SSC CHSL Tier-1 2023: Official Paper (Held On: 02 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. GAMU is related to JDPX in a certain way based on the English alphabetical order. In the same way. LHTC is related to OKWF. To which of the following is BRLQ related following the same logic?

(a) EUOT
(b) DTNS
(c) ETOS
(d) CTOU

Q2. Which of the following numbers will replace the question mark (?) in the given series to make it logically complete?

8, 17, ?, 197, 773, 3077

(a) 57
(b) 53
(c) 45
(d) 69

Q3. 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?

23 C 13 B 841 A 29 D 91 = ?

(a) 329
(b) 319
(c) 289
(d) 309

Q4. The position of how many letters will remain unchanged if each of the letters in the word ANOTHER is arranged in reversed alphabetical order. i.e. starting from the last letter (Z)?

(a) None
(b) Three
(c) One
(d) Two

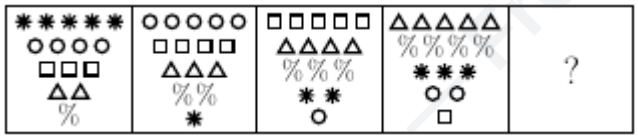
Q5. Each of the letters in the word JOURNAL are arranged in alphabetical order. How many letters are there in the English alphabetical series between the letter which is fourth from the left and the one which is second from the right in the new letter - cluster thus formed?

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

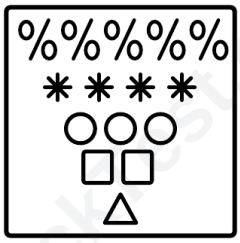
Q6. XU289 is related to SP324 in a certain way based on the English alphabetical order. In the same way, QN361 is related to LI400. To which of the following is JG441 related to, following the same logic?

(a) EB484
(b) FB464
(c) FB484
(d) EB464

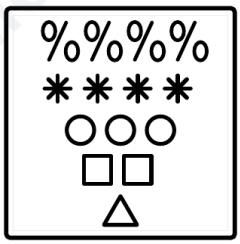
Q7. Identify the figure given in the options which when put in place of the question mark (?) will logically complete the series.



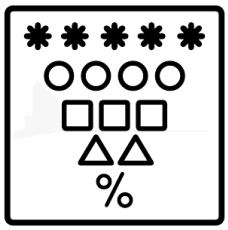
(a)



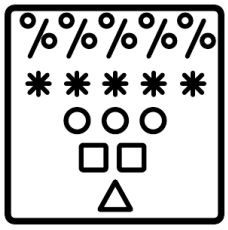
(b)



(c)



(d)



Q8. What should come in place of the question mark (?) in the given series?

57 43 31 21 13 ?

(a) 5
(b) 6
(c) 9
(d) 7

Q9. In a certain code language, 'RHETORIC' is coded as '6' and 'GURGLE' is coded as '4'. What will be the code for 'SIGNATURE' in the given code language?

(a) 5
(b) 7
(c) 6
(d) 12

Q10. In a certain code language, 'PACKET' is coded as '62' and 'POST' is coded as '74' and 'FAIR' is coded as '38. How is 'PEOPLE' coded in the given language?

(a) 72
(b) 75
(c) 70
(d) 77

Q11. 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, 56

17, 104

(a) 11, 83
(b) 8,51
(c) 12, 69
(d) 15, 92

Q12. Select the option in which the numbers share the same relationship as that shared by the given pairs of numbers.

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. Eg. 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.)

12 : 29 and 15 : 35

(a) 19 : 40
(b) 16 : 37
(c) 41 : 85
(d) 36 : 72

Q13. Select the option that is related to the third term in the same way as the second term is related to the first term and sixth term is related to fifth term.

4 : 128 :: 5 : ? :: 7: 686

(a) 225
(b) 240
(c) 255
(d) 250

Q14. Which number from among the given options can replace the question mark (?) in the following series?

12, ?, 82, 123, 168, 217

(a) 63
(b) 45
(c) 51
(d) 42

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Q15. In a certain code language,

A + Z means 'A is the mother of Z',

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

A × Z means 'A is the sister of Z',

A ÷ Z means 'A is the daughter of Z'.

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

(a) Mother
(b) Husband's sister
(c) Wife
(d) Sister

Q16. 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 mangoes are apples.

All apples are grapes.

No pears are mangoes.

Conclusions:

(I) Some grapes are mangoes.

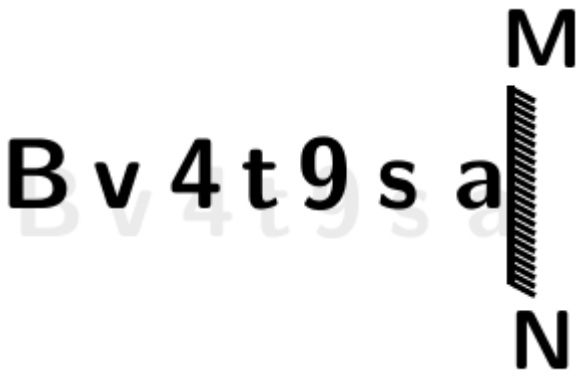
(II) No grapes are pears.

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

Q17. M is the brother of N. N is the father of O. O is the mother of P who is married to Q. Q is the son of R. S is the father of N and married to T. How is T related to O?

(a) Mother's father
(b) Mother's mother
(c) Father's mother
(d) Father

Q18. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.



(a)



(b)



(c)



(d)



Q19. Select the combination of letters which when sequentially placed in the blanks of the given series will complete the series.

G_IJG_HIJGGH_IJGGHH_IJ

(a) HIJG
(b) HGHI
(c) JGGJ
(d) GHHI

Q20. What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and '×' and '÷' are interchanged?

69 - 44 × 726 ÷ 132 + 58 = ?

(a) 369
(b) 115
(c) 19
(d) 135

Q21. BEH is related to GJM in a certain way based on the English alphabetical order. In the same way, FOT is related to KTY. To which of the following is LIN related following the same logic?

(a) NAT
(b) OLQ
(c) IFK
(d) QNS

Q22. Find out the correct alternative that when filled in the blanks in the same sequence will make the series logically complete.

ZN_T, W_DX, _VAB, QZX_,N_UJ

(a) FQSED
(b) GRTFD
(c) ESRFG
(d) FQRED

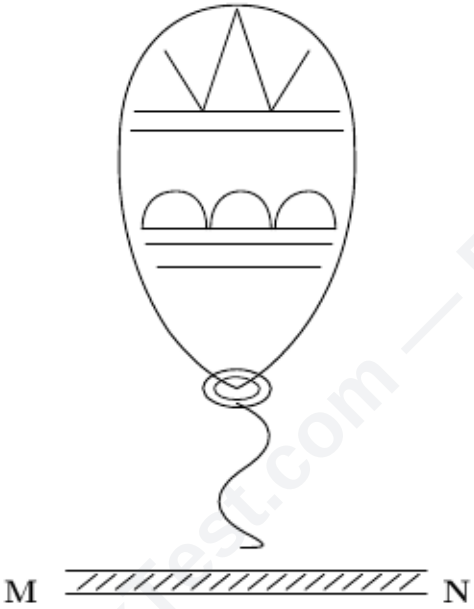
Q23. Which letter-cluster should come in place of ? in the given series based on the English alphabetical order?

VPA, SMX, ?, MGR, JDO

(a) PJU
(b) RKU
(c) QGV

(d) QIW

Q24. Select the correct mirror image of the given figure when the mirror is placed at MN as shown.



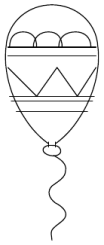
(a)



(b)



(c)

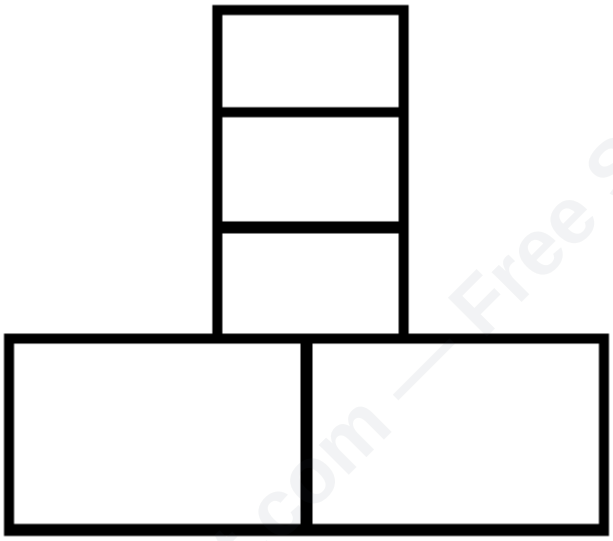


(d)



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Q25. Identify the number of rectangles in the given figure.



(a) 9
(b) 7
(c) 8
(d) 10

GENERAL INTELLIGENCE

Q26. Which of the following schemes / programmes is NOT related to microfinance type of initiatives?
(a) Ujjwala Scheme
(b) Jan Dhan Yojana
(c) Jeevika Project
(d) Indira Kranthi Patham Programme

Q27. Bastar Dussehra is celebrated in which of the following states?
(a) Uttar Pradesh
(b) Haryana
(c) Chhattisgarh
(d) Jharkhand

Q28. In the MPL 59th Senior National Chess Championship held in Delhi, Who became India's 78th Grandmaster ?
(a) G Akash
(b) Koustav Chatterjee
(c) Pranav V
(d) Prithu Gupta

Q29. Which of the following Articles says that double jeopardy which says that "no person shall be prosecuted or punished for the same offence more than once." ?
(a) Article 21 (2)
(b) Article 19 (1)
(c) Article 20 (2)
(d) Article 22 (2)

Q30. The neutral point in the magnetic field of a horizontally positioned bar magnet is the:
(a) point where the magnetic field changes direction
(b) point where the magnetic field is the weakest
(c) point where the magnetic field is the strongest
(d) point where the magnetic field is zero

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Q31. Which is a nutritional disorder caused by vitamin B3 deficiency, leading to clinical manifestations from the skin gastrointestinal tract and nervous system?

(a) Anaemia
(b) Pellagra
(c) Beri Beri
(d) Scurvy

Q32. With which scientist did William Ramsay show in 1894 that air also contained an element unknown until then, which was named argon?

(a) Lord Rayleigh
(b) Hermann Staudinger
(c) Glenn Seaborg
(d) Harold Urey

Q33. The Western Ghats and the Eastern Ghats meet at which of the following places in southern India?

(a) Satpura Hills
(b) Nallamala Hills
(c) Nilgiri Hills
(d) Mahendragiri Hills

Q34. Which of these is related to public goods?

(a) The principle of excludability is applicable to its consumption.
(b) There is a clear link between the producer and consumer which occurs through the payment process.
(c) Its consumption is rivalrous in nature.
(d) There is a possibility of free ridership in its consumption.

Q35. What is the distance between the goal line and the penalty spot in football?

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

Q36. Who among the following is NOT a professional Indian Classical Dancer?

(a) Mallika Sarabhai
(b) Vasundhara Doraswamy
(c) Shreya Ghoshal
(d) Shovana Narayanan

Q37. The Government of India is providing Ayushman Bharat Yojana, a health scheme. This type of government efforts falls under _____ of the Directive Principles of State Policy.

(a) Article 48
(b) Article 46
(c) Article 47
(d) Article 45

Q38. In which of the following years was the first radio show broadcast in India?

(a) 1923
(b) 1936
(c) 1911
(d) 1927

Q39. Ustad Akbar Ali Khan is remembered for his contribution to which of the following musical instruments?

(a) Tabla
(b) Santoor
(c) Sitar

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(d) Sarod

Q40. Who among the following Indian weightlifters won the silver medal in the women's 49 kg division at the World Weightlifting Championships 2022?

