SSC CHSL Tier-1 2023: Official Paper (Held On: 11 Aug, 2023 Shift 2) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2023 • 100 questions • 60 minutes • Answer key and solutions

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ENGLISH LANGUAGE

Q1. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on whole numbers, without breaking down the numbers into their 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.)

(9, 3, 90)

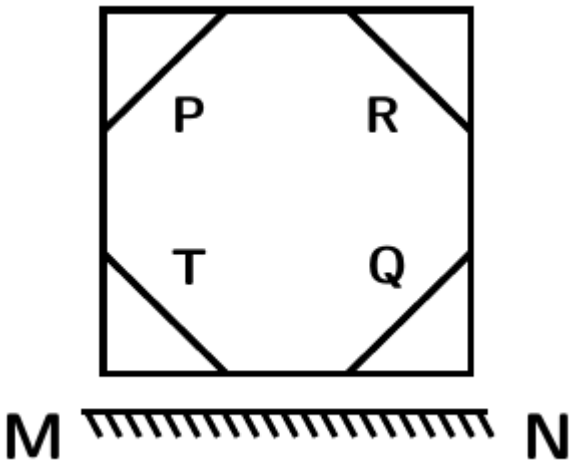
(5, 4, 41)

(a) (13, 7, 218)
(b) (7, 8, 117)
(c) (11, 8, 182)
(d) (4, 12, 162)

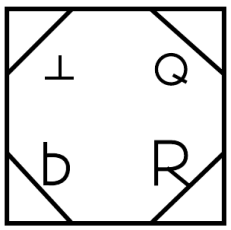
Q2. In a certain code language, 'will come back later' is written as 'nk zs kp rq' and 'later he won it' is written as 'pj st mk kp'. How is 'later' written in the given language?

(a) rq
(b) nk
(c) zs
(d) kp

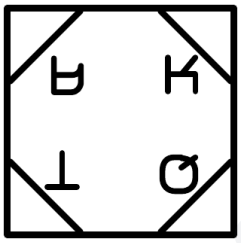
Q3. Select the correct mirror image of the given figure when the mirror is placed at MN as shown.



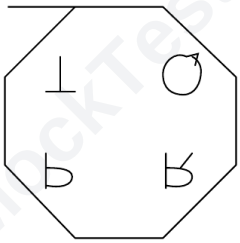
(a)



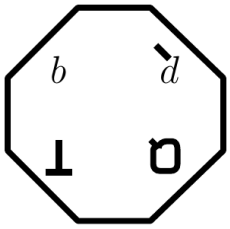
(b)



(c)



(d)



Q4. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark '?' in the following equation?

426 A 3 D 12 C 105 B 1 = ?

(a) 238
(b) 237
(c) 236
(d) 235

Q5. What will come in the place of the question mark (?) in the following equation if '+' and '-' are interchanged and '×' and '÷' are interchanged?

143 - 28 × 4 ÷ 5 + 22 = ?

(a) 156
(b) 149
(c) 167
(d) 142

Q6. Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below.

(The words must be considered meaningful English words and must not be related to each other based on the number of letters/consonants/vowels in the word.)

Blaze : Eruption

(a) Bookie : Boom

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(b) Bony : Haggard
(c) Boron : Bossy
(d) Borax : Boor

Q7. Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does NOT belong to that group?

(a) RPT
(b) YWA
(c) FDH
(d) EJN

Q8. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the option in which the numbers are related in the same way as are the numbers of the following pairs.

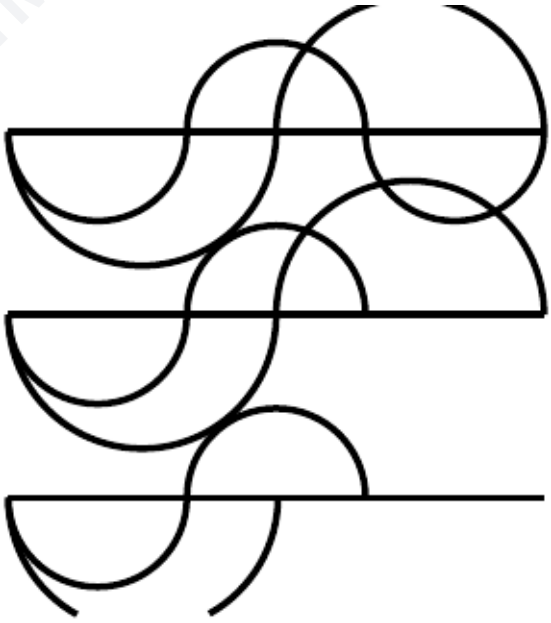
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 - Operations on 13 such as adding/deleting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is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

9, 74

5, 18

(a) 8, 27
(b) 20, 364
(c) 13, 162
(d) 14, 106

Q9. How many semi circles are there in the given figure?



(a) 12
(b) 13
(c) 15
(d) 16

Q10. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some hockeys are bats.

All bats are racquets.

No stick is a racquet.

Conclusions:

(I) Some sticks are bats.

(II) Some sticks are hockeys is a possibility.

(III) All hockeys are racquets.

(a) Only conclusion II follows
(b) Both conclusions I and II follow
(c) Both conclusions II and III follow
(d) Only conclusion I follows

Q11. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark (?) in the following equation?

30 B 5 C 246 A 6 D 17 = ?

(a) 179
(b) 176
(c) 171
(d) 174

Q12. Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the one that is different.

(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.)

29 : 160

31 : 138

27 : 150

21 : 120

(a) 31 : 138
(b) 21 : 120
(c) 27 : 150
(d) 29 : 160

Q13. Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. You have to decide which conclusion/s logically follow/s from the given statements.

Statements:

Some dietitians are surgeons.

All surgeons are therapists.

No therapist is a physician.

Conclusion (I): Some therapists are dietitians.

Conclusion (II): No dietitian is a physician.

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

Q14. In a certain code language, 'MUZJIK' is coded as 'UCHRQS' and 'BLOWZY' is coded as 'JTWEHG'. What is the code for 'SQUAWK' in the given code language?

(a) AZCIES
(b) AYCIFS
(c) AYDIES
(d) AYCIES

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Q15. What should come in place of the question mark (?) in the given series?

283, 308, 344, ?, 457

(a) 391
(b) 348
(c) 393
(d) 372

Q16. If 29 November 2009 is Sunday, then what will be the day of the week on 30 May 2010?

(a) Monday
(b) Sunday
(c) Tuesday
(d) Saturday

Q17. The position of how many letters will remain unchanged if each of the letters in the word 'DEFORM' is arranged in alphabetical order?

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

Q18. In a certain code language,

A + B means 'A is the sister of B',

A - B means 'A is the brother of B',

A × B means 'A is the mother of B',

A ÷ B means 'A is the father of B'.

Based on the above, how is P related to S if 'P × Q - R ÷ S + T'?

(a) Father's mother
(b) Father's brother
(c) Brother
(d) Son's daughter

Q19. Select the option that represents the letters that, when sequentially placed from left to right in the blanks below, will complete the letter series.

_ op _ mo _ n _ _ pnmop _

(a) mpnmno
(b) mnmopn
(c) mnpmon
(d) pmnopn

Q20. In a certain code language,

A + B means 'A is the mother of B'

A - B means 'A is the wife of B'

A × B means 'A is the son of B'

A ÷ B means 'A is the brother of B'

Based on the above, how is S related to L if 'L × K + D - S ÷ T'?

(a) Husband's brother
(b) Sister's husband
(c) Mother's son
(d) Father's brother

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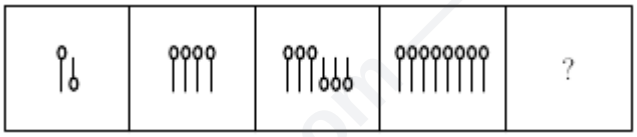
Q21. Select the option in which the letter-clusters share the same relationship as that shared by the given pair of letter-clusters.

YQF : HOI

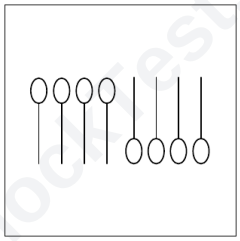
FSO : OQR

(a) PJZ : YHB
(b) PAJ : YZL
(c) NEZ : UXA
(d) QML : ZKO

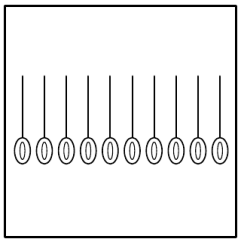
Q22. Identify the figure given in the options which when put in place of the question mark (?) will logically complete the series.



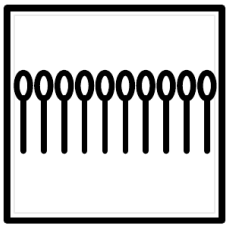
(a)



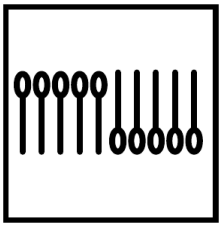
(b)



(c)



(d)



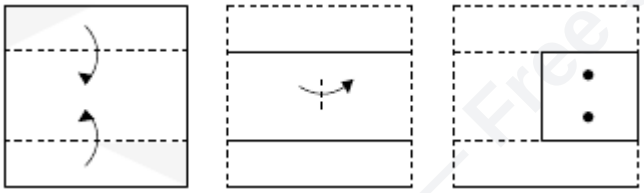
Q23. Four triads of numbers have been given out of which three are alike in some manner and one is different. Select the one that is different.

(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/deleting/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.)

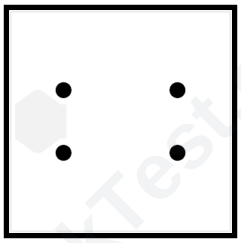
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(a) 25 - 45 - 65
(b) 8 - 28 - 48
(c) 38 - 58 - 78
(d) 17 - 27 - 67

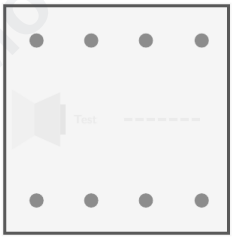
Q24. A square sheet of paper is folded along the dotted line successively along the directions shown and is then punched in the end. How would the paper look when unfolded?



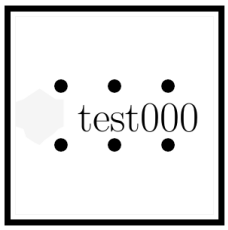
(a)



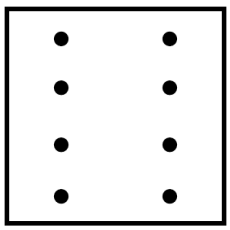
(b)



(c)



(d)



Q25. In a certain code language, EU324 is written as LN361 and HR529 is written as OK576. How will GS625 be written in that language?

(a) LM756
(b) LN676
(c) MN756
(d) NL676

GENERAL INTELLIGENCE

Q26. Film actress Hema Malini is a trained _____ dancer.

(a) Bharatanatyam
(b) Kathakali
(c) Kuchipudi
(d) Kathak

Q27. Who among the following Indian tennis players won the men's doubles title at the Bangkok Open Challenger held at Nonthaburi, Thailand in January 2023?

