

STAFF SELECTION COMMISSION
COMBINED GRADUATE LEVEL (TIER-I)

SOLVED PAPER

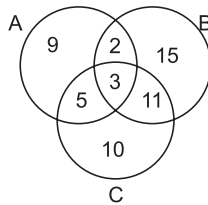
(4th March 2020: Shift-2)

Time Allotted: 1 hour

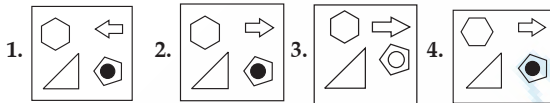
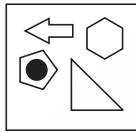
Max marks: 200

General Intelligence and Reasoning

1. In the given Venn diagram, 'Group A' represents those who can speak 'English', 'Group B' represents those who can speak 'Hindi', and Groups C represents those who can speak 'Marathi'. The numbers given in the diagram represent the number of persons in that particular category. How many persons can speak exactly two languages?

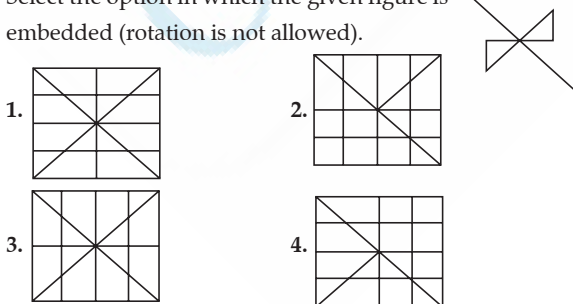


1. 21 2. 18 3. 3 4. 12
2. Select the option in which two words share the same relationship as that shared by the given pair of words.
Turmeric : Spices
1. Dates : Dry Fruits 2. Apricot : Pear
3. Fig : Cashew Nuts 4. Nutmeg : Chilli Flakes
3. Select the correct mirror image of the given figure when a mirror is placed on the right of the figure.



4. Product A is costlier than product B by ₹ 2. If the price of product A is increased by two times the price of product B, the new price of product A becomes ₹ 17. What is the price of product B?
1. ₹ 5 2. ₹ 3 3. ₹ 6 4. ₹ 7
5. Select the number that can replace the question mark (?) in the following series.
4,25, 121, ?, 529, 961
1. 289 2. 256 3. 324 4. 361
6. Select the option that is related to the third number in the same way as the second number is related to the first number.
6 : 252 :: 5 : ?
1. 150 2. 175 3. 225 4. 125

7. Select the option in which the given figure is embedded (rotation is not allowed).



8. In a certain code language, 'GUM' is coded as '49441169'. How will 'WAX' be coded in that language?

1. 2891400 2. 8412525 3. 5291576 4. 3611121

9. 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).

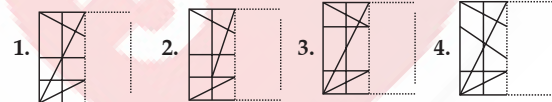
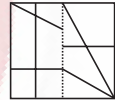
Statements:

1. All cars are trucks. 2. Some buses are cars.

Conclusion:

- I. All cars are buses.
II. Some buses are trucks.
III. All trucks are buses.
1. Only conclusions II and III follow.
2. Only conclusion I follows.
3. Only conclusion II follows.
4. Only conclusions I and III follow.

10. Select the option that depicts how the given transparent sheet of paper would appear if it is folded at the dotted line.



11. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd letter-cluster.

1. DVR 2. GMF 3. HFE 4. OVG

12. 'Grapes' is related to 'Fruit' in the same way as 'pepper' is related to '_____'.
1. Pulses 2. Spices 3. Cereals 4. Dry Fruits

13. Select the letter that can replace the question mark (?) in the following series.
W, Q, ?, H, E, C

1. K 2. L 3. N 4. M

14. Four words have been given out of which three are alike in some manner and one is different. Select the odd word.

1. Surat 2. Rajkot
3. Ahmedabad 4. Jhalrapatan

15. Arrange the following words in a logical and meaningful order.

1. Micron 2. Metre
3. Mile 4. Millimetre
5. Kilometre 6. Centimetre

1. 4-6-2-5-1-3 2. 1-4-6-2-3-5 3. 4-6-2-5-3-1 4. 1-4-6-2-5-3

16. In a certain code language, 'PYTHON' is written as 'LMFRWN'. How will 'RHYTHM' be written in that language?

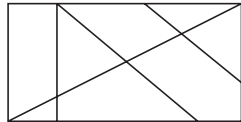
1. MFRWFX 2. KFRWFP 3. MFRWFT 4. NFRWFS

17. Which two digits should be interchanged to make the given equation correct?

$$32 \div 6 + 26 - 13 \times 6 = 54$$

1. 3 and 6 2. 2 and 3 3. 6 and 2 4. 3 and 1

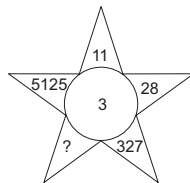
18. How many triangles are there in the given figure?