(a) Swati Singh
(b) Santoshi Matsa
(c) Sanjitha Chanu
(d) Saikhom Mirabai Chanu

Q41. Which of the following states became the first Indian State to enact 'Right to Health Act 2022 ?

(a) Punjab
(b) Rajasthan
(c) Haryana
(d) Madhya Pradesh

Q42. The Village and Small Scale Industries Committee is also referred to as the _____.

(a) Mahalanobis Committee
(b) Munshi Committee
(c) Karve Committee
(d) Chakravarty Committee

Q43. Which of the following is a qualitative measure of credit control used by the Reserve Bank of India?

A) CRR
B) Moral Suasion
C) SLR

(a) Only A
(b) Only B
(c) Both B and C
(d) Only C

Q44. What is the crude birth rate of India as per Census 2011?

(a) 20.5%
(b) 20%
(c) 21.8%
(d) 28%

Q45. NABARD launched a special pilot project in 2004 - 05 called _____ mainly to fulfil the credit needs of the small and marginal farmers and tenant farmers.

(a) JLGs
(b) MEDP
(c) SGSY
(d) BLP programme

Q46. Rajarajeshwara Temple of Tanjore was built by the ruler of which dynasty?

(a) Pandya
(b) Pallava
(c) Chola
(d) Chera

Q47. Under the Mahatma Gandhi National Rural Employment Guarantee Act, how many minimum days of guaranteed wage employment in every financial year has to be provided to every household whose adult members volunteer to do unskilled manual work ?

(a) 90
(b) 120
(c) 150

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(d) 100

Q48. Manju Barggavee won the Sangeet Natak Akademi Award of 2019 for which dance form?

(a) Mohiniattam
(b) Chhau
(c) Kathak
(d) Kuchipudi

Q49. Sal, acacia, and bamboo, which are types of Dry Tropical Forest, receive what amount of annual rainfall?

(a) From 51 cm to 151 cm
(b) Between 200 and 250 cm
(c) 251 cm or more
(d) Below 25 cm

Q50. Which of the following ministries of the Government of India has under it the Council of Scientific & Industrial Research (CSIR)?

(a) Ministry of Commerce and Industry
(b) Ministry Of Earth Sciences
(c) Ministry of Science and Technology
(d) Ministry of Education

QUANTITATIVE APTITUDE

Q51. A computer is available for Rs. 39,000 on cash payment or Rs. 19,000 as cash payment followed by five monthly installments of Rs. 4,200 each. What is the rate of interest per annum under the instalment plan?

(a) 2019/29 %
(b) 2017/29 %
(c) 2020/29 %
(d) 2018/29 %

Q52. If the distance between the centres of two circles is 12 cm and the radii are 5 cm and 4 cm, then the length (in cm) of the transverse common tangent is:

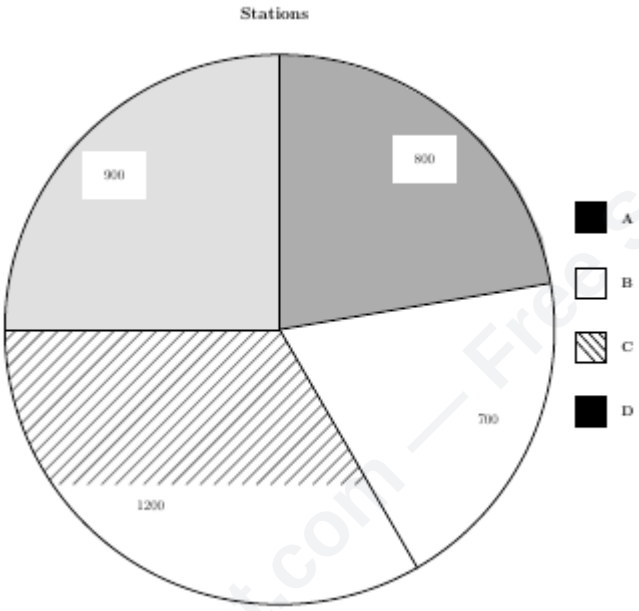
(a) 9
(b) √143
(c) √63
(d) 7

Q53. Ramagya sold his computer at three successive discounts of 18%, 12%, and 5%. If the marked price of the computer is Rs. 36000, then find the net selling price of the computer. (Correct to two places of decimals.)

(a) Rs. 24,786.72
(b) Rs. 24,678.72
(c) Rs. 24,687.72
(d) Rs. 24,876.72

Q54. The number of stations in four different cities A, B, C and D are given below.

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The angles made by the cities C and D on pie chart are _____ degrees and ____ degrees, respectively.

(a) 150, 70
(b) 70, 150
(c) 90, 120
(d) 120, 90

Q55. A direct common tangent is drawn to two circles of radius 25 cm and 20 cm. The centres of the two circles are 35 cm apart. What is the length (in cm) of the tangent?

(a) 25√2
(b) 25√3
(c) 20√3
(d) 20√2

Q56. If (a - b) = 9, and (a^3 - b^3) = 4401, find the value of ab.

(a) 190
(b) 112
(c) 162
(d) 136

Q57. The average weight of group A and group B is 12 kg and 24 kg, respectively. The ratio of the members in group A to group B is 1 : 2. Find the combined average of both the groups.

(a) 16 kg
(b) 22 kg
(c) 20 kg
(d) 18 kg

Q58. If A = 60°, B = 30°, then find the value of sin A cos B + cos A sin B.

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

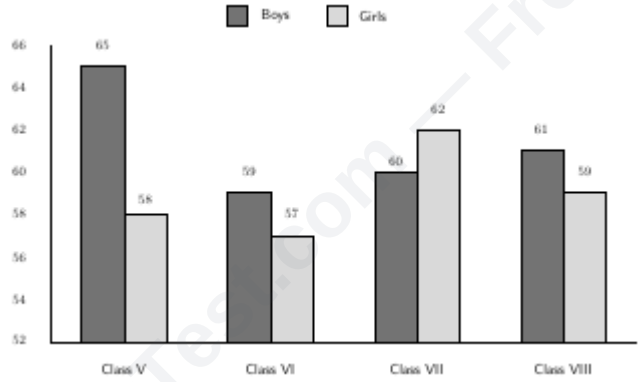
Q59. If (a + 1/a) = 6, then what is the value of 3/4(a^2+1/(a^2)) ?

(a) 22.5
(b) 34
(c) 25.5
(d) 36

Q60. A is a working partner and B is a sleeping partner in a business. A invested Rs. 30,000 and B invested Rs. 50,000. A receives 20% of the profit for managing the business and the rest is divided in proportion to their capital. What does B get out of the profit of Rs. 10,000?

(a) Rs. 5,500
(b) Rs. 5,000
(c) Rs. 4,500
(d) Rs. 4,000

Q61. The below data gives the number of boys and girls in class V, Class VI, Class VII and Class VIII.



Which class has maximum number of students?

(a) VIII
(b) V
(c) VI
(d) VII

Q62. In a solution of water and milk, the quantity of milk is double the quantity of water. To pass the quality standards, the solution must contain 90% milk in it. If the volume of the solution is v, then how much pure milk in litres is to be added to the solution to pass the quality standard?

(a) 4/3 v
(b) 3/4 v
(c) 7/4 v
(d) 7/3 v

Q63. Which of the following numbers is NOT divisible by 6.

(i) 1,97,232
(ii) 9,72,132
(iii) 8,00,552
(iv) 17,90,184

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

Q64. A man buys a toy car for Rs. 225 and sells it for Rs. 210. Find his loss percentage (round up to two decimal places).

(a) 4.44%
(b) 93.33%
(c) 3.33%
(d) 6.67%

Q65. In Δ ABC, the straight line parallel to the side BC meets AB and AC at the points P and Q. respectively. If AP = QC, the length of AB is 16 cm and the length of AQ is 4 cm, then the length (in cm) CQ is:

(a) (2 √21+2)
(b) (2 √18-2)

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(c) (2 √17-2)
(d) (2 √19+2)

Q66. Aman wants to get his spherical overhead water tank having a diameter of 7 m. painted. If the cost of painting is Rs. 13 per square metre, find the cost of painting Aman's spherical overhead water tank. (Use π = 22/7)

(a) Rs. 1,872
(b) Rs. 1,984
(c) Rs. 2,002
(d) Rs. 1,926

Q67. If (sin θ - cos θ) = 0, then the value of sin (π − θ) + sin (π/2 - θ) is:

(a) 1
(b) 0
(c) √3
(d) √2

Q68. If the price of a movie ticket increased by 12 1/2 % and the sale of tickets also increased by 8 1/2 %, then find % change in income.

(a) 21.875%
(b) 22.6750%
(c) 20.675%
(d) 22.0625%

Q69. Study the table given below and answer the question that follows.

The table below shows the total number of students studying different subjects in a college and the percentage of boys and girls.

Subject	Number of Students	Percentage of Girls	Percentage of Boys
Hindi	110	60	40
English	70	50	50
Physics	50	30	70
Chemistry	40	80	20
Mathematics	80	20	80
Computers	90	40	60

What is the respective ratio of the number of girls studying English to that of girls studying computers?

(a) 22 : 23
(b) 33 : 35
(c) 36 : 23
(d) 35 : 36

Q70. The value of cot 13° cot 27° cot 60° cot 63° cot 77° is:

(a) 1/√3
(b) 0
(c) √3
(d) 1

Q71. A publisher supplies books to a book - seller at a 20% discount on the list price of Rs. 1,574.80. If the book - seller sells books at the list price and if his expenses for freight etc. are Rs. 45.40, determine his profit.

(a) Rs. 285.34
(b) Rs. 269.56
(c) Rs. 273.50
(d) Rs. 282.22

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Q72. If (x+1/x)=5√2, and x > 1, what is the value of (x^6-1/(x^6)) ?

(a) 22970 √23
(b) 23030 √23
(c) 23060 √23
(d) 22960 √23

Q73. Which of the following set of angles forms a triangle?

(a) 60°, 70°, 80°
(b) 60°, 70°, 30°
(c) 60°, 40°, 80°
(d) 60°, 50°, 80°

Q74. A laptop is marked at a price 20% above its cost price. At what discount percentage should it be sold to make a 5% profit?

(a) 11.5%
(b) 12.5%
(c) 13.5%
(d) 10.5%

Q75. Find the compound interest on Rs. 50,000 for one year at 8% per annum when compounded half yearly.

(a) Rs. 3,900
(b) Rs. 3,880
(c) Rs. 4,080
(d) Rs. 3,950

GENERAL AWARENESS

Q76. Select the correctly spelt word.

(a) Business
(b) Buisnesc
(c) Buisness
(d) Busines

Q77. Select the most appropriate synonym of the word ‘Keen’ from the given sentence.

I am eager and happy to visit the beautiful city of Darjeeling next month with my family.

(a) beautiful
(b) visit
(c) eager
(d) happy

Q78. Select the most appropriate ANTONYM for ‘scarcity’ in the given sentence.

In spite of having ice glaciers across the globe, people don’t have excess of fresh drinking water.

(a) Excess
(b) Water
(c) Glaciers
(d) Fresh

Q79. Select the option that expresses the given sentence in passive voice.

A sudden noise frightened the horse.

(a) The horse has been frightened by a sudden noise.
(b) The horse was frightened by a sudden noise.
(c) The horse had frightened by a sudden noise.
(d) The horse got frightened by a sudden noise.

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Q80. Select the most appropriate option that can substitute the underlined segment in the given sentence.

In today's world, technology must be used for feed the changing forces in society.

(a) must had been used to feed
(b) must have been used to feed
(c) must used to feed
(d) must be used to feed

Q81. Select the option with the correct spellings to replace the underlined words in the given sentence.