(a) Arjun Kadhe and Saketh Myneni
(b) Yuki Bhambri and Saketh Myneni
(c) Rohan Bopanna and Ramkumar Ramanathan
(d) Prithvi Sekhar and Dhananjay Dubey

Q28. Rajaram was the leader of which of the following revolts against the Mughals?

(a) Satnami
(b) Bundela
(c) Jat
(d) Munda

Q29. Which of the following states of India still uses the ancient bamboo drip irrigation method?

(a) Telangana
(b) Meghalaya
(c) Maharashtra
(d) Chhattisgarh

Q30. The Family Courts (Amendment) Act 2022 has amended the Family Courts Act, 1984. The Act allows _____ to establish Family Courts.

(a) District Courts
(b) State Governments
(c) Union Government
(d) District Collector

Q31. Who founded the Arya Samaj and pleaded for the right of individuals to interpret Vedas and free themselves from the tyranny of priests?

(a) Raja Ram Mohan Roy
(b) RG Bhandarkar
(c) Swami Dayananda Saraswati
(d) MG Ranade

Q32. What is the popular name for mercury(I) chloride which is used as a laboratory reagent and as a depolarizer in dry batteries?

(a) Calomel
(b) Phosgene
(c) Galena
(d) Saltpetre

Q33. Which of the following can be considered a part of parallel economy?

(a) Under declared income
(b) Value of domestic work done by housewife
(c) Payments made to domestic helpers or housekeepers
(d) Payment for private tuition

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Q34. In the context of ecology, the given equation shows the relationship between the size of an area and the number of species present in it. Accordingly, by which letter is the regression coefficient denoted?

log S = log C + Z log A

(a) S
(b) A
(c) Z
(d) C

Q35. Which of the following hypotheses was propounded by Harry Hammond Hess in 1962?

(a) Continental Drift hypothesis
(b) Sea floor spreading hypothesis
(c) Gaia hypothesis
(d) Geographical cycle hypothesis

Q36. Which of the following statements is correct about Article 43 B of the Indian Constitution?

(a) It was added in the 44th Constitutional Amendment.
(b) It is related to cooperative society.
(c) It is related with the right of livelihood.
(d) It was added in 2002.

Q37. Which of the following is NOT the first day event in the decathlon?

(a) Discus throw
(b) Shot put
(c) 100 metre dash
(d) 400 metre dash

Q38. In the women's category, which athlete won the bronze medal at the 2023 Asian 20 km Walking Championships held in Nomi, Japan?

(a) Manju Rani
(b) Priyanka Goswami
(c) Bhawna Jat
(d) Khushbir Kaur

Q39. Which of the following is the famous festival of Telangana

(a) Kanuma
(b) Elephanta
(c) Bonalu
(d) Konark

Q40. The second annual session of the Indian National Congress was held at which of the following places?

(a) Bombay
(b) Delhi
(c) Calcutta
(d) Madras

Q41. Yamini Krishnamurthy, a legendary figure of Indian classical dance, was honoured with the _____ in 2016.

(a) Saraswati Samman
(b) Padma Vibhushan
(c) Moortidevi Award
(d) Bharat Ratna

Q42. Silicon doped with gallium forms _____.

(a) n-type semiconductor
(b) superconductor
(c) insulator

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(d) p-type semiconductor

Q43. Bismillah Khan played which of the following musical instruments?

(a) Sitar
(b) Shehnai
(c) Tabla
(d) Harmonium

Q44. Match the following items with respect to money.

List I	List II		
i.	Primary functions	a.	Distribution of national income
ii.	Secondary functions	b.	Measure of value
iii.	Evils of money	c.	Store of value
iv.	Contingent functions	d.	Instability of value

(a) i - d, ii - c, iii - a, iv - b
(b) i - a, ii - d, iii - b, iv - c
(c) i - c, ii - b, iii - a, iv - d
(d) i - b, ii - c, iii - d, iv - a

Q45. Which of the following is not a fundamental duty in the Indian Constitution?

(a) Protect public property
(b) To maintain and protect the sovereignty of the country
(c) To promote the spirit of harmony and brotherhood
(d) Protecting monuments

Q46. During a boom, the deficit of the government will reduce automatically due to _____.

(a) increase in tax revenue
(b) Increase in GDP
(c) decrease in tax revenue
(d) decrease in GDP

Q47. What percentage of the Indian population was estimated to be living below the poverty line in 2011-12?

(a) 25.6%
(b) 10.9%
(c) 15.6%
(d) 21.9%

Q48. The Himalayan Mountains act as an effective climatic divide by protecting the subcontinent from:

(a) cold northern winds
(b) warm southern winds
(c) cyclonic winds
(d) western disturbances

Q49. Which of these is NOT one of the common goals of five-year plans?

(a) Self-reliance
(b) Modernisation
(c) Globalisation
(d) Growth

Q50. The novel Self-Help Group Bank Linkage Program (SHG-BLP) project which grew into a dominant micro finance model, was piloted by _____.

(a) NABARD
(b) MFI

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(c) IRDA
(d) SEBI

QUANTITATIVE APTITUDE

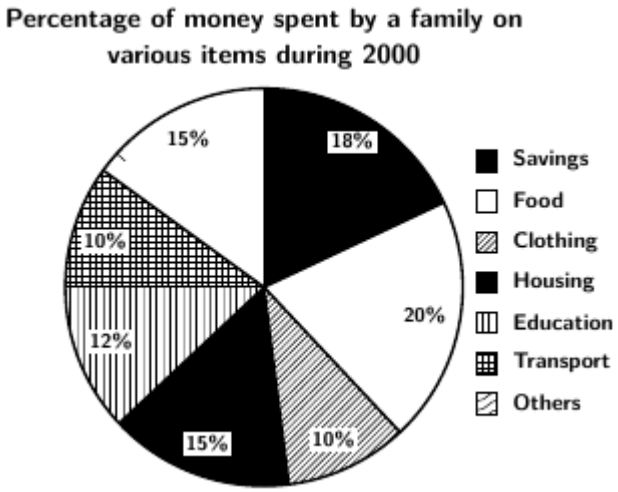
Q51. In an isosceles right-angled triangle, the perimeter is 30 m. Find its area (in m²). (Rounded off to the nearest integral value)
(a) 41
(b) 36
(c) 39
(d) 34

Q52. How many kilograms of rice costing Rs. 52 per kg must be mixed with 35 kg of rice costing Rs. 45 per kg so as to get a gain of 10% by selling the resulting mixture of rice at the rate of Rs. 55 per kg?
(a) 87.5kg
(b) 90.0kg
(c) 85.0kg
(d) 82.5kg

Q53. A copper wire is bent in the form of a square and it encloses an area of 30.25 cm². If the same wire is bent to form a circle, then find the area of the circle.[Use π = 22/7]
(a) 38.50 cm²
(b) 42.25 cm2
(c) 35 cm2
(d) 30.25 cm2

Q54. Upon selling an article at 3/7 of the marked price, a loss of 30% is incurred. What is the ratio between the marked price and the cost price of the article?
(a) 48 : 60
(b) 49 : 30
(c) 25 : 37
(d) 50 : 80

Q55. The pie chart given here shows the spending by a family on various items during the year 2000. Study the graph and answer these questions.



The ratio of the total amount of money spent on housing to that spent on education was:
(a) 2 : 5
(b) 5 : 4
(c) 4 : 5
(d) 5 : 2

Q56. A shopkeeper publishes a list of prices which are 60% above the CP. He proposes to give 20% discount. How much profit does he really make?

(a) 35%
(b) 22%
(c) 18%
(d) 28%

Q57. A can do a work in 18 days and B in 24 days. If they work on it together for 5 days, then find the fraction of the work which is left.

(a) 35/72
(b) 7/72
(c) 37/72
(d) 33/72

Q58. Ranjeet buys 1 kg potato for Rs. 20 and sells it for Rs. 25. He also uses a weight of 800 gm in place of 1 kg. What is Ranjeet's actual profit percentage on the sale of 1 kg potato?

(a) 56.75%
(b) 56.25%
(c) 55.75%
(d) 57.25%

Q59. If $\tan 2\theta = \cot(\theta - 36°)$, where 2θ is an acute angle, then the value of θ is:

(a) 18°
(b) 36°
(c) 30°
(d) 42°

Q60. In ΔABC, BD perpendicular to AC, intersecting AC at D. Also, BD = 12 cm. If m(AD) = 6 cm and m(CD) = 4 cm, find the area (in cm^2) of ΔABC.

(a) 45
(b) 50
(c) 60
(d) 75

Q61. If $(a + b + c) = 17$, and $(a^2 + b^2 + c^2) = 115$, find the value of $(a + b)^2 + (b + c)^2 + (c + a)^2$.

(a) 402
(b) 408
(c) 394
(d) 404

Q62. ΔABC is an isosceles triangle with angle ABC = 90° and AB = BC. If AC = 12 cm, then the length of BC (in cm) is equal to:

(a) $6\sqrt{2}$
(b) 8
(c) 6
(d) $8\sqrt{2}$

Q63. A deposited Rs. 1,56,250 at 8% simple interest for 2 years. How much more money will A have in his account at the end of two years, if at the same rate of interest the sum is invested in compound interest, compounded annually

(a) Rs. 1,740.90
(b) Rs. 1,000
(c) Rs. 2,000
(d) Rs. 1,540.40

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Q64. Simplify:

$((379+276)^2+(379-276)^2)/(379\times379+276\times276)$

(a) 2
(b) 655
(c) 103
(d) 1

Q65. What is the value of p, if, $25(4 + 3p) \div 5 - 3 \times 8 = 26$?

(a) 5
(b) 4
(c) 7
(d) 2

Q66. If $\tan(90 – \theta) = 2/\sqrt{3}$, then the value of $2\sqrt{3} \tan \theta + 1$ is:

(a) 4
(b) 5
(c) 3
(d) 6

Q67. O is the centre of a circle with a diameter of 16 cm. Q is a point outside the circle and QS is tangent to the circle at point S. If OQ is = 17 cm, what is the length (in cm) of the tangent QS?

(a) 15
(b) 12
(c) 18
(d) 10

Q68. Find the third proportional to 8 and 20.

(a) 25
(b) 50
(c) 40
(d) 64

Q69. 10^(th) class of 40 students took a Maths test. 25 students had an average score of 60. The other students had an average score of 80. What is the average score of the whole class?

(a) 66.5
(b) 65.5
(c) 67.5
(d) 68.5

Q70. Find the third proportion of P and 12, when 8, P, 16 and 18 are in proportion.

(a) 16
(b) 8
(c) 18
(d) 12

Q71. Directions: The following table gives the production of cookers by four plants of a company over the five years. Study the table and answer the questions that follow.

Year	**Production (in thousands)**			
Plant 1	Plant 2	Plant 3	Plant 4	
2018	35	25	40	45
2019	43	44	44	40
2020	48	39	36	30

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2021	32	40	35	48
2022	42	44	30	42

Which plant had the maximum average production in these five years?

(a) Plant 3
(b) Plant 4
(c) Plant 2
(d) Plant 1

Q72. Given below is the observed data of the age of various boys. Study the table carefully and answer the question that follows.

