit the context.

• Option 4: "boot" refers to footwear, which is unrelated to the context of the sentence.

Q73. Answer: (a) Omnipotent

The solution is in Hindi. Read it online.

Q74. Answer: (b) Agoraphobia

The solution is in Hindi. Read it online.

Q75. Answer: (b) The hardworking students had been praised by the teacher.

The correct answer is Option 2.

Key Points

• Passive voice structure: The object of the active voice sentence becomes the subject of the passive voice sentence.

• In the active voice, the sentence is: "The teacher had praised the hardworking students."

• To convert to passive voice: Place the object "the hardworking students" at the beginning.

• Change the active verb form "had praised" to "had been praised" (past perfect passive).

• Add the preposition "by" followed by the original subject "the teacher."

Therefore, the correct answer is Option 2.

Correct Sentence: "The hardworking students had been praised by the teacher."

Additional Information

• Option 1: "The hardworking students had praised the teacher." – This changes the subject and meaning of the sentence.

• Option 3: "The hardworking students were praised by the teacher." – Incorrect tense (past simple instead of past perfect).

• Option 4: "The hardworking students have been praised by the teacher." – Incorrect tense (present perfect instead of past perfect).

Q76. Answer: (b) How are all these ancient clocks kept in working order by him?

The correct answer is Option 2.

Key Points

• To convert a sentence into passive voice, the object of the active sentence becomes the subject of the passive sentence.

• The active voice sentence given is: "How does he keep all these ancient clocks in working order?"

• In passive voice, the subject "he" shifts to the agent, and the object "all these ancient clocks" becomes the subject.

• The auxiliary verb "does" changes to "are" to agree with the plural subject "all these ancient clocks."

• The main verb "keep" is changed to its past participle form "kept."

• The correct passive voice structure is: "How are all these ancient clocks kept in working order by him?"

Therefore, the correct answer is Option 2.

Correct Sentence: "How are all these ancient clocks kept in working order by him?"

Additional Information

• Option 1: "How do all these ancient clocks kept in working order by him?" – Incorrect auxiliary verb "do" does not agree with the passive voice structure.

• Option 3: "How is all these ancient clocks kept in working order by him?" – Incorrect subject-verb agreement (singular "is" with plural "clocks").

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• Option 4: "How are all these ancient clocks keep in working order by him?" – Incorrect verb form "keep" instead of "kept."

Q77. Answer: (d) Will the committee announce the final decision tomorrow afternoon?

The correct answer is Option 4.

Key Points

• To convert a sentence from passive voice to active voice, the subject and object are interchanged.

• The passive voice sentence is: "Will the final decision be announced by the committee tomorrow afternoon?"

• In the active voice, the subject "the committee" comes at the beginning of the sentence.

• The auxiliary verb "will" remains unchanged, and the verb "be announced" is replaced with its base form "announce."

• The time phrase "tomorrow afternoon" remains at the end of the sentence for clarity.

Therefore, the correct answer is Option 4.

Correct Sentence: "Will the committee announce the final decision tomorrow afternoon?"

Additional Information

• Option 1: "Does the committee announce the final decision tomorrow afternoon?" – Incorrect tense (present simple instead of future simple).

• Option 2: "Is the committee announcing the final decision tomorrow afternoon?" – Incorrect tense (present continuous instead of future simple).

• Option 3: "Has the committee announced the final decision tomorrow afternoon?" – Incorrect tense (present perfect instead of future simple).

• Option 4: "Will the committee announce the final decision tomorrow afternoon?" – Correct tense and structure.

Q78. Answer: (a) Doesn’t someone inspect the packages before dispatch?

The correct answer is Option 1.

Key Points

• The given sentence is in the passive voice: "Aren’t the packages inspected before dispatch?"

• To convert it into active voice, the subject performing the action ("someone" or "they") must be introduced.

• In the active voice, the verb must match the tense and structure of the original sentence.

• Option 1 ("Doesn’t someone inspect the packages before dispatch?") correctly converts the passive sentence into active voice.

• Other options are incorrect because:

• Option 2: "Don’t they inspected the packages before dispatch?" – Incorrect verb form ("inspected" should be "inspect").

• Option 3: "Aren’t they inspecting the packages before dispatch?" – Incorrect tense; this suggests a continuous action, not a general occurrence.