The enchanteng scenary of the beautiful lake was mesmerising.

(a) enchanting; scenery
(b) encanting; scenery
(c) enchenting; seenary
(d) enchantine; senery

Q82. Select the option that expresses the given sentence in active voice.

The matches are being shown live on Sports TV.

(a) Sports TV is showing the matches live.
(b) Sports TV may be showing the matches live.
(c) Sports TV will be showing the matches live.
(d) Sports TV can be showing the matches live.

Q83. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.

A. we need to understand where we are and,
B. that will require significant investment
C. where we are headed, and
D. in our data and information infrastructure
E. to stay ahead of these crises

(a) EACBD
(b) CEDAB
(c) BACDE
(d) BAEDC

Q84. Select the most appropriate homophones to fill in the blanks.

Kindly accept my _____ on your new haircut. It _____ your personality.

(a) compliment; complaints
(b) compliment; complements
(c) compliment; compliments
(d) complement; complements

Q85. 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. embarrassment and difficulty for them and himself
B. the great gods Odin and Thor, helping them with
C. his clever plans but sometimes causing
D. Loki was represented as the companion of

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

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Q86. Select the most appropriate ANTONYM of the word in brackets to fill in the blank.

Since she had never travelled abroad, she was both _____ (CALM) and nervous for her upcoming trip.

(a) Hyped
(b) Apathetic
(c) Excited
(d) Hopeful

Q87. Select the most appropriate synonym for the underlined word in the given sentence.

The guest was heckled by the spectators

(a) Calmed
(b) Aided
(c) Taunted
(d) Helped

Q88. Select the option that can be used as a one - word substitute for the given group of words.

The vehicle which carries dead bodies

(a) Coffin
(b) Hearse
(c) Ambulance
(d) Corpse

Q89. Select the most appropriate option that can substitute the underlined words in the given sentence.

The principal posted all the staff rules in black and white.

(a) on chart
(b) on board
(c) in writing
(d) in coloured print

Q90. Select the most appropriate ANTONYM of the given word.

Support

(a) Oppose
(b) Stay
(c) Bear
(d) Stand

Q91. Select the most appropriate meaning of the underlined idiom.

The new electric car costs an arm and a leg.

(a) Needs physical strength to drive
(b) Is very expensive
(c) Is very cheap
(d) Has no gears

Q92. Select the most appropriate option that can substitute the underlined segment in the given sentence.

She can draw very well and just as creative.

(a) as creativer
(b) as creatively
(c) creative than
(d) creative

Q93. Select the most appropriate idiom for the following statement.

It's better to get less than what you want than get nothing.

(a) Half a loaf is better than none.
(b) Waste not, want not.
(c) Where there is smoke, there is fire.

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(d) A storm in a teacup

Q94. Select the option that expresses the following sentence in superlative degree of comparison.

It looks like our bad fears are coming true.

(a) No change required
(b) The worse fears are coming back it seems so.
(c) It looks like our worst fears are coming true.
(d) The fears with bad thoughts come back.

Q95. 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. Written in unadorned Sanskrit prose
B. One of the world's earliest books
C. Devoted to statecraft,
D. The Arthashastra is

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

Directions

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

A couple of minutes later, a woman comes running towards the desk. As soon as she sees the little girl, she shouts and (1) ____ up to her. She lifts the girl into her arms and holds her very tight. Then she separates herself from her daughter and looks at her (2) ___ while she says, "I am here, Andrea. Everything is okay. I love you, honey." Then she turns and (3) __ the man. "Thank you so much, sir," she says. "We got separated in the crowd earlier. My daughter is deaf, so I could not make an (4) ____ over the speakers for her. I was looking for her everywhere. I was so worried!". Now the man understands why the little girl did not look at him until he (5) _____ her shoulder.

Q96. Select the most appropriate option to fill in blank number 1.

(a) chase
(b) runs
(c) stares
(d) blinks

Q97. Select the most appropriate option to fill in blank number 2.

(a) ears
(b) nails
(c) face
(d) skin

Q98. Select the most appropriate option to fill in blank number 3.

(a) opts
(b) discreet
(c) greets
(d) rejects

Q99. Select the most appropriate option to fill in blank number 4.

(a) rejects
(b) announcement
(c) notification
(d) assertion

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Q100. Select the most appropriate option to fill in blank number 5.

(a) felt
(b) touched
(c) contacted
(d) cracked

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) EUOT

The logic followed here is:
For, 'GAMU is related to JDPX'
For, 'LHTC is related to OKWF'
Similarly, for 'BRLQ'
So, 'BRLQ' will be related to 'EUOT'
Hence, the correct answer is "Option 1".

Q2. Answer: (b) 53

The logic followed here is:
So, '53' will complete the series.
Hence, the correct answer is "Option 2".

Q3. Answer: (d) 309

Given equation: 23 C 13 B 841 A 29 D 91 = ?
Decoding the given information :

Symbol	A	B	C	D
Means	÷	×	•	•

Now, replacing the sign from left to right and using BODMAS rule, we get :
New equation : 23 + 13 × 841 ÷ 29 - 91 = ?
Calculation :
=> 23 + 13 × 841 ÷ 29 - 91 = ?
=> 23 + 13 × 29 - 91 = ?
=> 23 + 377 - 91 = ?
=> 400 - 91 = 309.
Hence, the correct answer is "Option 4".

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Q4. Answer: (b) Three

The logic followed here is:

Given word: ANOTHER

Now, arranged in reversed alphabetical order:

Word	A	N	O	T	H	E	R
Reverse order	T	R	O	N	H	E	A

Here, 'Three' letters will remain unchanged if each of the letters in the word ANOTHER is arranged in reversed alphabetical order.

Hence, the correct answer is "Option 2".

Q5. Answer: (b) Three

Given word: JOURNAL

Now, arranging the word in alphabetical order:

Word	J	O	U	R	N	A	L
Alphabetical order	A	J	L	N	O	R	U

Now, after arranged in alphabetical order the letter which is fourth from the left is: 'N',

and, the one which is second from the right is: R.

In the English alphabetical series there are three letter between 'N' and 'R' i.e: 'O', 'P', 'Q'.

Hence, the correct answer is "Option 2".

Q6. Answer: (a) EB484

The logic followed here is:

For, 'XU289 is related to SP324'

For, 'QN361 is related to LI400'

Similarly, for 'JG441'

So, 'JG441' will be related to 'EB484'

Hence, the correct answer is "Option 1".

Q7. Answer: (a) [figure]

The logic followed here is:

Logic: The symbols are getting shifting upwards and downwards with increasing and decreasing order.

Hence, the correct answer is "Option 1".

Q8. Answer: (d) 7

The logic followed here is:

So, '7' will complete the series.

Hence, the correct answer is "Option 4".

Q9. Answer: (b) 7

The logic followed here is:

Logic: Number of letters in the word - 2 = Code of the word.

'RHETORIC' is coded as '6'

No. of letters in the word 'RHETORIC' is 8.

=> 8 - 2 = 6.

'GURGLE' is coded as '4'

No. of letters in the word 'GURGLE' is 6.

=> 6 - 2 = 4.

Similarly, for 'SIGNATURE'

No. of letters in the word 'SIGNATURE' is 9.

=> 9 - 2 = 7.

So, 'SIGNATURE' will be coded as '7'.

Hence, the correct answer is "Option 2".

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Q10. Answer: (b) 75

The logic followed here is:

Logic: (Sum of the place value of all numbers) + Number of letter in that word = Code of the word.

'PACKET' is coded as '62'

=> (16 + 1 + 3 + 11 + 5 + 20) + 6

=> 56 + 6 = 62.

'POST' is coded as '74'

=> (16 + 15 + 19 + 20) + 4

=> 70 + 4 = 74.

'FAIR' is coded as '38'

=> (6 + 1 + 9 + 18) + 4

=> 34 + 4 = 38.

Similarly, for 'PEOPLE'

=> (16 + 5 + 15 + 16 + 12 + 5) + 6

=> 69 + 6 = 75.

So, 'PEOPLE' will be coded as '75'.

Hence, the correct answer is "Option 2".

Q11. Answer: (d) 15, 92

The logic followed here is:

Logic: (1st number × 6) + 2 = 2nd number.

Now,

For, 9, 56

=> (9 × 6) + 2

=> 54 + 2 = 56.

For, 17, 104

=> (17 × 6) + 2

=> 102 + 2 = 104.

Similarly, for Option 4) 15 : 92

=> (15 × 6) + 2

=> 90 + 2 = 92.

Hence, the correct answer is "Option 4".

Q12. Answer: (b) 16 : 37

The logic followed here is:

Logic: (1st number × 2) + 5 = 2nd number.

Now,

For, 12 : 29

=> (12 × 2) + 5

=> 24 + 5 = 29.

For, 15 : 35

=> (15 × 2) + 5

=> 30 + 5 = 35.

Similarly, for Option 2) 16 : 37

=> (16 × 2) + 5

=> 32 + 5 = 37.

Hence, the correct answer is "Option 2".

Q13. Answer: (d) 250

The logic followed here is:

Logic: (1st number)3 × 2 = 2nd number.

Now,

For, 4 : 128

=> (4)3 × 2

=> 64 × 2 = 128.

For, 7: 686

=> (7)3 × 2

=> 343 × 2 = 686.

Similarly, for 5 : ?

=> (5)3 × 2

=> 125 × 2 = 250.

Hence, the correct answer is "Option 4".

Q14. Answer: (b) 45

The logic followed here is:

So, '45' will complete the series.

Hence, the correct answer is "Option 2".

Q15. Answer: (c) Wife

Family Chart:

Decoding the Symbols:

Symbol	•	•	×	÷
Meaning	Mother	Brother	Sister	Daughter

Given: J + K ÷ L - T × R

It means: J is the Mother of K, K is the Daughter of L, L is the Brother of T, T is the Sister of R.

So, J is the 'Wife' of L.

Hence, the correct answer is "Option 3".

Q16. Answer: (c) Only conclusion (I) follows

Given Statements:

Some mangoes are apples.

All apples are grapes.

No pears are mangoes.

The least possible Venn diagram for the given statement is:

Conclusions:

I. Some grapes are mangoes - True (Because, Those part of mangoes which is apples, that will also grapes).

II. No grapes are pears - False (Because, No definite relation given between grapes and pears, so it can be possible only).

So, Only conclusion I follows.

Hence, the correct answer is "Option 3".

Q17. Answer: (c) Father's mother

Family Chart:

Given:

M is the brother of N.

N is the father of O.

O is the mother of P who is married to Q.

Q is the son of R.

S is the father of N and married to T.

So, T is 'Father's mother' of O.

Hence, the correct answer is "Option 3".

Q18. Answer: (d) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 4".

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Q19. Answer: (b) HGHI

The logic followed here is:

Given Sequence: G_IJG_HIJGGH_IJGGHH_IJ

Now, putting the letters in the blank spaces given in the option one by one:

Option 1) HIJG → GHIJ / GIHIJ / GGHJIJ / GGHHGIJ

Option 2) HGHI → GHIJ / GGHIJ / GGHHIJ / GGHHIIJ - Followed a pattern.

Option 3) JGGJ → GJIJ / GGHIJ / GGHGIJ / GGHHJIJ

Option 4) GHHI → GGIJ / GHHIJ / GGHHIJ / GGHHIIJ

Here, 'Option 2' followed a pattern.

Hence, the correct answer is "Option 2".

Q20. Answer: (c) 19

BODMAS Table:

Given Equation: 69 - 44 × 726 ÷ 132 + 58 = ?

After interchanging '+' and '-' and '×' and '÷' we get;

=> 69 + 44 ÷ 726 × 132 - 58 = ?