Age in years	Number of children (Boys)
5	8
6	3
7	7
8	2
9	20

Calculate the mean age of the boys.

(a) 6.57
(b) 9.57
(c) 7.57
(d) 8.57

Q73. Simplify:

$(2a - 3b - c)^2 - (a + 2b + c)^2$

(a) $3a^2 + 5b^2 - 16ab + 2bc - 8ac$
(b) 3a2 + 5b2 - 8ab + 2bc - 6ac
(c) 3a2 + 5b2 - 16ab - 6ac
(d) 3a2 + 5b2 - 16ab + 2bc - 6ac

Q74. In one hour each, a boat goes 12 km along the stream and 8 km against the stream. What is the speed of the boat in still water (in km/h)?

(a) 8
(b) 12
(c) 10
(d) 9

Q75. If $\sec\theta + \tan\theta = 5$, then $\sin\theta$ = _____.

(a) 0
(b) 13/12
(c) 12/13
(d) 1/5

GENERAL AWARENESS

Q76. The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.

The man / is a / social animal.

(a) social animal
(b) The man

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(c) No error
(d) is a

Q77. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
Would you / like to / watch an movie / tonight at eight?
(a) watch an movie
(b) like to
(c) tonight at eight
(d) Would you

Q78. Select the most appropriate option to substitute the underlined segment in the given sentence.
Teja is a successful businessman; he always makes hay when the moon shines.
(a) makes hay while the sun sets
(b) makes hay while the sun shines
(c) makes hey while the moon rises
(d) makes hay while the stars twinkle

Q79. Select the option that expresses the given sentence in passive voice.
Did the company launch a new product last month?
(a) Did the new product launch the company last month?
(b) Was the company launched by a new product last month?
(c) Was a new product launched by the company last month?
(d) Did the new product launch by the company last month's?

Q80. Select the most appropriate option that can substitute the underlined segment in the given sentence.
In according to his advice I took this medicine.
(a) accordance with
(b) accordingly
(c) accordance to
(d) accord with

Q81. Select the most appropriate synonym of the underlined word.
Great leaders don’t ignore trivial things.
(a) Small
(b) Serious
(c) Informal
(d) Urgent

Q82. Select the most appropriate ANTONYM of the underlined word.
Her judicious act made him popular overnight.
(a) Criminal
(b) Unwise
(c) Loyal
(d) Lawful

Q83. Select the most appropriate ANTONYM of the underlined word in the following sentence.
The jovial host welcomed his guests with a warm smile and a hearty laugh.
(a) Cheerful
(b) Petulant
(c) Buoyant
(d) Convivial

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Q84. Select the most appropriate option that can substitute the underlined words in the following sentence.

I am trying to study, if it is impossible with all this noise.

(a) that it is impossible
(b) but it is impossible
(c) while it is impossible
(d) unless it is impossible

Q85. Select the option that expresses the given sentence in passive voice.

Suresh stole my book.

(a) My book is being stolen by Suresh.
(b) My book got stolen by Suresh.
(c) My book was stolen by Suresh.
(d) My book was being stolen by Suresh.

Q86. Select the most appropriate meaning of the given idiom.

Having a chip on one's shoulder

(a) Having an unnecessary feeling of guilt
(b) Having an irritated and unfriendly attitude
(c) Having a proud and self-centred arrogance
(d) Showing great resistance to any adversities

Q87. Parts of a sentence are given below in jumbled order. Select the option that arranges the parts in the correct order to form a meaningful sentence.

A) he has been
B) everyone he knows
C) so upset about his
D) him so rude to
E) divorce and that made

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

Q88. Directions: Each item in this section consists of a sentence with an underlined word followed by four words/group of words. Select the option that is nearest in meaning to the underlined word and mark your response on the answer sheet accordingly.

She is painfully introverted, but an intelligent girl.

(a) Shy
(b) Outspoken
(c) Social
(d) Bold

Q89. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No correction required'.

Everyone sincerely and positively were ready to find the solution for the serious issue of sewage system.

(a) Everyone were sincerely and positively
(b) Everyone was sincerely and positively
(c) No correction required.
(d) Everyone had sincerely and positively

Q90. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.

A. what to tell you and how to say it
B. and there is darkness everywhere

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C. and I do not quite know

D. the light has gone out of our lives

(a) BCAD
(b) DBCA
(c) ABCD
(d) CABD

Q91. Select the most appropriate ANTONYM of the underlined word in the following sentence.

The idea of investing all of his life savings in a risky startup seemed like an act of lunacy to his financial advisor.

(a) Sanity
(b) Dismay
(c) Delusion
(d) Insanity

Q92. Select the meaningful and correctly spelt word from the given options to fill in the blank.

Whenever Susan received letters from the police, she _____ ignored them.

(a) intantienally
(b) intoningly
(c) indentionally
(d) intentionally

Q93. Select the sentence that has the correct use of spellings from the given options.

(a) In spite of the challenges possed by the pandamic, the company adapted to remote work and successfully maintained productivity levels.
(b) In spite of the challenges posed by the pandamic, the company adapted to remote work and successfuly maintained productvity levels.
(c) In spite of the challenges posed by the pandemic, the company adapted to remote work and successfully maintained productivity levels.
(d) In spite of the challenges possed by the pandemic, the company adapted to remote work and succesfully maintained productevity levels.

Q94. Select the most appropriate option that can substitute the underlined segment in the given sentence.

The person who dislikes and distrusts other people lived alone in a secluded cabin deep in the woods, far away from the hustle and bustle of society.

(a) misanthrope
(b) pessimist
(c) hermit
(d) recluse

Q95. Select the most appropriate ANTONYM of the word in brackets to fill in the blank.

The gentle lapping of waves _____ (for) the shore was the only thing that could be heard.

(a) across
(b) beneath
(c) pro
(d) against

Directions

In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

Teenage is a (1)_____ of life that everyone goes through between childhood and adulthood. During this time, teenagers go through many changes both physically and emotionally. They may experience mood swings, have difficulty expressing their feelings, and sometimes (2)____ impulsively. Teenagers are also trying to figure out their place in the world and may face pressure from peers, parents and society to (3)____ to certain expectations. It is important for teenagers to have a support system that allows them to explore their interests, develop their own identity and make healthy choices. Despite the challenges that come with being a teenager, it can also be an exciting and transformative time. Teenagers have the (4)____ to learn new

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skills, make lifelong friends and explore new experiences that can shape their future. It is important for parents, educators and other adults to provide teenagers with guidance, support and resources that can help them (5)_____ the challenges of adolescence.

Q96. Select the most appropriate option to fill in blank no. 1.

(a) transition
(b) phase
(c) feeling
(d) milestone

Q97. Select the most appropriate option to fill in blank no. 2.

(a) pretend
(b) run
(c) play
(d) act

Q98. Select the most appropriate option to fill in blank no. 3.

(a) certify
(b) match
(c) conform
(d) appeal

Q99. Select the most appropriate option to fill in blank no. 4.

(a) possibility
(b) captivity
(c) opportunity
(d) ability

Q100. Select the most appropriate option to fill in blank no. 5.

(a) correlate
(b) propagate
(c) conclude
(d) reduce

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) (13, 7, 218)

The logic followed here is:

Logic: (First number)² + (Second number)² = Third number

• (9, 3, 90) → $9^2 + 3^2 = 81 + 9 = 90$

• (5, 4, 41) → $5^2 + 4^2 = 25 + 16 = 41$

Similarly,

• (13, 7, 218) → $13^2 + 7^2 = 169 + 49 = 218$

Hence, '(13, 7, 218)' is the correct answer.

Q2. Answer: (d) kp

The code for each word is shown below:

Clearly, 'kp' is coded as 'later' in the given language.

Hence, 'kp' is the correct answer.

Q3. Answer: (c) [figure]

The correct mirror image of the given figure when the mirror is placed at MN is shown below:

Hence, 'option 3' is the correct answer.

Q4. Answer: (d) 235

Letter	A	B	C	D
Meaning	÷	×	•	•

After replacing letters by their meaning, we get:

426 ÷ 3 - 12 + 105 × 1 = ?

=> 142 - 12 + 105 × 1 = ?

=> 142 - 12 + 105 = ?

=> 247 - 12 = ?

=> 235 = ?

Hence, ‘235’ is the correct answer.

Q5. Answer: (a) 156

If '+' and '-' are interchanged and '×' and '÷' are interchanged, then the equation becomes:

143 + 28 ÷ 4 × 5 - 22 = ?

=> 143 + 7 × 5 - 22 = ?

=> 143 + 35 - 22 = ?

=> 178 - 22 = ?

=> 156 = ?

Hence, ‘156’ is the correct answer.

Q6. Answer: (b) Bony : Haggard

The logic followed here is:

Logic: Words are synonym of each other.

• Blaze : Eruption → Blaze is synonym of eruption.

Similarly,

• Bony : Haggard → Bony is synonym of haggard.

Hence, 'Bony : Haggard' is the correct answer.

Q7. Answer: (d) EJN

The logic followed here is:

Logic: First letter - 2 = Second letter; Second letter + 4 = Third letter

1. RPT → R - 2 = P; P + 4 = T

2. YWA → Y - 2 = W; W + 4 = A

3. FDH → F - 2 = D; D + 4 = H

4. EJN → E + 5 = J; J + 4 = N

Hence, 'EJN' is the correct answer.

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Q8. Answer: (c) 13, 162

The logic followed here is:

Logic: (First number)² - 7 = Second number

• 9, 74 → 9² - 7 = 81 - 7 = 74

• 5, 18 → 52 - 7 = 25 - 7 = 18

Similarly,

• 13, 162 → 132 - 7 = 169 - 7 = 162

Hence, '13, 162' is the correct answer.

Q9. Answer: (c) 15

The number of semi-circles in the given figure is shown below:

Hence, '15' is the correct answer.

Q10. Answer: (a) Only conclusion II follows

The least possible Venn diagram is:

Conclusions:

(I) Some sticks are bats. → Does not follow (As, All bats are racquets and No stick is a racquet, which implies No sticks are bats)

(II) Some sticks are hockeys is a possibility. → Follows (There is no definite relation between sticks and hockeys, so it is a possibility that some sticks are hockeys)

(III) All hockeys are racquets. → Does not follow (As, Some hockeys are bats and All bats are racquets, which implies some hockeys are racquets)

Hence, 'Only conclusion II follows' is the correct answer.

Q11. Answer: (d) 174

Letter	A	B	C	D
Meaning	÷	×	•	•

After replacing the letters by their meaning, we get:

30 × 5 + 246 ÷ 6 - 17 = ?

=> 30 × 5 + 41 - 17 = ?

=> 150 + 41 - 17 = ?

=> 191 - 17 = ?

=> 174 = ?

Hence, ‘174’ is the correct answer.

Q12. Answer: (a) 31 : 138

The logic followed here is:

Logic: (First number + 3) × 5 = Second number

1. 31 : 138 → (31 + 3) × 5 = 34 × 5 = 170 ≠ 138

2. 21 : 120 → (21 + 3) × 5 = 24 × 5 = 120

3. 27 : 150 → (27 + 3) × 5 = 30 × 5 = 150

4. 29 : 160 → (29 + 3) × 5 = 32 × 5 = 160

Hence, '31 : 138' is the correct answer.