• Option 4: "Can’t they inspect the packages before dispatch?" – Incorrect modality; this suggests ability rather than a factual statement.

Therefore, the correct answer is Option 1.

Correct Sentence: "Doesn’t someone inspect the packages before dispatch?"

Additional Information

• Passive Voice Structure: "Object + to be (appropriate tense) + past participle + (optional agent)."

• Active Voice Structure: "Subject + verb (appropriate tense) + object."

• The subject "someone" or "they" is implied in the passive voice and needs to be explicitly stated in the active voice.

Q79. Answer: (c) in

The correct answer is 'in'.

Key Points

• The correct preposition to use in the phrase "get in touch" is "in" as it is a standard expression.

• The preposition "in" indicates a state of connection or communication with someone.

• Options 1, 2, and 4 are incorrect because they do not fit the idiomatic phrase "in touch."

Therefore, the correct answer is Option 3.

Complete Sentence: "You may get in touch with your parents if you need any help."

Additional Information

• Option 1: "with" is incorrect because "get with touch" is not a valid expression.

• Option 2: "for" is incorrect as it does not fit the idiomatic phrase "get in touch."

• Option 4: "upto" is incorrect because it does not make sense in the context of communication.

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Q80. Answer: (d) No improvement required

The correct answer is '4'.

Key Points

• The phrase "putting up with" means enduring or tolerating something unpleasant, which is contextually correct.

• Options 1, 2, and 3 suggest different phrasal verbs that do not fit the intended meaning of the sentence.

• Option 4 is correct as no improvement is required for the given sentence.

Therefore, the correct answer is Option 4.

Complete Sentence: "The NGO has been putting up with severe criticism for its methods."

Additional Information

• Option 1: "putting across with severe criticism" is incorrect because "putting across" means expressing or conveying, which does not fit the context.

• Option 2: "putting out with severe criticism" is incorrect because "putting out" means extinguishing or producing, which is not relevant here.

• Option 3: "putting in with severe criticism" is incorrect because "putting in" refers to contributing or inserting, which does not align with the sentence's meaning.

Q81. Answer: (b) for

The correct answer is 'for'.

Key Points

• The preposition "for" is used to indicate purpose or suitability.

• In the sentence, the phrase "room for more than four persons" refers to the capacity or accommodation for a specific number of people.

• Option 1 ("to"), Option 3 ("on"), and Option 4 ("of") do not fit the context of the sentence and are grammatically incorrect.

Therefore, the correct answer is Option 2.

Complete Sentence: "There is no room for more than four persons in this life."

Additional Information

• Option 1: "to" is incorrect because "to" is used to indicate direction or destination, which does not apply here.

• Option 3: "on" is incorrect because "on" is used to indicate position, location, or surface, which does not fit the context.

• Option 4: "of" is incorrect because "of" is used to indicate possession or relation, which is not suitable here.

Q82. Answer: (a) CDAB

The correct answer is: CDAB. S1 describes finding the woman dead. C details a child's injury during the woman's death. D recounts the villagers' burial assistance. A praises the villagers' character. B notes the babies are now alone. S2 questions their future. CDAB is correct as it links the death, burial, and the children's ensuing abandonment.

Q83. Answer: (c) CDAB

The correct answer is: (3) CDAB. S1 details falling ill; C specifies the location and summoning help; D describes the doctor arriving; A covers the treatment and initiation of talk; B explains the narrator's exhaustion and willingness to chat. This sequence logically links the start of an illness to the social interaction before tea is served.

Q84. Answer: (b) CADB

The correct answer is: (2) CADB. S1 introduces a guest, while C notes his distinct nature. A identifies him as an important personage, and D provides his specific name. B explains his high social standing relative to the host. CADB is correct as it transitions from general characterization to identity and status, leading into the specific host behaviors described in S2.

Q85. Answer: (a) However, on the

The correct answer is Option 1.

Key Points

• The error is in the use of the preposition "on" in Part A.

• For periods of the day like morning, afternoon, and evening, the standard preposition to use is "in."

• The phrase "on the evening" is only grammatically correct if followed by a specific date or day (e.g., "on the evening of the 10th").

• Therefore, "on" must be replaced with "in" to make the sentence grammatically accurate.