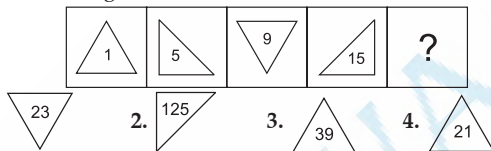
1. 12 2. 11 3. 9 4. 10
19. Select the letter-cluster that can replace the question mark (?) in the following series.
AOS, CQU, ?, GUY, IWA
1. DRV 2. FSX 3. ESW 4. GSW
20. Study the given pattern carefully and select the number that can replace the question mark (?) in it.

10	3	14
49	15	68
33	19	?

1. 27 2. 25 3. 28 4. 29
21. Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the number-pair that is different from the rest.
1. 11 – 143 2. 8 – 138 3. 5 – 155 4. 6 – 174
22. Study the given pattern carefully and select the number that can replace the question mark (?) in it.
1. 4126 2. 444 3. 464 4. 446
23. A + B means 'B is the sister of A'.
A – B means 'A is the father of B'.
A × B means 'B is the son of A'.
A ÷ B means 'B is the husband of A'.
If $E \div F - H + J \times G + D$, then how is D related to H?



1. Uncle 2. Niece 3. Father 4. Aunt
24. Three different positions of the same dice are shown. Select the symbol that will be on the face opposite to the one showing '@'.
1. & 2. # 3. ! 4. <
25. Select the figure that can replace the question mark (?) in the following series.



General Awareness

26. Georg Simon Ohm in whose honour we have the famous Ohm's Law, hailed from which country?
1. Russia 2. Spain 3. Poland 4. Germany
27. Which Union Minister of Home Affairs released a book titled 'Karmayodha Granth' in New Delhi?
1. P. Chidambaram 2. Sushilkumar Shinde
3. Amit Shah 4. Rajnath Singh
28. Who was the first Governor of Madhya Pradesh?
1. B.D. Sharma 2. N.N. Wanchu
3. G.P. Singh 4. Dr. Sitaramayya
29. Which part of the body is responsible for the manufacture of red blood cells?
1. Brain 2. Lungs
3. Bone marrow 4. Heart
30. Which city of India is known as 'The Athens of the East'?
1. Kochi 2. Allahabad 3. Patna 4. Madurai
31. Methane is a colourless, odourless, non-toxic but flammable gas. What is its common name?
1. Blue vitriol 2. Heating gas
3. Marsh gas 4. Laughing gas
32. In which state did the second phase of Intensified Mission Indradhanush (IMI) 2.0 begin in January 2020?
1. Uttar Pradesh 2. Punjab
3. Kerala 4. Bihar
33. Which of the following is NOT a twin city of India?
1. Cuttack and Bhubaneswar
2. Hubli and Dharwad
3. Thrissur and Thiruvalla
4. Ahmedabad and Gandhinagar
34. John Maynard Keynes, best known for his economic theories (Keynesian economics), hailed from which country?
1. Sweden 2. Denmark 3. Australia 4. England
35. In the sequence of planets in the solar system, which planet comes in between Mars and Saturn?
1. Uranus 2. Mercury 3. Venus 4. Jupiter
36. In which state has the Jawara Dance, a dance form to celebrate wealth, originated?
1. Gujarat 2. Kerala
3. Madhya Pradesh 4. Rajasthan
37. In which city was the Jhanda Satyagraha or Flag Satyagraha of 1923 held?
1. Calcutta 2. Nagpur
3. Ahmedabad 4. Bombay
38. The development of a fruit without fertilisation is called _____.
1. Gametogamy 2. Parthenocarpy
3. Hybridogenesis 4. Apomixis
39. Which city in India is world renowned for one of the most traditional embroidery styles, Chikankari?
1. Udaipur 2. Hyderabad
3. Ahmedabad 4. Lucknow
40. Who is the first Indian to bag two International hat-tricks in cricket?
1. Rohit Sharma 2. Virat Kohli
3. Kedar Jadhav 4. Kuldeep Yadav
41. Freedom fighter Sucheta Kripalani became the first woman chief minister of which state?
1. Uttar Pradesh 2. Rajasthan
3. Andhra Pradesh 4. Gujarat
42. In which period was the legendary Victoria Terminus station (currently Chhatrapati Shivaji Maharaj Terminus), Mumbai built?
1. 1878 to 1888 2. 1911 to 1921
3. 1933 to 1943 4. 1843 to 1853
43. Who chaired the sixth meeting of the Island Development Agency in New Delhi in January 2020?
1. Narendra Modi 2. Nirmala Sitharaman
3. Amit Shah 4. Nitin Gadkari
44. Who was chosen as foreign secretary of India in January 2020?
1. Ranjan Mathai 2. Harsh Vardhan Shringla
3. Vijay Keshav Gokhale 4. Nirupama Rao
45. Jellyfish are an example of which type of phylum?
1. Phylum-Cnidaria 2. Phylum-Porifera
3. Phylum-Protozoa 4. Phylum-Ctenophora
46. Which Tennis star will have a Swiss coin minted in his/her honour?
1. Serena Williams 2. Rafael Nadal
3. Novak Djokovic 4. Roger Federer
47. Which US based Indian topped the Forbes India's '20 people to watch in the 2020s' list?
1. Hasan Minhaj 2. Prashant Kishor
3. Mahua Moitra 4. Dushyant Chautala
48. Which of the following is NOT a nationalised bank?
1. State Bank of India 2. Punjab National Bank
3. United Bank of India 4. Punjab and Sind Bank