Q13. Answer: (a) Only conclusion I follows.

The least possible Venn diagram is:

Conclusion (I): Some therapists are dietitians. → Follows (As, Some dietitians are surgeons and All surgeons are therapists, which implies Some therapists are dietitians)

Conclusion (II): No dietitian is a physician. → Does not follow (As, Some dietitians are surgeons, All surgeons are therapists, and No therapist is a physician, which implies some dietitian are not physician)

Hence, ‘Only conclusion I follows’ is the correct answer.

Q14. Answer: (d) AYCIES

The logic followed here is:

• Similarly,

• Hence, 'AYCIES' is the correct answer.

Q15. Answer: (c) 393

The logic followed here is:

Hence, '393' is the correct answer.

Q16. Answer: (b) Sunday

There are 2 odd days in a month with 30 days and 3 odd days in a month with 31 days. Also, February with 28 days has 0 odd days and February with 29 days have 1 odd day.

Number of odd days between 29 November 2009 to 30 May 2010 = (1 + 3 + 3 + 0 + 3 + 2 + 30) = 42

42 when divided by 7, leaves 0 as remainder.

Sunday + 0 = Sunday

Hence, ‘Sunday’ is the correct answer.

Q17. Answer: (c) Three

The position of letters that will remain unchanged if each of the letters in the word 'DEFORM' is arranged in alphabetical order is shown below:

Clearly, D, E, and F's position remains unchanged.

Hence, 'Three' is the correct answer.

Q18. Answer: (a) Father's mother

A is				
Symbol	•	•	×	÷
Meaning	Sister	Brother	Mother	Father
to B				

P × Q - R ÷ S + T → P is mother of Q, Q is brother of R, R is father of S, S is sister of T.

By using the symbols in the table given below, we can draw the following family tree:

P is mother of S's father, or we can say P is S's father's mother.

Hence, ‘Father's mother’ is the correct answer.

Q19. Answer: (c) mnpmon

The logic followed here is:

1. mpnmno → m op p / mo n n / m n pn / mop o
2. mnmopn → m op n / mo m n / n o pn / mop n
3. mnpmon → m op n / mo p n / m o pn / mop n
4. pmnopn → p op m / mo n n / o p pn / mop n

• In option 3, mopn is repeated.

Hence, 'mnpmon' is the correct answer.

Q20. Answer: (b) Sister's husband

A is				
Symbol	•	•	×	÷
Meaning	Mother	Wife	Son	Brother
to B				

L × K + D - S ÷ T → L is son of K, K is mother of D, D is wife of S, S is brother of T.

By using the symbols in the table given below, we can draw the following family tree:

S is brother-in-law of L, or we can say that S is L's sister's husband.

Hence, ‘Sister's husband’ is the correct answer.

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Q21. Answer: (d) QML : ZKO

The logic followed here is:

• • Similarly,

• Hence, 'QML : ZKO' is the correct answer.

Q22. Answer: (d) [figure]

The logic followed in the given figure series is:

From Figure (1) to (3):

Two new similar shapes are added to the left and the right side of the existing form.

From Figure (2) to (4):

Two new similar shapes are added to the left and the right side of the existing form.

From Figure (3) to Answer Figure (5):

Two new similar shapes are added to the left and the right side of the existing form.

Hence, the correct answer is "Option (4)".

Q23. Answer: (d) 17 - 27 - 67

The logic followed here is:

Logic: First number + 20 = Second number; Second number + 20 = Third number

1. 25 - 45 - 65 → 25 + 20 = 45; 45 + 20 = 65

2. 8 - 28 - 48 → 8 + 20 = 28; 28 + 20 = 48

3. 38 - 58 - 78 → 38 + 20 = 58; 58 + 20 = 78

4. 17 - 27 - 67 → 17 + 10 = 27; 27 + 40 = 67

Hence, '17 - 27 - 67' is the correct answer.

Q24. Answer: (d) [figure]

The paper when unfolded will appear as shown below:

Hence, 'option 4' is the correct answer.

Q25. Answer: (d) NL676

The logic followed here is:

• • Similarly,

• Hence, 'NL676' is the correct answer.

Q26. Answer: (a) Bharatanatyam

The correct answer is Bharatanatyam.

Key Points

• Bharatanatyam is a classical Indian dance form that originated in Tamil Nadu.

• Hema Malini is a trained Bharatanatyam dancer and has performed in various stage shows and films.

• Actress, director, producer, and politician Hema Malini hails from India and is presently a member of the Lok Sabha.

Additional Information

• Kathakali is another classical Indian dance form that originated in Kerala.

• It is known for its elaborate makeup and costumes.

• Kuchipudi is a classical Indian dance form that originated in Andhra Pradesh.

• It is known for its intricate footwork and expression.

• Kathak is a classical Indian dance form that originated in North India.

• It is known for its graceful movements and storytelling.

Q27. Answer: (b) Yuki Bhambri and Saketh Myneni

The correct answer is Yuki Bhambri and Saketh Myneni.

Key Points

• Yuki Bhambri and Saketh Myneni won the men's doubles title at the Bangkok Open Challenger held at Nonthaburi, Thailand in January 2023.

• Yuki Bhambri is a professional Indian tennis player who has won six singles and 14 doubles titles on the ATP Challenger Tour.

• Saketh Myneni is also a professional Indian tennis player who has won two singles and 16 doubles titles on the ATP Challenger

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Tour.

Additional Information

• Arjun Kadhe is a tennis player from India.

• Kadhe is the four-time ITF Futures singles champion.

• He also holds seven ITF Futures doubles titles and three challenger titles.

• Indian tennis player Rohan Machanda Bopanna plays professionally.

• In 2012 and 2015, he advanced to the ATP World Tour Finals as a finalist.

• Indian tennis player Ramanathan Ramkumar plays professionally.

• He has played in the Davis Cup for India.

• Indian male deaf tennis player Prithvi Sekhar plays the sport.

• In the mixed doubles competition at the 2017 Summer Deaflympics, he and Jafreen Shaik took home a bronze medal.

Q28. Answer: (c) Jat

The correct answer is Jat.

Key Points

• Rajaram was the leader of the Jat revolt against the Mughals, which took place in the early 18th century.

• The Jat uprising was mainly a response to the oppressive policies of the Mughal Empire, which had caused widespread discontent among the Jat peasants and soldiers.

• Rajaram was a Jat chieftain who led the rebellion and managed to capture several Mughal forts and cities, including Agra and Mathura.

• However, the Jat revolt was eventually suppressed by the Mughals, and Rajaram was captured and executed in 1707.

Additional Information

• Satnami was a religious sect that rebelled against the Mughals in the late 17^(th) century.

• In 1657, Birbhan established the first Satnamis, a group of homeowners and mendicants in Narnaul, eastern Punjab.

• They were subdued by Aurangzeb's army in 1672 when they disobeyed him.

• A clan of Rajputs is the Bundela.

• They gained notoriety in 1545 when they defeated Sher Shah of Sur, the Afghan ruler, who was slain during a siege of their stronghold at Kalinjar.

• The Munda people are an ethnic group from the Indian subcontinent who speak Austraasiatic languages.

• They are native speakers of Mundari.

Q29. Answer: (b) Meghalaya

The correct answer is Meghalaya.

Key Points

• Meghalaya still uses the ancient bamboo drip irrigation method, which is a traditional method of irrigation that involves the use of bamboo pipes to supply water to crops.

• Meghalaya's unique topography, with its hills and valleys, makes it well-suited for this method of irrigation as it allows for the collection and distribution of water to different levels of the terrain.

• This method is eco-friendly, cost-effective, and sustainable as it uses locally available resources and does not require electricity or fuel to operate.

Additional Information

• Telangana primarily uses modern irrigation methods such as sprinkler and drip irrigation.

• Maharashtra also primarily uses modern irrigation methods, although some farmers may still use traditional methods on a small scale.

• Chhattisgarh primarily uses canal irrigation and tube wells for irrigation purposes.

• Bamboo drip irrigation is also known as the "jingkieng ksiar" method in Meghalaya and has been used for centuries by the Khasi tribe.

• The bamboo pipes used in this method are perforated with small holes to allow water to drip slowly onto the roots of the crops.

• Other traditional methods of irrigation used in India include the use of bullock carts to draw water from wells, the construction of earthen embankments to create ponds and the use of traditional water harvesting structures such as stepwells and baolis.

Q30. Answer: (b) State Governments

The correct answer is State Governments.

Key Points

• State Governments are allowed to establish Family Courts under the Family Courts (Amendment) Act, of 2022.

• The Family Courts Act, of 1984 was enacted to provide for the establishment of Family Courts for speedy settlement of family disputes.

• The Act applies to all states and Union Territories of India, except Jammu and Kashmir.

• The District Courts are already established under the Code of Civil Procedure, 1908, and they do not have the specific mandate of dealing with family disputes.

• The Union Government does not have the power to establish Family Courts as it is a subject under the State List of the Constitution of India.

• The District Collector is an administrative officer who is responsible for the collection of revenue and maintenance of law and order in the district.

• Therefore, State Governments are the appropriate authority to establish Family Courts as they have the power to make laws on the subject of family disputes under the State List of the Constitution of India.

Additional Information

• The Family Courts (Amendment) Act, 2022 was passed by the Parliament of India on 17th March 2022.

• The Act was brought in to amend certain provisions of the Family Courts Act, 1984 to make it more effective and efficient.

• The Family Courts Act, of 1984 defines family disputes as disputes between parties to a marriage, between parents and children, or between other relations.

• The Act provides for the establishment of Family Courts in every city or town with a population of more than 10 lakhs.

• The State Governments have the power to establish Family Courts and appoint judges for a term of three years.

• The judges must have special knowledge in matters relating to family disputes.

• The Act also provides for the appointment of counselors to assist the parties in resolving their disputes amicably.

• The establishment of Family Courts has been a significant step towards addressing the issue of pending cases in the Indian judicial system.

• The Family Courts have been able to provide speedy and effective justice to the parties involved in family disputes.

Q31. Answer: (c) Swami Dayananda Saraswati

The correct answer is Swami Dayananda Saraswati.

Key Points

• Arya Samaj is a Hindu reform movement founded by Swami Dayananda Saraswati in 1875.

• The movement aimed to promote monotheism and the study of Vedas, and to oppose idol worship, caste system, and other prevalent customs and practices in Hindu society.

• Swami Dayananda Saraswati believed in the right of individuals to interpret Vedas and advocated for the use of reason and logic in religious matters.

• He also emphasized the importance of education and social reform in uplifting the status of women and lower castes in society.

Additional Information

• Raja Ram Mohan Roy was a social reformer and founder of Brahmo Samaj.

• It was a monotheistic Hindu movement that rejected idol worship and caste system.

• RG Bhandarkar was a scholar of Sanskrit and ancient Indian history.

• MG Ranade was a social reformer and founder of Prarthana Samaj.

• It was a Hindu reform movement that aimed to promote monotheism and social equality.

Q32. Answer: (a) Calomel

The correct answer is Calomel.

Key Points

• The popular name for mercury(I) chloride is Calomel.

• Calomel is a white crystalline powder that is used as a laboratory reagent and as a depolarizer in dry batteries.