=> 69 + (44/726 × 132) - 58 = ?

=> 69 + 8 - 58 = ?

=> 77 - 58 = 19.

Hence, the correct answer is "Option 3".

Q21. Answer: (d) QNS

The logic followed here is:

For, 'BEH is related to GJM'

For, 'FOT is related to KTY'

Similarly, for 'LIN'

So, 'LIN' will be related to 'QNS'

Hence, the correct answer is "Option 4".

Q22. Answer: (b) GRTFD

The logic followed here is:

So, 'GRTFD' will be the correct alternative that filled in the blanks in the same sequence will make the series logically complete.

Hence, the correct answer is "Option 2".

Q23. Answer: (a) PJU

The logic followed here is:

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

Hence, the correct answer is "Option 1".

Q24. Answer: (d) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 4".

Q25. Answer: (a) 9

The rectangles are:

So, there are '9' rectangles in the given figure.

Hence, the correct answer is "Option 1".

Q26. Answer: (a) Ujjwala Scheme

The correct solution is Ujjawala Scheme.

Key Points

• Ujjawala Scheme is not related to microfinance type of initiatives.

• The Ujjawala Scheme is a scheme launched by the Indian government to provide free LPG connections to women from poor households.

• Prime Minister of India Narendra Modi announced the Pradhan Mantri Ujjwala Yojana on May 1, 2016.

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• The goal of scheme is to provide 50 million LPG connections to women from Below Poverty Line (BPL) households.

• Microfinance is the provision of financial services, such as loans, savings, and insurance, to low-income individuals or groups who lack access to traditional banking services.

Additional Information

• Jan Dhan Yojana:

• Jan Dhan Yojana is a financial inclusion scheme that aims to provide banking facilities to every household in India.

• It is related to microfinance initiatives.

• Jan Dhan Yojana was launched in August 2014.

• It also provides an overdraft facility of up to Rs. 10,000 and a RuPay debit card.

• Jeevika Project:

• It is a poverty alleviation programme that focuses on promoting sustainable livelihoods for the rural poor in Bihar, India.

• It includes microfinance initiatives.

• Jeevika Project is a joint initiative of the Government of Bihar and the World Bank.

• Indira Kranthi Patham Programme:

• Indira Kranthi Patham Programme was launched in 2005 by the Government of Andhra Pradesh with the aim of reducing poverty and promoting rural development.

• It is a poverty alleviation and rural development programme in Andhra Pradesh, India.

• It includes several components, such as microfinance, watershed development, and skill development.

Q27. Answer: (c) Chhattisgarh

The correct answer is Chhattisgarh.

Key Points

• Bastar Dussehra is a festival celebrated in the Bastar district of Chhattisgarh, which is located in central India.

• The festival is celebrated for 75 days and is known for its unique customs and traditions.

• The main attraction of the festival is the procession of the local deities, which is led by the king of Bastar.

• The festival is celebrated in the month of October or November and is considered to be one of the most important festivals in the state of Chhattisgarh.

Additional Information

• Uttar Pradesh:

• This state is located in northern India and is known for its rich cultural heritage.

• Some of the popular festivals celebrated in Uttar Pradesh include Diwali, Holi, and Eid.

• Haryana:

• This state is located in northern India and is known for its agricultural heritage.

• Some of the popular festivals celebrated in Haryana include Baisakhi, Teej, and Lohri.

• Jharkhand:

• This state is located in eastern India and is known for its tribal culture.

• Some of the popular festivals celebrated in Jharkhand include Sarhul, Karma, and Sohrai.

Q28. Answer: (b) Koustav Chatterjee

The correct answer is Koustav Chatterjee.

Key Points

• Koustav Chatterjee became India's 78^(th) Grandmaster by winning the MPL 59th Senior National Chess Championship held in Delhi.

• He achieved the Grandmaster title at the age of 18, which is a remarkable feat.

• Chatterjee has been playing chess since the age of 5 and has won several national and international tournaments.

• The Grandmaster title is the highest title a chess player can achieve and is awarded by the World Chess Federation (FIDE).

Additional Information

• G Akash:

• Akash Ganesan, an Indian chess grandmaster and former national champion, was born on October 1, 1996.

• Hs a 17-year-old chess prodigy from Tamil Nadu who has won several national and international tournaments.

• G Akash became India's 66th chess Grandmaster.

• Pranav V:

• Grandmaster Pranav Venkatesh is an Indian chess player who was born on October 13, 2006.

• He is a 16-year-old chess player from Kerala who has won the National Under-15 Chess Championship in 2017.
• He won a competition in Romania, making him the 75th Grandmaster of India.
• Prithu Gupta:
• He is a 16-year-old chess player from Delhi.
• He has won the National Under-13 Chess Championship in 2016 and the National Under-15 Chess Championship in 2018.
• Prithu Gupta became India's 64th Grandmaster

Q29. Answer: (c) Article 20 (2)

The correct answer is Article 20 (2).

Key Points

• Double jeopardy means that a person cannot be prosecuted or punished for the same offense more than once.
• Double jeopardy is a fundamental principle of law in many countries, including the United States and India.
• The General Clauses Act of 1897 offers defense against double jeopardy as well.
• Article 20(2) of the Indian Constitution guarantees protection against double jeopardy.
• Article 20(2) also guarantees protection against self-incrimination and retroactive punishment.

Additional Information

• Article 21(2):
• It deals with the right to life and personal liberty.
• Article 21(2) guarantees the right to a fair trial and due process of law.
• Article 19(1):
• It guarantees freedom of speech.
• It guarantees several other freedoms, including the right to assemble peacefully and the right to practice any profession or occupation.
• Article 22(2):
• It deals with the rights of arrested persons.
• Article 22(2) guarantees the right to be informed of the grounds of arrest and to consult a legal practitioner.

Q30. Answer: (d) point where the magnetic field is zero

The correct answer is point where the magnetic field is zero.

Key Points

• The neutral point in the magnetic field of a horizontally positioned bar magnet is the point where the magnetic field is zero.
• This point is also known as the magnetic equator or the magnetic neutral axis.
• At this point, the magnetic field lines of the magnet are parallel to the surface of the earth.
• The location of the neutral point depends on the strength and orientation of the magnet.

Additional Information

• Magnetic field does not change direction at the neutral point, but rather it changes direction at the poles of the magnet.
• Magnetic field is not necessarily the weakest at the neutral point, as it can be weaker or stronger depending on the distance from the magnet and the strength of the magnet.
• Magnetic field is strongest at the poles of the magnet.

Q31. Answer: (b) Pellagra

The correct answer is Pellagra.

Key Points

• Pellagra is a nutritional disorder caused by vitamin B3 (niacin) deficiency.
• Clinical manifestations of pellagra include skin rashes, diarrhea, dementia, and eventually death if left untreated.
• Vitamin B3 is important for energy production, metabolism, and DNA repair.
• Pellagra was once a common disease in the United States, particularly in the southern states, but it became rare after the fortification of grain products with niacin.

Additional Information

• Anaemia:
• Anemia is a blood condition where the blood's capacity to carry oxygen is diminished because there are fewer red blood cells in the blood than usual.
• It can be caused by various factors such as iron deficiency, vitamin B12 deficiency, or chronic disease.

• Beri Beri:

• It is a disease caused by thiamine (vitamin B1) deficiency.

• It can lead to symptoms such as fatigue, muscle weakness, and nerve damage.

• Scurvy:

• It is a disease caused by vitamin C deficiency.

• It can lead to symptoms such as bleeding gums, skin rash, and joint pain.

Q32. Answer: (a) Lord Rayleigh

The correct answer is Lord Rayleigh.

Key Points

• William Ramsay showed in 1894 that air contained an element unknown until then, which was named argon, with the help of Lord Rayleigh.

• Lord Rayleigh was a British physicist who won the Nobel Prize in Physics in 1904 for his discovery of argon.

• The discovery of argon, a noble gas that does not react with other elements, was made possible by the scientific collaboration of William Ramsay and John William Strutt, better known as Lord Rayleigh.

Additional Information

• Hermann Staudinger:

• He was a German chemist who is known for his work on macromolecules.

• He won the Nobel Prize in Chemistry in 1953.

• Glenn Seaborg:

• He was an American chemist who discovered several new elements.

• He won the Nobel Prize in Chemistry in 1951.

• Harold Urey:

• He was an American chemist who discovered deuterium, a heavy isotope of hydrogen.

• He won the Nobel Prize in Chemistry in 1934.

Q33. Answer: (c) Nilgiri Hills

The correct solution is Nilgiri Hills.

Key Points

• The Western Ghats and Eastern Ghats are two parallel mountain ranges running along the western and eastern coasts of India respectively.

• The Nilgiri Hills are located at the junction of the Western and Eastern Ghats in southern India, making it a significant geographical landmark.

• In India's Northwestern Tamil Nadu, Southern Karnataka, and Eastern Kerala, the Nilgiri Mountains are a portion of the Western Ghats.

• The Moyar River divides the Karnataka Plateau to the north from the Nilgiri Hills.

Additional Information

• Satpura Hills:

• It is located in central India.

• The range begins in eastern Gujarat, travels east along the Madhya Pradesh and Maharashtra borders, and ends in Chhattisgarh.

• Nallamala Hills:

• It is located in the eastern part of the Deccan Plateau.

• It establishes the eastern boundary of the Indian states of Telangana and Andhra Pradesh, as well as the Rayalaseema region.

• Mahendragiri Hills:

• It is located in the Eastern Ghats.

• This mountain peak, located in the Koraput district, is the second highest in Odisha, after Deomali.

Q34. Answer: (d) There is a possibility of free ridership in its consumption.

The correct answer is There is a possibility of free ridership in its consumption.

Key Points

• Public goods are goods or services that are non-excludable and non-rivalrous in nature.

• They are available to everyone and their consumption by one person does not diminish their availability to others.

• The possibility of free ridership in the consumption of public goods is a key characteristic, as individuals can benefit from the

good without contributing to its provision.

• If users don't pay for such goods, they can't be prevented from using or accessing them.

• Multiple people can use the good at the same time.

Additional Information

• The principle of excludability:

• The ability of a good, service, or resource to be restricted to only those who can afford it is known as excludability.

• Excludability refers to the ability of a producer, supplier, or other managing body (such as the government) to stop "free" consumption of a good.

• Clear link between the producer and consumer which occurs through the payment process:

• It is more applicable to private goods.

• It is applicable where payment is necessary to access the good or service*.*

• Its consumption is rivalrous in nature:

• It suggests rivalrous consumption.

• It is also not applicable to public goods as their consumption does not reduce availability to others.

Q35. Answer: (b) 12 yards

The correct answer is 12 yards.

Key Points

• The distance between the goal line and the penalty spot in football is 12 yards.

• The penalty spot is located 12 yards away from the goal line and is used for penalty kicks.

• The penalty kick is awarded when a team commits a foul inside their own penalty area, and the opposing team is given a free shot at goal from the penalty spot.

• The distance of 12 yards was established in the late 19^(th) century and has been used ever since.

Additional Information

• 11 yards is used for the width of the penalty area, which extends 11 yards from the goal line.

• An area of an association football pitch is called the penalty area, or 18-yard box (sometimes referred to less formally as the penalty box or just the box).

• The ball is deemed to be inside the penalty area if any portion of it crosses any portion of the line defining the area.

Q36. Answer: (c) Shreya Ghoshal

The correct answer is Shreya Ghoshal.

Key Points

• Shreya Ghoshal is a playback singer in Bollywood and not a professional Indian Classical Dancer.

• Singer Shreya Ghoshal was born in India on March 12, 1984 in a bengali brahmin family.