Therefore, the correct answer is Option 1.

Correct Sentence: "However, in the evening, he returned with one foot limping because his heel was wounded."

Additional Information

• Option 2: "evening, he returned with" – This part is correct; the comma properly sets off the introductory adverbial phrase.
• Option 3: "one foot limping because" – This part is correct. "Limping" functions as a participle describing the state of the foot.
• Option 4: "his heel was wounded." – This part is grammatically correct, using the passive voice to describe the injury.
• Preposition Rule: Remember: In the morning/afternoon/evening vs. At night.

Q86. Answer: (a) Strict traffic laws are emphasized by governments.

The correct answer is Option 1.

Key Points

• Passive voice structure: The object of the active voice sentence becomes the subject of the passive voice sentence. The formula for the present simple passive is: Subject (Receiver) + am/is/are + Past Participle (V3) + by + Agent (Doer).
• In the active voice, the sentence is: "Governments emphasize strict traffic laws."
• Step 1: Identify the object, "strict traffic laws," and move it to the beginning of the sentence.
• Step 2: Change the active verb "emphasize" (present simple) to its passive form "are emphasized" to match the plural subject.
• Step 3: Place the original subject "Governments" at the end, introduced by the preposition "by."

Therefore, the correct answer is Option 1.

Correct Sentence: "Strict traffic laws are emphasized by governments."

Additional Information

• Option 2: "Governments are emphasized by strict traffic laws." – This incorrectly makes "Governments" the receiver of the action, reversing the logical meaning of the sentence.
• Option 3: "Governments were emphasizing strict traffic laws." – This is the past continuous tense in the active voice.
• Option 4: "Strict traffic laws emphasize governments." – This is an active voice sentence where the subject and object have been swapped, resulting in a nonsensical statement.

Q87. Answer: (b) Comparative degree

The correct answer is Option 2 i.e 'Comparative degree'.

Key Points

• The phrase "safer and more intelligent" involves comparisons made between the current or past state and a future state of cars.
• Comparative degree is used to compare two things or states. In this case, "safer" and "more intelligent" are comparing cars as they are now to how they will become in the future.
• Adjectives in the comparative degree often end in "-er" or are characterized by the use of "more" before adjectives that are longer. Here, "safer" is the comparative form of "safe," and "more intelligent" is the comparative form of "intelligent."
• Comparative degree reflects a progression or improvement from the current state to improve aspects of safety and intelligence in cars.

Therefore, the correct answer is- Option 2.

Additional Information

• Positive degree: The positive degree is used when no comparison is being made. Examples include "safe" and "intelligent." They describe the general, unmodified state.
• Superlative degree: The superlative degree is used to describe the highest, most extreme level of a quality among three or more entities. Examples include "safest" and "most intelligent."
• Past degree: There is no recognized grammatical term known as the past degree in the context of degrees of comparison.

Q88. Answer: (a) Carelessness

The solution is in Hindi. Read it online.

Q89. Answer: (c) Right

The solution is in Hindi. Read it online.

Q90. Answer: (d) Because machines cannot make ethical decisions and drivers must remain alert

The correct answer is 'Option 4'.

Key Points

• Limitations in Ethical Reasoning.
• While AI and intelligent systems can process data faster than humans, they lack the capacity for moral judgment. In complex, split-second "life-or-death" scenarios, machines follow programmed logic rather than understanding the ethical weight of their actions.
• The Necessity of Human Oversight.
• "Responsibility" implies accountability. Because a machine cannot be held legally or morally liable in the same way a person

can, a human driver must remain alert to intervene and take control when the technology encounters an unpredictable situation.

• Unpredictability of the Environment.

• Even a "safer" car cannot account for every possible external variable. The phrase emphasizes that technology is a tool to assist, but the ultimate duty of care remains with the human operator to ensure safety for everyone on the road.

Therefore, the correct answer is Option 4.

Additional Information

• Option 1: Incorrect because the legal status of machines on roads is a matter of regulation, not an explanation for the fundamental nature of "human responsibility."

• Option 2: Incorrect because the premise of the question states that future cars will be safer, contradicting the idea that technology is "always" unsafe.

• Option 3: Incorrect because while pedestrian behavior is a challenge, "human responsibility" specifically refers to the person operating the vehicle, not the behavior of others.

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