• It is also used in medicine as a purgative and as a treatment for syphilis.

• Calomel has been used historically as a laxative and as a treatment for various ailments, but its use has declined due to its toxicity.

Additional Information

• Phosgene is a toxic gas.

• It was used as a chemical weapon in World War I.

• Galena is a mineral.

• It is a source of lead.

• Saltpetre is a common name for potassium nitrate.

• It is used in fertilizer and in the production of gunpowder.

Q33. Answer: (a) Under declared income

The correct answer is Under declared income.

Key Points

• The parallel economy, also referred to as the shadow economy, black economy, or underground economy, exists alongside the official, legal economy.

• It's characterized by unreported economic activity that deliberately avoids government scrutiny and taxation.

• Under-declared income is money earned through legal activities but not reported to the government to avoid taxes.

• This hidden income fuels the parallel economy.

Additional Information

• The value of domestic work done by housewives is unpaid work and doesn't involve any cash flow. It's not part of the formal economy, but it's not hidden or illegal.

• Payments made to domestic helpers or housekeepers is a legitimate transactions within the formal economy, assuming taxes and regulations are followed.

Q34. Answer: (c) Z

The correct answer is Z.

Key Points

• The regression coefficient in the given equation is denoted by the letter Z.

• The equation is known as the species-area relationship and is used to predict the number of species present in a given area based on its size.

• The coefficient Z represents the slope of the regression line and measures the rate at which the number of species increases with increasing area.

Additional Information

• The constant C represents the intercept of the regression line and represents the number of species present in a unit area.

• S represents the number of species.

• A represents the size of the area.

• In general, there are more plant and animal species on larger lands than on smaller ones.

• Almost all terrestrial systems that have been investigated, from vast continental regions to island archipelagos, have shown this link to hold true.

Q35. Answer: (b) Sea floor spreading hypothesis

The correct answer is Sea floor spreading hypothesis.

Key Points

• Harry Hammond Hess proposed the seafloor spreading hypothesis in 1962, which explained the mechanism behind continental drift.

• This hypothesis suggested that new oceanic crust is formed at mid-ocean ridges and then moves away from the ridge, carrying the continents with it.

• This theory was supported by evidence such as magnetic anomalies in the oceanic crust and the age of oceanic rocks becoming progressively younger towards the mid-ocean ridges.

Additional Information

• According to Alfred Wegener's theory, the continents were formerly part of a single supercontinent called Pangaea, which means "all of earth" in Greek.

• He proposed that the continents relocated to their present locations when Pangaea broke apart a long time ago.

• He dubbed continental drift his theory.

• The Gaia hypothesis was proposed by James Lovelock in the 1970s.

• It suggests that the Earth is a self-regulating system that maintains conditions necessary for life.

• The geographical cycle hypothesis was proposed by William Morris Davis in the late 19th century.

• He suggested that landforms were shaped by a cycle of erosion, transportation, and deposition.

Q36. Answer: (b) It is related to cooperative society.

The correct answer is It is related to cooperative society.

Key Points

• Article 43 B is related to cooperative societies.

• It directs the state to promote the formation and autonomous functioning of cooperative societies.

• The objective is to ensure the democratic functioning of cooperatives based on principles of voluntary formation, democratic control, and autonomous management.

Additional Information

• Article 43 B was not added to the 44^(th) Constitutional Amendment.

• The 44^(th) Amendment Act of 1978 dealt with various other provisions of the Constitution.

• The right to livelihood is enshrined in Article 21 of the Indian Constitution.

• Article 43 B was not added in 2002.

• Article 43B was added to the Indian Constitution by the Constitution (Ninety-seventh Amendment) Act, 2011.

Q37. Answer: (a) Discus throw

The correct answer is Discus throw.

Key Points

• The first day of the decathlon typically includes five events: 100-meter dash, long jump, shot put, high jump, and 400-meter dash.

• The Discus throw is usually the second event on the second day of the decathlon.

• The Shot put is the first event of the decathlon, which tests the athlete's strength and technique in throwing a heavy ball as far as possible.

• The 100-meter dash is also one of the events on the first day, which tests the athlete's speed and acceleration.

Additional Information

• The Decathlon is a track and field event consisting of ten track and field events, which are completed over two days.

• The ten events are: the 100-metre dash, long jump, shot put, high jump, 400-metre dash, 110-metre hurdles, discus throw, pole vault, javelin throw, and 1500-metre run.

• The Shot put is the first event of the decathlon, which is followed by the Long jump, High jump, 400-metre dash, and 110-metre hurdles.

• The 100-metre dash is the first event of the Heptathlon, which is a women's track and field event consisting of seven events.

Q38. Answer: (b) Priyanka Goswami

The correct answer is Priyanka Goswami.

Key Points

• The athlete who won the bronze medal in the women's category at the 2023 Asian 20 km Walking Championships held in Nomi, Japan is Priyanka Goswami.

• Priyanka Goswami is an Indian racewalker who has been consistently performing well in various national and international events.

Additional Information

• Bhawna Jat is also an Indian racewalker who won a silver medal in the 20 km walk event at the 2019 Asian Race Walking Championships held in Nomi, Japan.

• Khushbir Kaur is another Indian racewalker who has won several medals in national and international events, including a silver medal in the 20 km walk event at the 2014 Asian Games held in Incheon, South Korea.

• Manju Rani is a boxer from India who won a bronze medal in the women's 48 kg category at the 2019 AIBA Women's World Boxing Championships held in Ulan-Ude, Russia.

Q39. Answer: (c) Bonalu

The correct answer is Bonalu.

Key Points

• Bonalu is a famous festival celebrated in Telangana.

• It is celebrated in the month of Ashada, which falls in July/August.

• The festival is dedicated to the goddess Mahakali and is celebrated with great fervor in Telangana.

• During the festival, women dress up in traditional attire and carry decorated pots on their heads filled with offerings to the goddess.

• The offerings include cooked rice, jaggery, curd, and water.

• The women visit temples and offer these pots to the goddess while dancing to the beat of drums and music.

Additional Information

• Kanuma is a festival celebrated in Andhra Pradesh and Telangana.

• It is celebrated as a part of the three-day Sankranti festival.
• Elephanta is a UNESCO World Heritage Site.
• It is located in Maharashtra.
• Konark is a famous temple in Odisha.
• It is dedicated to the sun god Surya.

Q40. Answer: (c) Calcutta

The correct answer is Calcutta.

Key Points

• The second annual session of the Indian National Congress was held in Calcutta.
• Indian National Congress (INC) is one of the oldest political parties in India, founded in 1885.
• It played a significant role in India's struggle for independence from British colonial rule.
• INC has produced several prominent political leaders, including Jawaharlal Nehru, Indira Gandhi, and Rahul Gandhi.

Additional Information

• Bombay (now Mumbai) hosted the first session of the Indian National Congress in 1885.
• Delhi became the capital of India in 1911, and it was not a major center of political activity during the early years of the Indian National Congress.
• Madras (now Chennai) hosted the third session of the Indian National Congress in 1887.
• An important milestone in the fight for Indian independence from British control was reached in December 1926 when the Indian National Congress conducted its 41st session in Guwahati, Assam.
• The All-India Congress Committee meeting was arranged in Pandu Nagar, Guwahati, by Tarun Ram Phukan.

Q41. Answer: (b) Padma Vibhushan

The correct answer is Padma Vibhushan.

Key Points

• Yamini Krishnamurthy was honored with the Padma Vibhushan in 2016, which is the second highest civilian award in India.
• She is a legendary figure in Indian classical dance, known for her graceful and expressive performances.

Additional Information

• The Saraswati Samman is a prestigious literary award.
• It is given to Indian writers for their outstanding contribution to literature in any Indian language.
• The Moortidevi Award is another literary award given by the Bharatiya Jnanpith organization.
• It is given for excellence in Indian literature.
• The Bharat Ratna is the highest civilian award in India.
• It is given for exceptional service in any field of human endeavor.

Q42. Answer: (d) p-type semiconductor

The correct answer is a p-type semiconductor.

Key Points

• Silicon doped with gallium forms a p-type semiconductor because gallium is a trivalent impurity and replaces some of the silicon atoms in the crystal lattice, creating a hole in the valence band.
• P-type semiconductors have a majority of holes as their charge carriers and a smaller number of electrons, which are the minority carriers.
• N-type semiconductors, on the other hand, are doped with a pentavalent impurity like phosphorus, which adds an extra electron to the conduction band and creates a surplus of electrons as the majority carriers.
• Superconductors are materials that exhibit zero electrical resistance below a certain temperature, and silicon doped with gallium is not known to exhibit superconductivity.
• Insulators are materials that do not conduct electricity at all and have a very high resistance, which is not the case with p-type semiconductors.

Additional Information

• In a p-type semiconductor, the holes in the valence band can move from one atom to another and act as positive charge carriers, while the electrons in the conduction band are immobile unless excited by an external energy source.
• The doping process is a way to intentionally introduce impurities into a semiconductor crystal to alter its electrical properties and enable the creation of p-n junctions, which are the basis of many electronic devices.
• Some common p-type dopants besides gallium are boron and aluminum, while common n-type dopants include arsenic and

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antimony.

• The properties of a semiconductor depend not only on its doping but also on its temperature, light exposure, and other environmental factors that can affect its carrier concentration, mobility, and recombination.

Q43. Answer: (b) Shehnai

The correct answer is Shehnai.

Key Points

• Bismillah Khan was a renowned Indian classical musician who played the shehnai.

• His expressive virtuosity in playing it led to his rise to prominence as a prominent Hindustani classical music artist.

• The woodwind instrument was inextricably linked to his name.

• The shehnai is a traditional Indian wind instrument that is similar to an oboe.

Additional Information

• A sitar is a stringed instrument that is played by plucking the strings.

• Ravi Shankar is a famous sitar player from India.

• The tabla is a percussion instrument that consists of two drums of different sizes.

• Ustad Allah Rakha is a famous tabla player from India.

• Harmonium is a keyboard instrument that produces sound by blowing air through reeds.

• Pandit Rambhau Bijapure is a famous harmonium player from India.

Q44. Answer: (d) i - b, ii - c, iii - d, iv - a

The correct answer is i - b, ii - c, iii - d, iv - a.

Key Points

• The correct option is primary functions - b, secondary functions - c, evils of money - d, contingent functions - a.

• Money is an essential element of our economy, and it performs several functions that are crucial for the smooth functioning of the economy.

• The primary function of money is to act as a medium of exchange, i.e., it facilitates the exchange of goods and services.

• Money also acts as a measure of value, i.e., it helps in determining the value of goods and services.

• The secondary functions of money include acting as a store of value, i.e., it helps in storing the wealth in the form of money.

• It also acts as a standard of deferred payments, i.e., it facilitates the payment of debts in the future.

Additional Information

• The evils of money include instability of value, i.e., the value of money keeps fluctuating due to various economic factors.

• Money can also create inflation, i.e., the rise in the general price level of goods and services.

• The contingent functions of money include acting as a means of distribution of national income, i.e., it helps in distributing the national income among various sections of the society.

• Money also acts as a source of public revenue, i.e., the government earns revenue by imposing taxes on various economic activities.