• Her achievements were recognized with multiple awards, such as five Filmfare Awards, seven Filmfare Awards South, four Kerala State Film Awards, two Tamil Nadu State Film Awards, two BFJA Awards, and five National Film Awards.

Additional Information

• Mallika Sarabhai:

• She is the daughter of famous Indian scientist Vikram Sarabhai.

• She has also been involved in activism and theatre.

• Vasundhara Doraswamy:

• She has performed extensively in India and abroad.

• She has also choreographed dance productions.

• Shovana Narayanan:

• She has been recognized for her contributions to Kathak.

• She has also been a member of the Rajya Sabha, the upper house of the Indian Parliament.

Q37. Answer: (c) Article 47

The correct answer is Article 47.,

Key Points

• Article 47 states that it is the duty of the state to improve public health and provide medical aid to all citizens.

• Ayushman Bharat Yojana is a scheme launched by the Government of India in 2018 which aims to provide health insurance coverage to vulnerable families and individuals.

• It is a nationwide public health insurance program designed to give low-income citizens of the nation free access to health

insurance coverage. Approximately 50% of the population is eligible for this program.

• For individuals in need of specialized care or hospitalization, it offers free secondary and tertiary healthcare.

Additional Information

• Article 45:

• State shall endeavor to provide free and compulsory education for all children until they complete the age of 14 years.

• This clause demonstrates a dedication to guaranteeing that all children in India have access to a basic education and to the universalization of elementary education.

• Article 46:

• State shall promote educational and economic interests of the weaker sections of society.

• In particular, the Scheduled Castes and Scheduled Tribes are among the weaker segments of the population whose educational and economic interests the State will give particular attention to.

• Article 48:

• State shall endeavor to organize agriculture and animal husbandry on modern and scientific lines.

• State shall take steps for preserving and improving the breeds, and prohibiting the slaughter of cows, calves and other milch and draught cattle.

Q38. Answer: (a) 1923

The correct answer is 1923.

Key Points

• The first radio broadcast in India was on June 23, 1923, by the Radio Club of Bombay.

• It was a test transmission, and the first regular broadcasting began on July 23, 1927, from the same club.

• The broadcasting was initially done in the evenings for 30 minutes, and the programs were mainly music concerts and talks.

Additional Information

• Radio broadcasting is the process of sending audio across radio waves to radio receivers owned by members of the general public, occasionally along with pertinent metadata.

• There are now four forms of radio broadcasting in use:

• AM: Electromagnetic radio waves are all around us but are invisible to the naked eye.

• FM: The term FM refers to frequency modulation.

• DAB: Digital Audio Broadcasting, or DAB, is an acronym.

• Internet radio: When a radio station streams its content online, it's known as internet radio.

Q39. Answer: (d) Sarod

The correct answer is Sarod.

Key Points

• Ustad Akbar Ali Khan is remembered for his contribution to the musical instrument 'Sarod'.

• He was a renowned Sarod player and contributed to the development of the instrument.

• The Sarod is a stringed musical instrument that originated in India and is played with a plectrum.

• It has a unique sound and is often used in Indian classical music.

Additional Information

• Tabla :

• Since the 18th century, the tabla, a pair of small drums, has been an essential part of Hindustani music in northern India, Pakistan, and Bangladesh.

• Santoor:

• The Indian santoor is a hammered dulcimer in the shape of a trapezoid, which is a variant of the Iranian santur.

• The instrument typically has 25 bridges and is constructed of walnut.

• Sitar:

• It is a stringed instrument played in Hindustani classical music that is plucked and originated in the Indian subcontinent.

• The instrument originated in medieval India, reached its peak of popularity in the 18^(th) century, and evolved into its current form in India during the 19^(th) century.

Q40. Answer: (d) Saikhom Mirabai Chanu

The correct answer is Saikhom Mirabai Chanu.

Key Points

• Saikhom Mirabai Chanu, won the silver medal in the women's 49 kg division at the World Weightlifting Championships 2022.

• She is a well-known Indian weightlifter who has won several medals in various international tournaments, including the 2018 Commonwealth Games and the 2020 Asian Championships.

• Her achievement is significant for Indian weightlifting as she has become the first Indian woman to win a medal at the World Weightlifting Championships since Karnam Malleswari's bronze in 1995.

• Her success at the World Weightlifting Championships 2022 has also boosted her chances of winning a medal at the upcoming Tokyo Olympics, where she will represent India in the women's 49 kg category.

Additional Information

• Swati Singh

• She is a Weightlifter, an Indian.

• She won the bronze medal in the women's 53 kg weight class at the Glasgow 2014 Commonwealth Games.

• Santoshi Matsa

• Weightlifter Santoshi Matsa, an Indian, took home the silver medal in the women's 53 kg weight class at the Glasgow 2014 Commonwealth Games.

• Khumukcham Sanjita Chanu

• Weightlifter Khumukcham Sanjita Chanu hails from India.

• She has won two Commonwealth Games titles.

• In the women's 48 kg and 53 kg weight categories, Chanu won gold medals in both the 2014 Glasgow and 2018 Gold Coast events.

Q41. Answer: (b) Rajasthan

The correct answer is Rajasthan.

Key Points

• Rajasthan became the first Indian state to enact the 'Right to Health Act 2022'.

• The act aims to provide every citizen with access to quality healthcare services and facilities.

• It also includes provisions for free medical treatment and medicines for certain categories of people.

• The act also establishes a state health commission to oversee the implementation of the act.

Additional Information

• Punjab:

• Punjab has launched a universal health insurance scheme called Sarbat Sehat Bima Yojana.

• In order to provide better health outcomes, the Punjab government's Sarbat Sehat Bima Yojana offers cashless services and incentive money in the form of health insurance.

• Haryana:

• Haryana has launched a scheme called Mukhyamantri Muft Ilaaj Yojana.

• It provides free medical treatment to certain categories of people.

• Madhya Pradesh:

• Madhya Pradesh has launched a scheme called Ayushman Bharat Madhya Pradesh Niramayam Yojana.

• It provides free medical treatment and medicines to certain categories of people.

Q42. Answer: (c) Karve Committee

The correct answer is Karve Committee.

Key Points

• The Village and Small Scale Industries Committee was set up in 1948 to study the problems of small-scale industries in India and suggest measures for their development.

• The committee was headed by D.R. Karve, a renowned social worker and educationist.

• The committee submitted its report in 1949, which is also known as the Karve Report.

• The report highlighted the need for the development of small-scale industries in India and suggested various measures such as the establishment of industrial estates, provision of financial assistance, and technical training to entrepreneurs.

Additional Information

• Mahalanobis Committee was set up in 1953 to suggest a plan for the rapid industrialization of India.

• It is also known as the Planning Commission.

• Munshi Committee was set up in 1951.

• Its aim was to study the problems of small-scale industries in India and suggest measures for their development.

• Chakravarty Committee was set up in 1985 to suggest measures for the development of small-scale industries in India.

• It is also known as the High-Powered Committee on Urban and Rural Small-Scale Industries.

Q43. Answer: (b) Only B

The correct answer is Moral Suasion.

Key Points

• Moral suasion is a qualitative measure of credit control used by the Reserve Bank of India.

• It is a persuasive technique used by the central bank to influence the behavior of the commercial banks.

• The RBI uses moral suasion to encourage banks to comply with the policy guidelines and regulations issued by the central bank.

• It is a non-binding measure and relies on the reputation and credibility of the RBI to convince the banks to follow the desired course of action.

• Other measures of credit control used by the RBI include quantitative measures such as CRR (Cash Reserve Ratio) and SLR (Statutory Liquidity Ratio).

Additional Information

• CRR (Cash reserve ratio) is the percentage of deposits that banks are required to keep with the RBI as a reserve.

• It is a quantitative measure of credit control as it directly affects the liquidity and lending capacity of the banks.

• SLR (Statutory Liquid Ratio) is the percentage of deposits that banks are required to invest in specified securities such as government bonds.

• It is also a quantitative measure of credit control as it restricts the funds available for lending by the banks.

Q44. Answer: (c) 21.8%

The correct answer is 21.8%.

Key Points

• The crude birth rate is the number of live births per 1,000 population in a given year.

• As per Census 2011, the crude birth rate of India is 0.218.

• This means that for every 1,000 people in India, 0.218 births occurred in the year 2011.

• It is important to note that the crude birth rate is influenced by various factors such as age structure of the population, fertility rate, and socio-economic factors.

• In India, the crude birth rate has been declining over the years. For instance, it was 23.8 in 1991, 22.8 in 2001, and 21.8 in 2011.

Additional Information

• The ratio of all live births in a population during a given year to all mid-year population for that same year is called the crude birth rate.

• It is one of the key factors regulating a nation's population growth and is multiplied by 1000.

• The formula for CBR = (number of births) *1000 / estimated population at mid-year.

• Population growth is calculated using the birth rate, mortality, and migration rates.

Q45. Answer: (a) JLGs

The correct answer is JLGs

Key Points

• JLGs stands for Joint Liability Groups.

• NABARD launched the JLGs scheme in 2004-05 to cater to the credit needs of small and marginal farmers, tenant farmers, and other vulnerable groups.

• The primary objective of JLGs is to improve the flow of credit to tenant farmers cultivating land as oral lessees, sharecroppers, and small farmers who do not have proper title to their landholding.

• By forming JLGs, these farmers can avail of credit without providing any collateral security, thereby ensuring financial inclusion and improving their livelihood.

• JLGs operate based on mutual guarantee, where each member of the group is responsible for the repayment of loans taken by any member of the group.

Additional Information

• NABARD (National Bank for Agriculture and Rural Development) is an apex development financial institution in India, established on 12th July 1982.

• NABARD's primary focus is on the development of agriculture and rural areas through various credit and non-credit initiatives.

• The JLG model encourages group lending and ensures that credit is available to those who might otherwise be excluded from the formal banking system.

• Other initiatives by NABARD include SHG-Bank Linkage Program (SBLP), Micro-Enterprise Development Program (MEDP), and various other schemes aimed at rural development and financial inclusion.

• NABARD also plays a crucial role in policy planning, capacity building, and providing refinance support to rural financial institutions.

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Q46. Answer: (c) Chola

The correct answer is Chola.

Key Points

• Rajarajeshwara Temple is also known as Brihadeeswarar Temple and is located in the city of Thanjavur (formerly known as Tanjore) in Tamil Nadu, India.

• The temple was built by the Chola dynasty ruler Rajaraja Chola I in the 11^(th) century AD.

• The temple is a UNESCO World Heritage Site and is considered one of the best examples of Dravidian architecture in India.

• The temple is dedicated to Lord Shiva and has a towering vimana (temple tower) that is one of the tallest in India.

Additional Information

• Pandya:

• The Pandya dynasty ruled over parts of South India, including Tamil Nadu, in the 6^(th)-17^(th) centuries AD.

• Maravarman Sundara I established the groundwork for the Pandya empire in southern India around the beginning of the thirteenth century.

• The pinnacles of Pandya architecture are, in fact, the Meenakshi Temple in Madurai and the Aranganathar Temple in Srirangam.

• Pallava:

• The Pallava dynasty was an early medieval South Indian dynasty that ruled from the 3^(rd)-9^(th) centuries AD.

• They were known for their patronage of the arts and architecture.

• The Shore Temple and the Vaikuntha Perumal Temple in Kanchipuram are two of the best specimens of Pallava art and architecture.

• Chola:

• The Chola dynasty was one of the most powerful South Indian dynasties that ruled from the 9^(th)-13^(th) centuries AD.

• They were known for their military conquests, administrative skills, and patronage of the arts.

• The Brihadisvara Temple in Thanjavur, the Airavatesvara Temple in Darasuram, and the Brihadisvara Temple in Gangaikonda Cholapuram are the three well-known temples that date back to the Chola era.