Q45. Answer: (d) Protecting monuments

The correct answer is protection of monuments and heritage sites.

Key Points

• Protecting public property is a fundamental duty of Indian citizens as it is important for the welfare and development of the society.

• Safeguarding the sovereignty, unity, and integrity of the country is a fundamental duty of Indian citizens.

• Promoting harmony and brotherhood among all people of India is a fundamental duty of Indian citizens.

• The protection of monuments and heritage sites is not listed as a fundamental duty in the Indian Constitution.

Additional Information

• The fundamental duties of Indian citizens are listed under Article 51A of the Indian Constitution.

• There are 11 fundamental duties listed in the Constitution.

• These duties were added by the 42nd Amendment Act in 1976.

• Fundamental Duties were recommended by the Swaran Singh Committee in 1976, and their importance became apparent during the internal emergency of 1975–1977.

Q46. Answer: (a) increase in tax revenue

The correct answer is increase in tax revenue.

Key Points

• During a boom, people tend to earn more, which increases their taxable income and, in turn, the government's tax revenue.

• Hence, the deficit of the government will be reduced automatically due to an increase in tax revenue.

• As the economy grows during a boom, businesses also tend to earn more profits, leading to higher corporate tax collections for the government.

• During a boom, the government may also earn more from other sources, such as dividends, royalties, and fees, which can contribute to reducing the deficit.

Additional Information

• A booming economy also leads to more employment opportunities, which reduces the government's expenditure on welfare programs such as unemployment benefits and food assistance.

• A higher GDP indicates a larger economy, which can generate more income for the government.

• However, it is the increase in tax revenue that contributes to reducing the deficit, not the GDP itself.

• A decrease in tax revenue would lead to an increase in the government deficit, not a reduction.

• A Decrease in GDP would lead to a decline in overall economic activity, resulting in lower tax collections and higher government expenditure, leading to an increase in the deficit.

Q47. Answer: (d) 21.9%

The correct answer is 21.9%.

Key Points

• 21.9% of the Indian population was estimated to be living below the poverty line.

• This means that around 270 million people in India were living below the poverty line in 2011-12.

• The poverty line in India is defined as the minimum level of income required to meet basic needs such as food, clothing, and shelter.

Additional Information

• Poverty in India is a major issue, with a large population struggling to meet their basic needs.

• The poverty line in India is determined by the Planning Commission, which takes into account factors such as the cost of food, health care, and education.

• The poverty line is different for rural and urban areas in India, with the rural poverty line being lower than the urban poverty line.

• Poverty reduction has been a priority for the Indian government, with various schemes and programs aimed at improving the lives of the poor.

• However, progress has been slow and there is still a long way to go in addressing the issue of poverty in India.

Q48. Answer: (a) cold northern winds

The correct answer is cold northern winds.

Key Points

• The Himalayan Mountains are the highest mountain range in the world and act as a natural barrier that separates the Indian subcontinent from the rest of Asia.

• The mountains act as an effective climatic divide by protecting the subcontinent from the cold northern winds that blow from the Tibetan Plateau and Central Asia.

• The Himalayas also block the warm southern winds that originate from the Indian Ocean, preventing them from entering the subcontinent and making the climate cooler and drier.

• Cyclonic winds are not affected by the Himalayan Mountains and can still enter the subcontinent, causing heavy rainfall and flooding in some regions.

• Western disturbances are weather systems that originate from the Mediterranean region and can enter the subcontinent from the northwest, but their impact is reduced by the Himalayan Mountains.

Additional Information

• The Himalayan Mountains are located in the northern part of the Indian subcontinent and stretch over 2,400 km from Afghanistan to Myanmar.

• The mountains are home to some of the highest peaks in the world, including Mount Everest, which is the highest peak at 8,848 meters.

• The Himalayas are also the source of many major rivers in South Asia, including the Ganges, Brahmaputra, and Indus rivers.

• Cyclonic winds are low-pressure systems that form over warm ocean waters and can cause heavy rainfall and strong winds when they make landfall.

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• They are common in the Bay of Bengal and the Arabian Sea.
• Western disturbances are weather systems that bring rain and snow to the western Himalayan region from November to April.
• They are important for agriculture and water supply in the region.

Q49. Answer: (c) Globalisation

The correct answer is Globalisation.

Key Points

• The five-year plans were introduced in India in 1951 to accelerate the pace of economic growth and development.
• Self-reliance, modernization, growth, and equity are the four common goals of five-year plans.
• Self-reliance aims to reduce dependence on foreign aid and promote domestic resources.
• Modernization aims to promote industrialization, technological advancement, and infrastructure development.
• Growth aims to increase the national income and improve the living standards of the people.

Additional Information

• Globalization refers to the integration of economies, cultures, and societies across the world.
• It is not a common goal of five-year plans as it emerged as a concept in the 1990s.
• Self-reliance is an important concept that has been emphasized in India's economic policies since independence.
• It aims to promote indigenous industries, reduce imports, and encourage exports.
• Modernization is critical for achieving sustainable economic growth and development.
• It includes the adoption of new technologies, modernizing infrastructure, and improving the quality of education and healthcare.
• Growth is an essential goal of economic development as it helps to reduce poverty, unemployment, and inequality.
• However, growth must be inclusive and sustainable to benefit all sections of society.

Q50. Answer: (a) NABARD

The correct answer is NABARD.

Key Points

• NABARD was the organization that piloted the Self-Help Group Bank Linkage Program (SHG-BLP) project in India.
• NABARD came into existence on 12 July 1982 by transferring the agricultural credit functions of RBI and refinance functions of the then Agricultural Refinance and Development Corporation (ARDC).
• It was dedicated to the service of the nation by the late Prime Minister Smt. Indira Gandhi on 05 November 1982.
• The SHG-BLP project is a microfinance model that involves linking self-help groups of women in rural areas with formal financial institutions like banks, to provide them with access to credit and financial services.
• Full form of NABARD is the National Bank for Agriculture and Rural Development.

Additional Information

• Microfinance institutions (MFIs) are organizations that provide financial services to low-income individuals or groups who do not have access to traditional banking services.
• Any loan amount in India under one lakh rupees is regarded as a microloan.
• The Ministry of Finance, Government of India, has control over the Insurance Regulatory and Development Authority of India, which is a statutory entity.
• Its job is to license and oversee the insurance and reinsurance sectors in India.
• Under the administrative purview of the Ministry of Finance in the Government of India, the Securities and Exchange Board of India (SEBI) is the regulatory authority for the securities and commodities market in India.
• SEBI was founded on April 12, 1988, as an executive body, and on January 30, 1992, the SEBI Act, 1992, granted it legislative authority.

Q51. Answer: (c) 39

Given:

The perimeter of an isosceles right-angled triangle = 30 m

Concept used:

Perimeter of an isosceles triangle = $2x + y$

Area of an isosceles right angle triangle = $1/2 \times x^2 \times \sin\theta$

x = equal sides of an isosceles triangle

θ = angle between equal sides

Calculation:

In an isosceles right-angled triangle ABC,

=> $BC^2 = AB^2 + AC^2$

=> $(y)^2 = x^2 + x^2$

=> $y = \sqrt{\{2 \times (x)^2\}}$

=> $y = \sqrt{2}x$

Now,

Perimeter of an isosceles triangle = 2x + y

=> $2 \times x + \sqrt{2}x = 30$

=> $x \times (2 + \sqrt{2}) = 30$

=> $x = 30/(2 + \sqrt{2})$

By rationalisation

=> $x = 30 \times(2 - \sqrt{2})/(2 + \sqrt{2}) \times (2 - \sqrt{2})$

=> $x = 30 \times(2 - \sqrt{2})/\{2^2 - (\sqrt{2})^2\}$

=> $x = 30 \times(2 - \sqrt{2})\{4 - 2\}$

=> $x = 30 \times(2 - \sqrt{2})/2$

=> $x = 15 \times (2 - \sqrt{2})$

Put the value of $\sqrt{2} = 1.414$

=> $x = 15 \times (2 - 1.414)$

=> $x = 15 \times 0.586 = 8.79$ m

Area of an isosceles right angle triangle = $1/2 \times x2 \times \sin \theta$

=> $1/2 \times (8.79)^2 \times \sin 90°$

=> $1/2 \times 77.26 \times 1$

=> $38.63 \text{ m}^2 \approx 39 \text{ m}^2$

Therefore The correct answer is 39 m2.

Q52. Answer: (a) 87.5kg

Given:

Rate of 1st quality of rice = Rs.52/kg

Quantity of 2nd quality of rice = 35 kg

Rate of 2nd quality of rice = Rs.45/kg

Selling price of mixture = Rs.55/kg

Concept used:

Average rate of product = Total cost of the product/Number of product

Calculation:

Let the 1st quantity of rice = x

Cost price of mixture of rice = (55 × 100)/110 = Rs.50/kg

According to the question:

=> $(52 \times x + 35 \times 45)/(35 + x) = 50$

=> $(52x + 1575) = 50 \times (35 + x)$

=> $(52x + 1575) = 1750 + 50x$

=> $52x + 50x = 1750 - 1575$

=> $2x = 175$

=> $x = 87.5$ kg

Therefore The correct answer is 87.5 kg.

Q53. Answer: (a) 38.50 cm^2

Given:

Copper wire bent to square for area = 30.25 cm^2

Formula used:

Area of a square = $(side)^2$

Perimeter of square = 4 × side

Circumference of circle = $2 \times \pi \times r$

Area of circle = $\pi \times r^2$

Calculation:
Area of square = 30.25 cm²
=> a² = 30.25
=> a = √30.25
=> a = 5.5 cm
Perimeter of square = 4 × a
=> 4 × 5.5 = 22 cm
Now,
Circumference of circle = 22 cm
=> 2 × π × r = 22
=> 2 × (22/7) × r = 22
=> r = 7/2 = 3.5 cm
Area of circle = π × r²
=> (22/7) × 3.5 × 3.5
=> 22 × 0.5 × 3.5 = 38.50 cm²
Therefore The correct answer is 38.50 cm2.

Q54. Answer: (b) 49 : 30

Given:
Selling price (S.P) = (3/7) × marked price (M.P)
Loss% = 30%
Concept used:
If loss = L%
Cost price (C.P) = (S.P × 100)/(100 - L)
Calculation:
Selling price (S.P) = (3/7) × marked price (M.P)
=> S.P = (3/7) × M.P
=> S.P/M.P = 3/7
Now, S.P = 300 and M.P = 700
Cost price = (300 × 100)/70 = Rs.3000/7
M.P : C.P = 700 : 3000/7
=> 4900 : 3000
=> 49 : 30
Therefore The correct option is 2.

Q55. Answer: (b) 5 : 4

Calculation:
Amount spent on housing : amount spent on education
=> 15 : 12 = 5 : 4
Therefore The correct option is 5 : 4.

Q56. Answer: (d) 28%

Given:
Marked price (M.P) = 160% × Cost price (C.P)
Discount% = 20%
Formula used:
If discount = D% then,
Selling price (S.P) = M.P × (100 - D)%
Profit = S.P - C.P
Profit% = (P × 100)/C.P
Calculation:
Marked price (M.P) = 160% × Cost price (C.P)
M.P/C.P = 160/100

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M.P = 160 and C.P = 100
Selling price (S.P) = 160 × (100 - 20)%
=> 160 × 80% = Rs.128
Profit% = {(128 - 100) × 100}/100
=> 28%
Therefore The correct answer is 28%.