• Chera:

• The Chera dynasty was an ancient dynasty that ruled over parts of South India, including present-day Kerala and Tamil Nadu, from the 3^(rd) century BC to the 12^(th) century AD.

• Kerala's Thiruvanchikulam Temple, which is devoted to Lord Shiva and has a distinctive architectural style, is situated in the Ernakulam district.

Q47. Answer: (d) 100

The correct answer is 100.

Key Points

• 100 days of guaranteed wage employment in every financial year has to be provided to every household whose adult members volunteer to do unskilled manual work under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).

• The MGNREGA was enacted in 2005 to provide a legal guarantee of 100 days of wage employment in a financial year to every rural household whose adult.

• By generating long-lasting assets, raising rural people standards of living, and lowering poverty, the program seeks to give those living in poverty in rural areas security of income.

Additional Information

• The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a social security measure that aims to provide employment and livelihood security to rural households in India.

• The MGNREGA is implemented by the Ministry of Rural Development, Government of India, and is the largest employment generation programme in the world.

• The Act aims to create durable assets and infrastructure in rural areas, enhance the livelihoods of rural households, and promote sustainable development in rural India.

Q48. Answer: (d) Kuchipudi

The correct answer is Kuchipudi.

Key Points

• Manju Barggavee won the Sangeet Natak Akademi Award of 2019 for the dance form Kuchipudi.

• Actress and dancer Manju Bhargavi is most known for her roles in the Telugu blockbusters Sankarabharanam (1980) and Nayakudu Vinayakudu (1980).

• The Sangeet Natak Akademi, India's National Academy of Music, Dance, and Drama, gives the Sangeet Natak Akademi Award.

• It is the greatest honor bestowed upon those working in the performing arts in India.

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• The prize included a tamrapatra (a brass plaque), an angavastram (a shawl), a citation, and Rs. 1,00,000.

Additional Information

• Kuchipudi is a classical Indian dance form that originated in the village of Kuchipudi in Andhra Pradesh, India.

• Mohiniattam is a classical Indian dance form that originated in Kerala, India.

• It is known for its graceful movements and expressions.

• Chhau is a semi-classical Indian dance form that originated in the eastern states of India, primarily in West Bengal, Odisha, and Jharkhand.

• It involves acrobatic movements and martial arts.

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

• It is known for its fast footwork and intricate hand movements.

Q49. Answer: (a) From 51 cm to 151 cm

The correct answer is from 51 cm to 151 cm.

Key Points

• Dry Tropical Forests are characterized by a long dry season and a short rainy season.

• Sal, acacia, and bamboo are some of the common tree species found in Dry Tropical Forests.

• These forests receive an annual rainfall ranging from 51 cm to 151 cm, which is lower than the rainfall received by other forest types.

• This are found between 10^o and 25^o latitude.

• These forests are important habitats for a variety of wildlife species and provide various ecosystem services, such as carbon sequestration, soil conservation, and water regulation.

Additional Information

• Sal is a tree species found in tropical and subtropical regions of Asia and Africa.

• It is also known as Shorea robusta.

• Acacia is a genus of trees and shrubs found in arid and semi-arid regions of Africa, Australia, and the Americas.

• Based on the African species Acacia nilotica, it was first described by the Swedish scientist Carl Linnaeus in 1773.

• Bamboo is a type of grass that grows in tropical and subtropical regions of Asia, Africa, and the Americas.

• The Indian Forest Act, 1927 considered it a tree. Accordingly, cutting bamboo from outside forests and transporting it was made unlawful.

• In 2017 an amendment was made to the Indian Forest Act, 1927 and bamboo has been removed from the tree category.

Q50. Answer: (c) Ministry of Science and Technology

The correct answer is Ministry of Science and Technology.

Key Points

• The Council of Industrial Research (CSIR) was established in 1942 and has its headquarters in New Delhi.

• The CSIR has a network of 38 national laboratories and 39 outreach centers spread across the country.

• The Council of Scientific undefined Industrial Research (CSIR) comes under the Ministry of Science and Technology.

• CSIR is a premier national organization in India and is among the world's largest publicly funded organization.

• The Ministry of Science and Technology is responsible for promoting the development and application of science and technology in various sectors of the economy.

Additional Information

• The Ministry of Commerce and Industry is responsible for formulating and implementing policies for the promotion of internal, external trade and commerce in India as well as for the promotion of industrial development in India.

• The Ministry of Earth Sciences is responsible for promoting sustainable development of oceans, atmosphere, and other natural resources and provide weather and climate-related services to various sectors of the economy.

• The Ministry of Education is responsible for the formulation of policies, laying down of norms, and standards for education in India.

Q51. Answer: (c) 2020/29 %

Calculation:

Total cost of the computer = Rs. 39000

Down payment = Rs. 19000

Balance = Rs. (39000 - 19000) = Rs. 20000.

Let the rate of interest be R% p.a.

Amount of Rs. 20000 for 5 months

=Rs.(20000 + 20000 × 5/12 × R/100)=Rs.(20000+250R/3)

The customer pays the shopkeeper Rs. 4200 after 1 month,

Rs. 4200 after 2 months, ... and Rs. 4200 after 5 months.

Thus, the shopkeeper keeps Rs. 4200 for 4 months, Rs. 4200 for 3 months, Rs. 4200 for 2 months, Rs. 4200 for 1 months and Rs. 4200 at the end.

Therefore sum of the amounts of these installments

=> (Rs. 4200 + S.I. on Rs 4200 for 4 months) + (Rs. 4200 + S.I. on Rs. 4200 for 3 months) + ... + (Rs. 4200 + S.I. on Rs. 4200 for 1 month) + Rs. 4200

=> Rs. (4200 × 5) + S.I. on Rs. 4200 for (4 + 3 + 2 + 1) months

=> Rs. 21000 + S.I. on Rs. 4200 for 10 months

=> Rs.(21000 + 4200 × R × 10/12×1/ 100)

=> (21000 + 35R)

(20000+250R/3) = (21000 + 35R)

R = 2020/29 %

Alternate Method Total amount = 39000

Down payment = 19000

Remaining amount = 20000

Installment = 4200

So,

Principal

At Starting = 20000

after 1 month → 20000 - 4200 = 15800

After 2 months → 15800 - 4200 = 11600

After 3 months → 11600 - 4200 = 7400

After 4 months → 7400 - 4200 = 3200

So,

total principal = 20000 + 15800 + 11600 + 7400 + 3200 = 58000

and

Interest = 4200 × 5 - 20000 = 1000

So,

rate of interest for 1 month = (1000/58000) × 100 = 100/58 = (50/29)%

rate of interest for 12 months or annual rate of interest = 12 × (50/29)% = (600/29)%

Q52. Answer: (c) √63

Shortcut Trick

The length of the transverse common tangent (TCT) is calculated using the direct formula:

TCT = √[d² − (r1 + r2)²]

Where d is the distance between centres, and r1, r2 are the radii.

=> TCT = √[12² − (5 + 4)²]

=> TCT = √[144 − 81] = √63

Therefore The correct answer is √63 cm.

Alternate Method

Given:

Distance between the centres of two circles = 12 cm

Radii of the two circles = 5 cm and 4 cm

Formula Used:

Length of transverse common tangent = √[(Distance between the centres)2 − (r1 + r2)2]

Calculation:

Let the length of the transverse common tangent = D

According to the formula,

D = √[122 − (5 + 4)2]

=> D = √(144 − 92)

=> D = √(144 − 81)

=> D = √63 cm

Therefore The correct option is 3.

Additional Information

Direct Common Tangent (DCT)

The length of the direct common tangent is given by the formula: DCT = √[d² − (R − r)²].

Existence of Tangents

A transverse common tangent exists only if the distance between the centres is greater than or equal to the sum of the radii (d ≥ R + r).

Common Tangent Cases

If two circles touch each other externally, d = R + r, and there are 3 common tangents (2 direct and 1 transverse).

Q53. Answer: (b) Rs. 24,678.72

Shortcut Trick

For successive discounts, use the multiplying factor method.

Net Multiplier = (100 − 18)% × (100 − 12)% × (100 − 5)%

Net Multiplier = 0.82 × 0.88 × 0.95 = 0.68552

Net Selling Price = 36000 × 0.68552 = Rs. 24,678.72

Therefore The correct answer is Rs. 24,678.72.

Alternate Method

Given: Marked Price (MP) = Rs. 36,000, Successive Discounts = 18%, 12%, and 5%.

Step-by-step Calculation:

=> Price after 18% discount = 36000 − (18 ÷ 100 × 36000) = 36000 − 6480 = Rs. 29,520

=> Price after 12% discount = 29520 − (12 ÷ 100 × 29520) = 29520 − 3542.4 = Rs. 25,977.60

=> Price after 5% discount = 25977.60 − (5 ÷ 100 × 25977.60) = 25977.60 − 1298.88 = Rs. 24,678.72

Therefore The correct answer is Rs. 24,678.72.

Additional Information

Successive Discount Formula

For two successive discounts d1 and d2, the single equivalent discount is [d1 + d2 − (d1 × d2 ÷ 100)]%.

Selling Price and Marked Price

Selling Price (SP) = Marked Price (MP) × (100 − Discount%) ÷ 100. Discounts are always calculated on the Marked Price.

Effective Discount for Three Rates

Net SP = MP × (1 − d1/100) × (1 − d2/100) × (1 − d3/100). The overall discount percentage is 1 − [(1 − d1/100)(1 − d2/100)(1 − d3/100)].

Q54. Answer: (d) 120, 90

Calculation:

Total as we know, 2100 + 800 + 700 = 3600

So the value of 3600= 360°

So the value of 1° = 10

The angles made by the cities C on pie chart is 1200 / 10 = 120°

The angles made by the cities D on pie chart is 900 / 10 = 90°

Therefore The correct option is 4

Q55. Answer: (c) 20√3

Given:

Two circles of radius 25 cm and 20 cm. The centres of the two circles are 35 cm apart.

Formula used:

Direct common tangent = √ (distance between the two centers2 - (r1 - r2)2

Calculation:

Direct common tangent = D

As per the formula,

D = √ (352 - (25 - 20)2.
=> √ (352 - 52)
=> √(30 × 40)
=> √1200 = 20√ 3
Therefore The correct option is 3

Q56. Answer: (d) 136

Shortcut Trick
Use the direct algebraic identity: $a^3 - b^3 = (a - b)((a - b)^2 + 3ab)$
Substitute the given values: $4401 = 9 \times (9^2 + 3ab)$
=> 4401 ÷ 9 = 81 + 3ab
=> 489 − 81 = 3ab
=> 408 = 3ab => ab = 136
Therefore The correct answer is 136.
Alternate Method
Given:
Difference (a − b) = 9
Difference of cubes ($a^3 - b^3$) = 4401
Formula Used:
$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
Since $a^2 + b^2 = (a - b)^2 + 2ab$, we have:
$a^3 - b^3 = (a - b)((a - b)^2 + 3ab)$
Calculation:
=> $4401 = 9 \times (9^2 + 3ab)$
=> $4401 = 9 \times (81 + 3ab)$
=> 4401 ÷ 9 = 81 + 3ab
=> 489 = 81 + 3ab
=> 3ab = 489 − 81
=> 3ab = 408
=> ab = 408 ÷ 3
=> ab = 136
Therefore The correct answer is 136.
Additional Information
Cube of a Binomial
$(a - b)^3 = a^3 - b^3 - 3ab(a - b)$. This is a rearranged version of the identity used to find ab or $a^3 - b^3$.
Sum of Cubes Identity
$a^3 + b^3 = (a + b)(a^2 - ab + b^2) = (a + b)((a + b)^2 - 3ab)$.
Square of a Binomial
$(a - b)^2 = a^2 + b^2 - 2ab$ and $(a + b)^2 = a^2 + b^2 + 2ab$.

Q57. Answer: (c) 20 kg

Given:
Average weight of group A = 12 kg and group B = 24 kg
The ratio of the members in group A to group B is 1 : 2
Concept used:
Total value = average × numbers of observation
Calculation:
Let the number of A is x and B is 2x
Total numbers of observations is 2x + x = 3x
As per the question,
The combined average of both the groups is,
(12 × x + 24 × 2x) / 3x

=> 60x /3x = 20

Therefore The correct option is 3

Q58. Answer: (d) 1

Given:

A = 60°, B = 30°

Formula used:

Sin (A+B) = sin A cos B + cos A sin B

Calculation:

sin A cos B + cos A sin B

=> Sin (A+B)

=> Sin (60+30)

=> Sin 90° = 1

Therefore The correct option is 4

Q59. Answer: (c) 25.5

Given:

(a + 1/a) = 6

Formula used:

$(a + 1/a)^2 = a^2 + 1/a^2 + 2$

=> a2 + 1/a2 = (a + 1/a) 2 - 2

Calculation:

$3/4(a^2+1/(a^2))$

=> 3/4 ((a + 1/a) 2 - 2)

=> (3/4) ((6) 2 - 2)

=> (3/4) × (36 - 2)

=> (3/4) × (34)

=> 3 × (8.5) = 25.5

Therefore The correct option is 3

Q60. Answer: (b) Rs. 5,000

Shortcut Trick

B is a sleeping partner, so he receives his share only from the profit remaining after A's managing fee.

Investment Ratio of A and B = 30,000 : 50,000 = 3 : 5.

Remaining profit after A's 20% fee = 80% of Rs. 10,000 = Rs. 8,000.

B's share in profit = (5 / 8) × 8,000 = Rs. 5,000.

Therefore The correct answer is Rs. 5,000.

Alternate Method

Given:

A's investment = Rs. 30,000

B's investment = Rs. 50,000

Total Profit = Rs. 10,000

A's managing fee = 20% of total profit

Calculations:

=> Profit is divided by capital ratio since both invested for the same duration.

=> Capital Ratio of A and B = 30,000 : 50,000 = 3 : 5

=> Total Ratio parts = 3 + 5 = 8 parts

=> A's managing fee = 20% of Rs. 10,000 = Rs. 2,000

=> Remaining divisible profit = 10,000 − 2,000 = Rs. 8,000

=> B's share = (B's ratio ÷ Total ratio) × Divisible profit

=> B's share = (5 ÷ 8) × 8,000

=> B's share = 5 × 1,000 = Rs. 5,000

Therefore The correct answer is Rs. 5,000.

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Additional Information

Working Partner vs Sleeping Partner

A Working Partner actively manages the business and usually receives a salary or fixed percentage of profit before the division. A Sleeping Partner only invests capital and receives a share only from the remaining divisible profit.

Partnership Profit Distribution

Profit ratio is equal to the product of Capital and Time invested: Profit Ratio = (C1 × T1) : (C2 × T2). If the time period is the same, profit is distributed directly in proportion to their initial capitals.

Q61. Answer: (b) V

Calculation:

The total number of students in class 5 is, 65 + 58 = 123

The total number of students in class 6 is, 59 + 57 =116

The total number of students in class 7 is, 60 + 62 = 122

The total number of students in class 8 is, 61 + 59 = 120

Class V has the maximum number of students.

Q62. Answer: (d) 7/3 v

Given:

The ratio of milk: water = 2:1,

The solution must contain 90% milk in it.

Calculation:

Let the total volume of milk is v = 30 liter

So the quantity of milk initially is 30 × 2/3 = 20 liter

amount of milk tobe added is x liter

As per the question,

(20 + x) / 10 = 9/1

x = 90 -20

= 70 liter

Now the volume is v = 30

So the volume will be (70/30) v

=> 7/3 v

Therefore The correct option is 4

Q63. Answer: (b) (iii)

Concept used:

If a number has to be divided by 6 it has tobe divided by both 2 and 3

Calculation:

Here all these options are divided by 2

Again, (i) 1,97,232, (ii) 9,72,132 and (iv) 17,90,184 is divided by 3 also because sum of digit is divided by 3

But in option (iii) 8,00,552, the sum of digit is 8 + 5 + 5 + 2 = 20 which is not divided by 3

Therefore The correct option is 2

Q64. Answer: (d) 6.67%

Given:

A man buys a toy car for Rs. 225 and sells it for Rs. 210

Concept used:

Loss = cost price - selling price

Calculation:

The cost price is Rs 225 and selling price is Rs 210

The loss amount is 225 - 210 = Rs 15

The loss percentage is,

=> 15 / 225 × 100

=> 100 /15

=> 20/3 = 6.67%

Therefore The correct option is 4

Q65. Answer: (c) (2 √17-2)

Given:

In Δ ABC, PQ is parallel to the side BC. AP = QC, Ab = 16cm and AQ = 4cm

Concept used:

In Δ ABC, PQ parallel to the side BC

So AP / PB = AQ /QC

Calculation:

Let AP = QC = x, PB = 16 - x

As per the question,

x/(16-x)=4/x

=> $x^2 + 4x - 64 = 0$

=> x = -b ± √(b^2-4ac) over 2a

=> x = -4 ± √(4^2-4(1)(-64)) over 2(1)

=> x = -4 ± √(16+256) over 2

=> x = -4 ± √272 over 2

=> x = -4 ± 4√17 over 2

=> x = 2√17-2

Therefore The correct option is 3.

Q66. Answer: (c) Rs. 2,002

Shortcut Trick

The surface area of a sphere with diameter (d) is given by πd^2.

Surface Area = (22/7) × 7 × 7 = 154 m^2.

Total Painting Cost = Area × Rate = 154 × 13 = Rs. 2,002.

Therefore The correct answer is Rs. 2,002.

Alternate Method

Given:

Diameter (d) of the spherical tank = 7 m

Radius (r) = d ÷ 2 = 7 ÷ 2 = 3.5 m

Cost of painting = Rs. 13/m^2

Formula:

Surface Area of a sphere = $4\pi r^2$

Calculations:

=> Surface Area = 4 × (22/7) × $(3.5)^2$

=> Surface Area = 4 × (22/7) × (7/2) × (7/2)

=> Surface Area = 22 × 7 = 154 m^2

=> Total Cost of painting = Surface Area × Rate per m^2

=> Total Cost = 154 × 13

=> Total Cost = Rs. 2,002

Therefore The correct answer is Rs. 2,002.

Additional Information

Volume of a Sphere

The total space occupied by a sphere is given by $V = (4/3)\pi r^3$.

Surface Area of a Hemisphere

For a hemisphere of radius r, the Curved Surface Area (CSA) is $2\pi r^2$ and the Total Surface Area (TSA) is $3\pi r^2$.

Relationship between Diameter and Radius

The diameter (d) is twice the radius (r), i.e., d = 2r. In terms of diameter, the area of a sphere is πd^2.

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Q67. Answer: (d) √2

Given:

(sin θ - cos θ) = 0

Concept used:

If sin θ - cos θ = 0

then sin θ = cos θ

then θ = 45°

sin (180 - θ) = sin θ

sin (90 - θ) = cos θ

Calculation:

Now by putting θ = 45°

we get,

sin (π − θ) + sin (π/2 - θ)

=> sin (180 − 45) + sin (90 - 45)

=> sin (45) + cos (45)

=> 1/√2 + 1/√2 = √2

Therefore The correct option is 4

Q68. Answer: (d) 22.0625%

Given:

The price increased by 12 1/2 % and the sale increased by 8 1/2 %

Concept used:

Total revenue = Price × number of tickets sold

Calculation:

As we know 12 1/2 %= 1/8 and 8 1/2 % = 17/200

Let the previous price is Rs 8 now the increased price is 8 + 1 = Rs 9

Again, Let the previous number of people is 200 now the increased number is 200 +17 = 217

Previous total revenue is 8 × 200 = Rs 1600

Now total revenue is 217 × 9 = Rs 1953

So revenue is increased by

=> (1953 - 1600) / 1600 × 100

=> 353 /16 = 22.0625%

Therefore The correct option is 4

Q69. Answer: (d) 35 : 36

Calculation:

The respective number of girls studying English is, 70 × 50 /100 = 35

The respective number of girls studying computers is 90 × 40 /100 = 36

The respective ratio of the number of girls studying English to that of girls studying computers is 35 : 36

Therefore The correct option is 4

Q70. Answer: (a) 1/√3

Shortcut Trick

If A + B = 90°, then cot A × cot B = 1.

Here, (13° + 77°) = 90° and (27° + 63°) = 90°.

So, cot 13° × cot 77° = 1 and cot 27° × cot 63° = 1.

Expression = 1 × 1 × cot 60° = 1/√3

Therefore The correct answer is 1/√3.

Alternate Method

Given:

cot 13° × cot 27° × cot 60° × cot 63° × cot 77°

Formula Used:

cot (90° − θ) = tan θ

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tan θ × cot θ = 1

Calculations:

=> cot 13° × cot 27° × cot 60° × cot (90° − 27°) × cot (90° − 13°)

=> cot 13° × cot 27° × cot 60° × tan 27° × tan 13°

=> (cot 13° × tan 13°) × (cot 27° × tan 27°) × cot 60°

=> 1 × 1 × (1/√3)

=> 1/√3

Therefore The correct answer is 1/√3.

Additional Information

Complementary Angles

Trigonometric ratios of complementary angles: sin(90° − θ) = cos θ, sec(90° − θ) = csc θ, and tan(90° − θ) = cot θ.

Reciprocal Identities

The product of reciprocal ratios is always 1: sin θ × csc θ = 1, cos θ × sec θ = 1, and tan θ × cot θ = 1.

Standard Trigonometric Values

Important values of cotangent are: cot 30° = √3, cot 45° = 1, and cot 60° = 1/√3.

Q71. Answer: (b) Rs. 269.56

Shortcut Trick

In this case, since the Selling Price is equal to the List Price, the Gross Profit is simply the Discount amount.

Net Profit = Discount − Expenses

Discount = 20% of 1,574.80 = 314.96

Net Profit = 314.96 − 45.40 = 269.56

Therefore The correct answer is Rs. 269.56.

Alternate Method

Given:

List Price = Rs. 1,574.80

Discount Rate = 20%

Freight Expenses = Rs. 45.40

Selling Price = List Price

Formula Used:

Purchase Price = List Price − Discount

Total Cost Price = Purchase Price + Expenses

Profit = Selling Price − Total Cost Price

Calculations:

=> Discount = 20% of 1,574.80

=> Discount = (20 ÷ 100) × 1,574.80 = 314.96

=> Purchase Price = 1,574.80 − 314.96 = 1,259.84

=> Total Cost Price = 1,259.84 + 45.40 = 1,305.24

=> Selling Price = 1,574.80

=> Profit = 1,574.80 − 1,305.24 = 269.56

Therefore The correct answer is Rs. 269.56.

Additional Information

Total Cost Price (Effective CP)

It includes the Purchase Price plus all additional overhead expenses such as freight, transportation, repairs, and labor charges.

Discount on List Price

Discount is always calculated on the List Price (or Marked Price) unless specified otherwise. Net Price = LP × (100 − D)%.

Profit Percentage

Profit % = (Profit ÷ Total Cost Price) × 100. It measures the gain relative to the total investment.