Q57. Answer: (c) 37/72

Given:
A can do a work = 18 days
B can do a work = 24 days
Formula used:
Total work = efficiency × time
Calculation:

Efficiency	Person	Time	Total work
4	A	18	72
3	B	24	

According to the question:
Total work done by both A and B = (4 + 3) × 5 = 7 × 5 = 35
Remaining work = 1 - (35/72)
=> (72 - 35)/72 = 37/72
Therefore The correct answer is 37/72.

Q58. Answer: (b) 56.25%

Given:
The cost price of 1 kg potato = Rs.20
Selling price of 1 kg potato = Rs.25
Formula used:
Profit = S.P - C.P
Profit% = (P × 100)/C.P
Where, C.P = cost price
S.P = Selling price ; P = profit
Calculation:
Let the price of 1 gm = Rs.1
The cost price of 800 grams = Rs.800
The selling price of 1000 grams = Rs.1000
Cost price : Selling price = 800 : 1000 = 4 : 5

Cost price	Selling price
20	25
4	5

Cost price : Selling price = 20 × 4 : 25 × 5
=> 16 : 25
Profit% = {(25 - 16) × 100}/16
=> 900/16 = 56.25%
Therefore The correct answer is 56.25%.

Q59. Answer: (d) 42°

Given:
tan 2 θ = cot (θ - 36°)
Concept used:

If tan θ1 = cot θ2 then
θ1 + θ2 = 90°
Calculation:
=> Tan 2 θ = cot (θ - 36°)
So,2θ + (θ - 36°) = 90°
=> 2θ + θ - 36° = 90°
=> 3θ = 90 + 36
=> θ = 126/3 = 42°
Therefore The correct answer is 42°.

Q60. Answer: (c) 60

Given:
In ΔABC:
BD perpendicular to AC
BD = 12 cm ; AD = 6 cm ; CD = 4 cm
Formula used:
Area of triangle = 1/2 × base × height
Calculation:
AC = AD + CD = 6 + 4 = 10 cm
Area of ΔABC = 1/2 × AC × BD
=> 1/2 × 10 × 12
=> 5 × 12 = 60 cm²
Therefore The correct answer is 60 cm2.

Q61. Answer: (d) 404

Given:
(a + b + c) = 17
And (a2 + b2 + c2) = 115
Formula used:
(a + b + c)2 = a2 + b2 + c2 + 2 (ab + bc + ca)
Calculation:
(a + b + c) = 17
Squaring both sides
=> (a + b + c)² = (17)²
=> a² + b² + c² + 2 × (ab + bc + ca) = 289
=> 2 × (ab + bc + ca) = 289 - 115
=> 2 × (ab + bc + ca) = 174
Now,
=> (a + b)2 + (b + c)2 + (c + a)2
=> a² + b² + 2ab + b² + c² + 2bc + c² + a² + 2ca
=> 2 × (a² + b² + c²) + 2 × (ab + bc + ca)
=> 2 × 115 + 174 = 404
Therefore The correct answer is 404.

Q62. Answer: (a) 6√2

Given:
triangle ABC is a isosceles triangle.
angle ABC = 90°
AB = BC ; AC = 12 cm
Formula used:
In a right-angled triangle.
=> H² = P² + B²
Where, H = hypotenuse

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P = perpendicular ; B = base

Calculation:

In right-angled isosceles triangle ABC

=> H2 = P2 + B2

=> $(12)^2 = BC^2 + BC^2$

=> $BC^2 = 144/2 = 72$

=> $BC = \sqrt{72} = 6\sqrt{2}$ cm

Therefore The correct answer is $6\sqrt{2}$ cm.

Q63. Answer: (b) Rs. 1,000

Given:

Principal = Rs.156250

Time = 2 years ; Rate% = 8%

Formula used:

S.I = (P × R × T)/100

C.I = P × effective rate for T years

For C.I:

Effective rate for 2 years = R1 + R2 + {(R1 × R2)/100}

Where, S.I = simple interest ; C.I = compound interest

and P = principal ; R = rate ; T = time

Calculation:

Effective rate for 2 years = (8 × 2)% = 16%

=> S.I = 156250 × 16%

The effective rate for 2 years = 8 + 8 + (8 × 8)/100

=> 16 + 0.64 = 16.64%

C.I = 156250 × 16.64%

Required difference = 156250 × (16.64 - 16)

=> 156250 × 0.64% = Rs.1000

Therefore The correct answer is Rs.1000.

Q64. Answer: (a) 2

Formula used:

(a + b)2 = a2 + b2 + 2ab

(a - b)2 = a2 + b2 - 2ab

Calculation:

Let a = 379 and b = 276

So, $\{(a + b)^2 + (a - b)^2\}/a^2 + b^2$

=> $(a^2 + b^2 + 2ab + a2 + b2 - 2ab)/a2 + b2$

=> 2 × (a2 + b2)/a2 + b2

=> 2

Therefore The correct answer is 2.

Q65. Answer: (d) 2

Concept used:

Calculation:

25(4 + 3p) ÷ 5 - 3 × 8 = 26

=> 5 × (4 + 3p) - 24 = 26

=> 20 + 15p - 24 = 26

=> 15p = 26 + 4

=> p = 30/15 = 2

Therefore The correct answer is 2.

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Q66. Answer: (a) 4

Given:

tan(90 – θ) = 2/√3

Formula used:

Tan (90 - θ) = Cot θ

Calculation:

Tan(90 – θ) = 2/√3

=> Cot θ = 2/√3

=> Tan θ = √3/2

Putting the value of tan θ in the equation:

2√3 tan θ + 1 = (2√3 × √3/2) + 1

=> 3 + 1 = 4

Therefore The correct answer is 4.

Q67. Answer: (a) 15

Given:

Diameter of a circle = 16 cm

QS is tangent to the circle.

OQ = 17 cm

Concept used:

The radius of a circle is perpendicular to the point of contact between the tangent and the circle.

In right angled triangle

$H^2 = P^2 + B^2$

Where, H = hypotenuse

P = perpendicular ; B = base

Calculation:

Radius of the circle (OS) = 16/2 = 8 cm

OS perpendicular to QS

So triangle OQS is a right angled triangle.

In triangle OQS

=> $OQ^2 = OS^2 + QS^2$

=> $17^2 = 8^2 + QS^2$

=> $QS^2 = 17^2 - 8^2$

=> QS = √{289 - 64}

=> QS = √225 = 15 cm

Therefore The correct answer is 15 cm.

Q68. Answer: (b) 50

Given:

First number (a) = 8

Second number (b) = 20

Formula used:

Third proportion = b^2/a

Calculation:

Third proportion = b2/a

=> (20 × 20)/8

=> 400/8 = 50

Therefore The correct answer is 50.

Q69. Answer: (c) 67.5

Given:

Total number of students = 40

25 students had an average score = 60
15 students had an average = 80
Concept used:
Average score of N students = Sum of score of N students/N
Calculation:
According to the question:
=> (25 × 60 + 15 × 80)/40
=> (1500 + 1200)/40
=> 2700/40
=> 270/4 = 67.5
Therefore The correct answer is 67.5.

Q70. Answer: (a) 16

Given:
8, P, 16 and 18 are in proportion.
Concept used:
If a, b, c and d are in proportion then,
aover b = cover d
Third proportion = b^2/a
Calculation:
8, P, 16 and 18 are in proportion.
=> 8over P = 16over 18
=> 16P = 8 × 18
=> P = (8 × 18)/16
=> P = 9
Third proportion for 9 and 12
Third proportion = $12^2/9$
=> 144/9 = 16
Therefore The correct answer is 16.

Q71. Answer: (b) Plant 4

Calculation:
Average production of plant 1 = (35 + 43 + 48 + 32 + 42)/5 = 200/5 = 40
Average production of plant 2 = (25 + 44 + 39 + 40 + 44)/5 = 192/5 = 38.4
Average production of plant 3 = (40 + 44 + 36 + 35 + 30)/5 = 185/5 = 37
Average production of plant 4 = (45 + 40 + 30 + 48 + 42)/5 = 205/5 = 41
Therefore The correct option is 2.

Q72. Answer: (c) 7.57

Calculation:
Total number of boys = (5 × 8) + (6 × 3) + (7 × 7) + (8 × 2) + (20 × 9)
=> 40 + 18 +49 + 16 + 180 = 303
The mean age of the boys = 303/(8 + 3 + 7 + 2 + 20)
=> 303/40 = 7.57
Therefore The correct answer is 7.57.

Q73. Answer: (d) 3a2 + 5b2 - 16ab + 2bc - 6ac

Shortcut Trick
Apply the Difference of Squares identity: $x^2 - y^2 = (x + y)(x - y)$.
Let x = (2a − 3b − c) and y = (a + 2b + c).
Sum (x + y) = (2a − 3b − c) + (a + 2b + c) = 3a − b.
Difference (x − y) = (2a − 3b − c) − (a + 2b + c) = a − 5b − 2c.
Result = $(3a - b)(a - 5b - 2c) = 3a^2 + 5b^2 - 16ab + 2bc - 6ac$.

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Therefore The correct answer is $3a^2 + 5b^2 - 16ab + 2bc - 6ac$.

Alternate Method

Given: $(2a - 3b - c)^2 - (a + 2b + c)^2$

Formula Used: $(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$

=> $(2a - 3b - c)^2 = (2a)^2 + (-3b)^2 + (-c)^2 + 2(2a)(-3b) + 2(-3b)(-c) + 2(-c)(2a)$

=> $(2a - 3b - c)^2 = 4a^2 + 9b^2 + c^2 - 12ab + 6bc - 4ac$

=> $(a + 2b + c)^2 = a^2 + (2b)^2 + c^2 + 2(a)(2b) + 2(2b)(c) + 2(c)(a)$

=> $(a + 2b + c)^2 = a^2 + 4b^2 + c^2 + 4ab + 4bc + 2ac$

=> Final Expression = $(4a^2 + 9b^2 + c^2 - 12ab + 6bc - 4ac) - (a^2 + 4b^2 + c^2 + 4ab + 4bc + 2ac)$

=> Final Expression = $3a^2 + 5b^2 - 16ab + 2bc - 6ac$

Therefore The correct answer is $3a^2 + 5b^2 - 16ab + 2bc - 6ac$.

Additional Information

Algebraic Identity $x^2 - y^2$

The difference of two squares can be factored into the product of the sum and the difference of the terms: $x^2 - y^2 = (x + y)(x - y)$.

Expansion of a Trinomial Square

For any three terms, $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$. Care must be taken with the signs of each term during expansion.

Combining Like Terms

Simplification requires identifying like terms (terms with the same variable and exponent) and performing addition or subtraction on their coefficients.

Q74. Answer: (c) 10

Given:

Distance along the stream = 12 km

Distance against the stream = 8 km

Concept used:

Speed of boat along with stream = U + V

Speed of boat against with stream = U - V

U = speed of boat and V = speed of stream

Calculation:

Speed of boat along with stream = U + V = 12 km/h

Speed of boat against with stream = U - V = 8 km/h

Speed of boat (U) = (12 + 8)/2

=> 20/2 = 10 km/h

Therefore The correct answer is 10 km/h.

Alternate MethodGiven:

Distance traveled downstream in one hour = 12 km

Distance traveled upstream in one hour = 8 km

Concept Used:

Speed along the stream (downstream) = speed of boat in still water + speed of stream (u + v)

Speed against the stream (upstream) = speed of boat in still water - speed of stream (u - v)

Calculation:

Downstream speed: u + v = 12 km/h

Upstream speed: u - v = 8 km/h

Solve the system of equations:

Adding the equations:

=> (u + v) + (u - v) = 12 + 8

=> 2u = 20

=> u = 10 km/h.

Subtracting the equations:

=> (u + v) - (u - v) = 12 - 8

=> 2v = 4

=> v = 2 km/h.

Therefore The speed of the boat in still water (u) is 10 km/h.

Answer: 10 km/h.

Q75. Answer: (c) 12/13

Shortcut Trick

If sec θ + tan θ = k, then sec θ − tan θ = 1/k.

Given k = 5, then sec θ − tan θ = 1/5.

Adding both: 2 sec θ = 5 + 1/5 = 26/5 => sec θ = 13/5.

Using triplet (5, 12, 13): If Hypotenuse = 13 and Base = 5, then Perpendicular = 12.

sin θ = Perpendicular / Hypotenuse = 12/13.

Therefore The correct answer is 12/13.

Alternate Method

Given: sec θ + tan θ = 5 --- (i)

Formula Used: $\sec^2 \theta - \tan^2 \theta = 1$

=> (sec θ + tan θ)(sec θ − tan θ) = 1

=> 5 × (sec θ − tan θ) = 1

=> sec θ − tan θ = 1/5 --- (ii)

=> Adding (i) and (ii): 2 sec θ = 5 + 0.2 = 5.2

=> sec θ = 2.6 = 26/10 = 13/5

=> Since sec θ = Hypotenuse / Base, let H = 13 and B = 5.

=> $P = \sqrt{(H^2 - B^2)} = \sqrt{(169 - 25)} = \sqrt{144} = 12$

=> sin θ = P / H = 12/13

Therefore The correct answer is 12/13.

Additional Information

Trigonometric Identities

Standard identities include $\sin^2 \theta + \cos^2 \theta = 1$ and $1 + \cot^2 \theta = \operatorname{cosec}^2 \theta$.

Pythagorean Triplets

Common triplets used in exams: (3, 4, 5), (5, 12, 13), (7, 24, 25), (8, 15, 17), and (9, 40, 41).

Reciprocal Relations

sec θ = 1/cos θ and tan θ = sin θ/cos θ. If sec θ + tan θ = x, then $\sec \theta = (x^2 + 1)/2x$ and $\tan \theta = (x^2 - 1)/2x$.

Q76. Answer: (b) The man

The correct answer is: "The man."

Key Points

• The sentence should read "Man is a social animal." The article "the" is unnecessary.

• When we talk about human beings in a general or abstract sense, we often omit the article.

• The sentence expresses a universal truth about human nature, and in such cases, the article can be omitted to make the statement more concise.

• The error is in the subject of the sentence, not the predicate.

• The sentence is grammatically correct aside from the unnecessary article.

Thus, option 2 is the correct answer.

Q77. Answer: (a) watch an movie

The correct answer is: "watch an movie".

Key Points

• The correct phrase is "watch a movie" instead of "watch an movie".

• The article "an" is used before a word that starts with a vowel sound, while the word "movie" starts with a consonant sound.

• The correct sentence should be "Would you like to watch a movie tonight at eight?"

Therefore, the correct answer is option 1.

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Q78. Answer: (b) makes hay while the sun shines

The solution is in Hindi. Read it online.

Q79. Answer: (c) Was a new product launched by the company last month?

The correct answer is: "Was a new product launched by the company last month?"

Key Points

• To convert an active sentence into a passive voice, the object of the active sentence becomes the subject of the passive sentence.

• The verb is changed to its past participle form and "by" is used to introduce the doer of the action in the passive sentence.

• In this case, "the company" is the object of the active sentence, so it becomes the subject of the passive sentence.

• "Launch" becomes "launched" in its past participle form.

• The sentence in passive voice becomes "Was a new product launched by the company last month?"

Thus, option 3 is the correct answer.

Q80. Answer: (a) accordance with

The correct answer is: "accordance with".

Key Points

• "In accordance with": This phrase is the correct and standard way to express conformity or agreement with something.

• It means in agreement or harmony with a particular recommendation, rule, or suggestion.

• "In according to": This is not a grammatically correct construction.

• The preposition "in" and the phrase "according to" do not go together in this context.

• "According to" is used to introduce a report or statement, not to express compliance or agreement.

• The correct sentence would be: "In accordance with his advice, I took this medicine."

• The correction ensures proper grammar and conveys the intended meaning, indicating that the action of taking the medicine aligns with the advice given.

Therefore, option 1 is the correct answer.

Q81. Answer: (a) Small

The solution is in Hindi. Read it online.

Q82. Answer: (b) Unwise

The solution is in Hindi. Read it online.

Q83. Answer: (b) Petulant

The solution is in Hindi. Read it online.

Q84. Answer: (b) but it is impossible

The correct answer is: "but it is impossible."

Key Points

• The original sentence expresses a contrast between the speaker's desire to study and the distracting noise.

• 'But' expresses this contrast and maintains the original meaning.

• The conjunction "but" is used to indicate a contrast or contradiction between the two clauses.

• In this case, the first part of the sentence expresses the effort to study, and the second part introduces the obstacle (noise) that makes studying impossible.

• Using "but" clarifies the relationship between these contrasting elements, resulting in a more coherent and grammatically correct sentence.

Therefore, the correct answer is option 2.

Additional Information

• 'If': Used to introduce a condition or a possibility.

• 'That': Often used to introduce a clause, provide additional information, or indicate a consequence.

• 'While': Used to indicate a contrast or simultaneous occurrence.

• 'Unless': Indicates a condition that must be met for a certain outcome to happen.

Q85. Answer: (c) My book was stolen by Suresh.

The correct answer is: My book was stolen by Suresh.

Key Points

• In passive voice, the object of the active sentence becomes the subject of the passive sentence.

• Active structure: Subject + verb + object

• Passive structure: Object + was + verb (3rd form) + by + Subject

• The verb is changed to its past participle form and "be" is added before it.

• The subject of the active sentence becomes the object of the preposition "by" in the passive sentence.

Thus, option 3 is the correct answer.

Q86. Answer: (b) Having an irritated and unfriendly attitude

The solution is in Hindi. Read it online.

Q87. Answer: (c) A, C, E, D, B

The correct answer is: A, C, E, D, B.

Key Points

• A- "He has been": This part sets the subject and introduces a state or condition.

• C- "So upset about his": This part provides more information about the subject's emotional state, giving context to the upcoming events.

• E- "Divorce and that made": This part introduces the reason for the subject's emotional state, explaining what caused him to be upset.

• D- "Him so rude to": This part describes a consequence of the emotional state mentioned earlier, indicating the effect of his upset feelings.

• B- "Everyone he knows": This part concludes the sentence by specifying the scope of the impact, indicating that his emotional state has affected those around him.

• So, when arranged in the sequence A, C, E, D, B the parts form a coherent and meaningful sentence with a clear flow of events and information.

Therefore, the correct answer is option 3.

Q88. Answer: (a) Shy

The solution is in Hindi. Read it online.

Q89. Answer: (b) Everyone was sincerely and positively

The correct answer is: "Everyone was sincerely and positively."

Key Points

• The subject of the sentence is "Everyone," which is a singular pronoun.

• In English grammar, singular subjects require singular verbs.

• Therefore, the appropriate singular verb is "was" rather than "were."

• Adverbs (such as "sincerely" and "positively" in this case) typically come after the verb "to be." Placing them after the verb is a common and accepted structure.

• "Everyone was sincerely and positively" maintains subject-verb agreement and follows the standard order for adverb placement after the verb.

• In the corrected version "Everyone was sincerely and positively," the placement of "was" before the adverbs is more conventional and grammatically accurate.

Thus, option 2 is the correct answer.

Q90. Answer: (b) DBCA

The correct answer is: DBCA

Key Points

• Part D: This part sets the sombre tone of the sentence, conveying a sense of loss or despair.

• Part B: This part builds upon the previous statement, emphasizing the bleakness of the situation by using the metaphor of darkness.

• Part C: This part introduces a personal reflection, expressing uncertainty or a lack of understanding about the current circumstances.

• Part A: This part concludes the sentence by expressing difficulty in finding the right words or conveying the emotions associated with the loss. It provides insight into the speaker's struggle to communicate the depth of their feelings.

• So, when arranged in the sequence DBCA, the parts form a coherent and meaningful sentence, capturing a sense of sorrow, uncertainty, and difficulty in articulating emotions.

Therefore, option 2 is the correct answer.

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Q91. Answer: (a) Sanity

The solution is in Hindi. Read it online.

Q92. Answer: (d) intentionally

The solution is in Hindi. Read it online.

Q93. Answer: (c) In spite of the challenges posed by the pandemic, the company adapted to remote work and successfully maint...

The correct answer is: "In spite of the challenges posed by the pandemic, the company adapted to remote work and successfully maintained productivity levels."

Key Points

• "challenges" - A noun referring to difficulties or obstacles that require effort to overcome.

• "posed" - The past tense of the verb "pose," meaning to present or create a particular situation.

• "pandemic" - An adjective or noun describing a widespread occurrence of a disease affecting people over a large area or the entire world.

• "company" - A noun referring to an organization or business entity.

• "adapted" - The past tense of the verb "adapt," meaning to adjust or modify in response to new conditions.

• "successfully" - Adverb indicating the achievement of a desired result or outcome.

• "maintained" - The past tense of the verb "maintain," meaning to keep in a particular state or condition.

• "productivity" - Noun referring to the effectiveness of productive effort, usually measured in terms of output per unit of input.

• The structure and choice of words follow standard grammatical rules, resulting in a coherent expression of the company's response to pandemic challenges and its successful maintenance of productivity.

Thus, option 3 is the correct answer.

Q94. Answer: (a) misanthrope

The solution is in Hindi. Read it online.

Q95. Answer: (d) against

The correct answer is: Against

Key Points

• An antonym is a word that means the opposite of another word.

• The word in brackets is "for", which means towards or in the direction of.

• The opposite of "for" is "against", which means in opposition to or in contact with.

Thus, option 4 is the correct answer.

Additional Information

• Across means from one side to the other.

• Beneath means under or below.

• Pro means in favour of or support.

Q96. Answer: (b) phase

The solution is in Hindi. Read it online.

Q97. Answer: (d) act

The solution is in Hindi. Read it online.

Q98. Answer: (c) conform

The solution is in Hindi. Read it online.

Q99. Answer: (c) opportunity

The solution is in Hindi. Read it online.

Q100. Answer: (d) reduce

The solution is in Hindi. Read it online.

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