Q72. Answer: (b) 23030 √23

Formula Used:

1. For x > 1

If $x+1/x=k$, then $x-1/x=\sqrt{(k^2-4)}$

2. If $x+1/x=k$, then $x^3+1/(x^3)=k^3-3k$

3. If $x-1/x=k$, then $x^3-1/(x^3)=k^3+3k$

4. $a^2 - b^2 = (a + b) (a - b)$

Calculation:

$x+1/x=5\sqrt{2}$

$\Rightarrow x-1/x = \sqrt{((5\sqrt{2})^2-4)} = \sqrt{46}$ ----(1)

$x+1/x=5\sqrt{2}$

$\Rightarrow x^3+1/(x^3) = (5\sqrt{2})^3-3(5\sqrt{2})$

$\Rightarrow x^3+1/(x^3) = 250\sqrt{2}-15\sqrt{2} = 235\sqrt{2}$ ----(2)

$x-1/x = \sqrt{46}$

$\Rightarrow x^3-1/(x^3) = (\sqrt{46})^3+3\sqrt{46}$

$\Rightarrow x^3-1/(x^3) = 46\sqrt{46}+3\sqrt{46} = 49\sqrt{46}$ ----(3)

Now,

$x^6-1/(x^6) = (x^3+1/(x^3)) (x^3-1/(x^3))$

$\Rightarrow x^6-1/(x^6) = 235\sqrt{2} \times 49\sqrt{46}$

$\Rightarrow x^6-1/(x^6) = 11515\sqrt{92} = 11515\sqrt{4}\times23$

$\Rightarrow x^6-1/(x^6) = 11515\times2\sqrt{23} = 23030\sqrt{23}$

Q73. Answer: (c) 60°, 40°, 80°

Concept used:

The sum of angles of triangle is 180°

Calculation:

From option 1 the sum of the angles is 60 + 70 + 80 = 210°

From option 2 the sum of the angles is 60 + 70 +3 0 = 160°

From option 3 the sum of the angles is 60 + 40 + 80 = 180°

Therefore The correct option is 3

Q74. Answer: (b) 12.5%

Given:

The market price is 20% above the cost price.

Concept used:

The discount is calculated on market price while profit is calculated on cost price.

Calculation:

Let the cost price is 100

Then the market price is 120

The selling price will be 100 × 105 /100 = Rs 105

So the discount will be 120 -105 = 15

So the discount percentage will be,

$\Rightarrow 15 /120 \times 100$

$\Rightarrow 100 /8 =12.5\%$

Therefore The correct option is 2

Q75. Answer: (c) Rs. 4,080

Shortcut Trick

Effective Rate of Interest for two half-yearly periods at 4% each (8% ÷ 2) = 4 + 4 + (4 × 4) ÷ 100 = 8.16%.

Compound Interest = 8.16% of Principal (Rs. 50,000).

CI = 50,000 × 0.0816 = Rs. 4,080.

Therefore The correct answer is Rs. 4,080.

Alternate Method

Given:

Principal (P) = Rs. 50,000

Annual Rate (R) = 8% per annum

Time (T) = 1 year

Formula Used:

Amount (A) = $P(1 + r/100)^n$, where r = rate per period and n = number of periods.

Calculations:

=> For half-yearly compounding, rate (r) = 8% ÷ 2 = 4% per half-year.

=> Number of periods (n) = 1 year × 2 = 2 half-years.

=> $A = 50,000 \times (1 + 4/100)^2$

=> $A = 50,000 \times (104/100) \times (104/100)$

=> $A = 50,000 \times 1.04 \times 1.04$

=> $A = 50,000 \times 1.0816$

=> A = Rs. 54,080

=> Compound Interest (CI) = Amount − Principal

=> CI = 54,080 − 50,000

=> CI = Rs. 4,080

Therefore The correct answer is Rs. 4,080.

Additional Information

Compounding Frequency

When interest is compounded half-yearly, the annual rate is divided by 2 and the time in years is multiplied by 2. For quarterly, divide rate by 4 and multiply time by 4.

Effective Rate Formula

For two successive periods with interest rates x% and y%, the net effective rate is given by (x + y + xy/100)%.

CI − SI Difference

The difference between Compound Interest and Simple Interest for 2 years (or 2 periods) is given by $P(r/100)^2$.

Q76. Answer: (a) Business

The solution is in Hindi. Read it online.

Q77. Answer: (c) eager

The solution is in Hindi. Read it online.

Q78. Answer: (a) Excess

The solution is in Hindi. Read it online.

Q79. Answer: (b) The horse was frightened by a sudden noise.

The correct answer is: The horse was frightened by a sudden noise.

Key Points

• In the active voice, the subject performs the action on the object. In this case, the sudden noise is causing the horse to be frightened.

• Active Voice Structure: Subject + Verb + Object

• Example: The chef cooked a delicious meal.

• In the passive voice, the focus shifts from the doer of the action (sudden noise) to the recipient of the action (the horse).

• The agent (sudden noise) that performs the action is introduced with the preposition "by."

• Passive Voice Structure: Object + was + V3 + By + Agent

• Example: A delicious meal was cooked by the chef.

**Therefore, the correct answer is option 2.

Q80. Answer: (d) must be used to feed

The correct answer is: must be used to feed

Key Points

• The original sentence contains a grammatical error in the use of the preposition "for" after "used."

• The correct construction in this context is "used to" when indicating the purpose or function of something.

• The verb "used" is typically followed by "to" to express the intended action or purpose.

• "For" is often used to express the beneficiary or recipient of an action.

• Example: Technology must be used to feed the changing forces in society.

• **Corrected Sentence: In today's world, technology must be used to feed the changing forces in society.

• The corrected sentence uses "to" after "used" to indicate the purpose or function of technology. This construction is more grammatically accurate.

Therefore, the correct answer is option 4.

Q81. Answer: (a) enchanting; scenery

The solution is in Hindi. Read it online.

Q82. Answer: (a) Sports TV is showing the matches live.

The correct answer is: Sports TV is showing the matches live.

Key Points

• In the passive voice, the emphasis is on the matches being the recipient of the action, and Sports TV is mentioned as the platform where the matches are being shown.

• Passive Voice Structure: Subject + Helping Verb + Main Verb + Adverb + Prepositional Phrase

• Example:

• The novel is being read by the students. (Passive)

• The students are reading the novel. (Active)

• In the active voice, the focus shifts to the doer of the action, which is Sports TV. Sports TV is actively showing the matches live.

• Active Voice Structure: Subject + Main Verb + Object+ Adverb

• Example:

• The chef is preparing a delicious meal. (Active)

• A delicious meal is being prepared by the chef. (Passive)

Therefore, the correct answer is option 1.

Q83. Answer: (a) EACBD

The correct answer is: EACBD

Key Points

• Part E: The sentence begins with the purpose or objective, indicating the need to stay ahead of crises. This sets the context for the rest of the sentence.

• Part A: Next, the sentence introduces the idea that, in order to achieve the goal stated in the first part (staying ahead of crises), it is necessary to understand the current situation.

• Part C: Following the need to understand the current situation, the sentence introduces the concept of where we are headed. This adds to the context and emphasizes the importance of both current status and future direction.

• Part B: The sentence then specifies that achieving the understanding of the current situation and future direction will require a significant investment.

• Part D: Finally, the sentence concludes by specifying the area where the investment is required, which is in the data and information infrastructure.

Therefore, the correct answer is option 1.

Q84. Answer: (b) compliment; complements

The solution is in Hindi. Read it online.

Q85. Answer: (a) D, B, C, A

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

Key Points

• D (Loki was represented as the companion of): The sentence begins by introducing Loki and establishing his role as the companion of the great gods Odin and Thor. This sets the context for Loki's interactions.

• B (the great gods Odin and Thor, helping them with): Following the introduction of Loki, the sentence explains that Loki assisted the great gods, Odin and Thor, indicating a positive aspect of his role.

• C (his clever plans but sometimes causing): The sentence then introduces a contrast by stating that Loki's clever plans were helpful but sometimes caused difficulties. This adds complexity to Loki's character.

• A (embarrassment and difficulty for them and himself): Finally, the sentence concludes by specifying the outcomes of Loki's actions, which include causing embarrassment and difficulty for both the gods and himself.

Therefore, the correct answer is option 1.

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Q86. Answer: (c) Excited

The solution is in Hindi. Read it online.

Q87. Answer: (c) Taunted

The solution is in Hindi. Read it online.

Q88. Answer: (b) Hearse

The solution is in Hindi. Read it online.

Q89. Answer: (c) in writing

The solution is in Hindi. Read it online.

Q90. Answer: (a) Oppose

The solution is in Hindi. Read it online.

Q91. Answer: (b) Is very expensive

The correct answer is: Is very expensive

Key Points

• The idiom "costs an arm and a leg" is used to convey that something is very expensive.

• The idiom employs a figurative expression suggesting that the cost is so high that it feels like one would have to pay a significant sacrifice, such as losing an arm and a leg.

• Example: Renovating the historic mansion turned out to be a beautiful project, but it cost us an arm and a leg.

Therefore, the correct answer is option 2.

Q92. Answer: (b) as creatively

The correct answer is: as creatively

Key Points

• The error in the original sentence lies in the use of the adjective "creative" instead of the adverb "creatively" when comparing her drawing skills.

• In English, when making comparisons with adverbs, the adverbial form is needed to maintain grammatical accuracy and parallel structure.

• Correct Sentence: She can draw very well and just as creatively.

• The original segment is corrected by substituting "creative" with "creatively" to maintain parallelism in the sentence.

• The corrected sentence ensures parallel construction by using "as creatively" to match the structure of "very well."

Therefore, the correct answer is option 2.

Q93. Answer: (a) Half a loaf is better than none.

The correct answer is: Half a loaf is better than none.

Key Points

• The idiom "Half a loaf is better than none" implies that it is better to have or receive something, even if it is not everything you desire or expect than to have nothing at all.

• It suggests that obtaining a partial or limited benefit is preferable to receiving nothing or experiencing a complete loss.

• Example: I was aiming for a higher salary, but they offered me less. Well, half a loaf is better than none. At least I have a job now.

??Therefore, the correct answer is option 1.

Additional Information

• Waste not, want not: Avoid wasting resources to prevent future shortages or needs.

• Where there is smoke, there is fire: If there are signs or indications of a problem, there is likely a real issue.

• A storm in a teacup: A situation where there is a lot of fuss or excitement over a trivial matter.

Q94. Answer: (c) It looks like our worst fears are coming true.

The correct answer is: It looks like our worst fears are coming true.

Key Points

• The original sentence expresses concern about fears becoming reality, using the term "bad" to describe the nature of these fears.

• The transformation into the superlative degree involves replacing "bad" with "worst."

• This is because the superlative degree is used to indicate the highest degree or extent of quality.

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• The use of "worst" intensifies the level of fear, suggesting that these fears are the most severe or distressing among the possibilities.

Therefore, the correct answer is option 3.

Q95. Answer: (a) D, B, C, A

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

Key Points

• Part D: The sentence begins by introducing the subject, "The Arthashastra," establishing what it is.

• Part B: Following the introduction, the sentence provides additional information about The Arthashastra, specifying that it is one of the earliest books in the world.

• Part C: Next, the sentence further describes the content of The Arthashastra, stating that it is devoted to statecraft.

• Part A: The final part of the sentence provides details about the style in which The Arthashastra is written, mentioning that it is in unadorned Sanskrit prose.

• The sequence ensures a coherent and meaningful presentation of information.

Therefore, the correct answer is option 1.

Q96. Answer: (b) runs

The solution is in Hindi. Read it online.

Q97. Answer: (c) face

The solution is in Hindi. Read it online.

Q98. Answer: (c) greets

The solution is in Hindi. Read it online.

Q99. Answer: (b) announcement

The solution is in Hindi. Read it online.

Q100. Answer: (b) touched

The solution is in Hindi. Read it online.

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