49. Who was appointed as the Managing Director of the International Monetary Fund in October, 2019?
 1. Kristalina Georgieva 2. Christine Lagarde
 3. Rodrigo Rato 4. Dominique Strauss-Kahn
50. Which pillar inscriptions recorded the achievements of Samudra Gupta, who was known as the 'Napoleon of India' for his conquests?
 1. Iron Pillar 2. Vijaya Stambha
 3. Allahabad Pillar 4. Sun Pillar

Quantitative Aptitude

51. One-third of goods are sold at a 15% profit, 25% of the good are sold at a 20% profit and the rest at a 20% loss. If the total profit of ₹ 138.50 is earned on the whole transaction, then the value (in ₹) of the goods is:
 1. ₹ 8,310 2. ₹ 7,756 3. ₹ 8,030 4. ₹ 8,587
52. If $7 \sin^2 \theta - \cos^2 \theta + 2 \sin \theta = 2$, $0^\circ < \theta < 90^\circ$, then the value of $\frac{\sec 2\theta + \cot 2\theta}{\operatorname{cosec} 2\theta + \tan 2\theta}$ is:
 1. $\frac{2\sqrt{3}+1}{3}$ 2. $\frac{2}{5}(1+\sqrt{3})$ 3. $\frac{1}{5}(1+2\sqrt{3})$ 4. 1
53. Two chords AB and CD of a circle are produced to intersect each other at a point P outside the circle. If AB = 7 cm, BP = 4.2 cm and PD = 2.8 cm, then the length of CD is:
 1. 15.8 cm 2. 14 cm 3. 14.6 cm 4. 12 cm
54. The given table represents the revenue (in ₹ crores) of a company from the sale of four products A, B, C and D in 6 years. Study the table carefully and answer the question that follows.

Product \ Years	2012	2013	2014	2015	2016	2017
A	98	94	80	95	110	115
B	74	96	92	84	98	86
C	82	98	96	88	93	103
D	74	102	92	93	97	102

The number of years in which the revenue of the company from the sale of product D is more than the average revenue from the sale of product A over six years is:

1. 4 2. 1 3. 2 4. 3
55. If $P = \frac{x^4 - 8x}{x^3 - x^2 - 2x}$, $Q = \frac{x^2 + 2x + 1}{x^2 - 4x - 5}$ and $R = \frac{2x^2 + 4x + 8}{x - 5}$, then $(P \times Q) \div R$ is equal to:
 1. $\frac{1}{2}$ 2. 4 3. 2 4. 1
56. If the 6-digit numbers $x35624$ and $1257y4$ are divisible by 11 and 72, respectively, then what is the value of $(5x - 2y)$?
 1. 13 2. 14 3. 10 4. 12
57. If $a + b + c = 7$ and $ab + bc + ca = -6$, then the value of $a^3 + b^3 + c^3 - 3abc$ is:
 1. 469 2. 472 3. 463 4. 479
58. The given table represents the revenue (in ₹ crores) of a company from the sale of four products A, B, C, and D in 6 years. Study the table carefully and answer the question that follows:

Product \ Years	2012	2013	2014	2015	2016	2017
A	98	94	80	95	110	115
B	74	96	92	84	98	86
C	82	98	96	88	93	103
D	74	102	92	93	97	102

- The total revenue of the company from the sale of products B, C and D in 2014 is what percentage of the total revenue from the sale of products C and D in 6 years?
 1. 25 2. 28 3. 18 4. 20
59. The expression $3 \sec^2 \theta \tan^2 \theta + \tan^6 \theta - \sec^6 \theta$ is equal to:
 1. -2 2. 2 3. -1 4. 1
60. PRT is a tangent to a circle with centre O, at the point R on it. Diameter SQ of the circle is produced to meet the tangent at P and QR is joined. If $\angle QRP = 28^\circ$, then the measure of $\angle SPR$ is:
 1. 62° 2. 29° 3. 32° 4. 34°
61. The income of A is 60% less than that of B, and the expenditure of A is equal to 60% of B's expenditure. If A's income is equal to 70% of B's expenditure, then what is the ratio of the savings of A and B?
 1. 3 : 8 2. 4 : 7 3. 2 : 15 4. 5 : 9
62. In $\triangle ABC$, D and E are the points on sides AC and BC, respectively such that $DE \parallel AB$. F is a point on CE such that $DF \parallel AE$. If $CE = 6$ cm, and $CF = 2.5$ cm, then BC is equal to:
 1. 12 cm 2. 14 cm 3. 14.4 cm 4. 15.6 cm
63. The difference in compound interest on a certain sum at 10% p.a. for one year, when the interest is compounded half yearly and yearly, is ₹ 88.80. What is the simple interest on the same sum for $1\frac{2}{3}$ years at the same rate?
 1. ₹ 5,980 2. ₹ 5,916 3. ₹ 5,986 4. ₹ 5,920
64. A cylindrical vessel of radius 30 cm and height 42 cm is full of water. Its contents are emptied into a rectangular tub of length 75 cm and breadth 44 cm. The height (in cm) to which the water rises in the tub is: (Take $\pi = \frac{22}{7}$)
 1. 30 2. 45 3. 36 4. 40
65. The value of $\frac{\tan^2 \theta - \sin^2 \theta}{2 + \tan^2 \theta + \cot^2 \theta}$ is:
 1. $\operatorname{cosec}^6 \theta$ 2. $\cos^4 \theta$ 3. $\sin^6 \theta$ 4. $\sec^4 \theta$
66. The given table represents the revenue (in ₹ crores) of a company from the sale of four products A, B, C and D in 6 years. Study the table carefully and answer the question that follows.

Product \ Years	2012	2013	2014	2015	2016	2017
A	98	94	80	95	110	115
B	74	96	92	84	98	86
C	82	98	96	88	93	103
D	74	102	92	93	97	102

By what percentage is the total revenue of the company from the sale of products A, B, and D in 2012 and 2013 more than the total revenue from the sale of product B in 2013 to 2016? (correct to one decimal place)

1. 45.4 2. 31.2 3. 43.6 4. 44.5
67. The ratio of boys and girls in a group is 7 : 6. If 4 more boys join the group and 3 girls leave the group, then the ratio of boys to girls becomes 4 : 3. What is the total number of boys and girls initially in the group?
 1. 91 2. 117 3. 104 4. 78
68. The times taken by a boat to travel 13 km downstream is the same as time taken by it to travel 7 km upstream. If the speed of the stream is 13 km/h, then how much time (in hours) will it take to travel a distance of 44.8 km in still water?
 1. $5\frac{3}{5}$ 2. $4\frac{13}{25}$ 3. $5\frac{2}{5}$ 4. $4\frac{12}{25}$

69. The given table represents the revenue (in ₹ crores) of a company from the sale of four products A, B, C and D in 6 years. Study the table carefully and answer the question that follows.

Product \ Years	2012	2013	2014	2015	2016	2017
A	98	94	80	95	110	115
B	74	96	92	84	98	86
C	82	98	96	88	93	103
D	74	102	92	93	97	102

What is the ratio of the total revenue of the company in 2014 from the sale of all the four products to the total revenue from the sale of product C in 2014 to 2017?

1. 14 : 23 2. 7 : 10 3. 7 : 9 4. 18 : 19
70. The average weight of some students in a class was 58.4 kg. When 5 students having the average weight 62.8 kg joined the class, the average weight of all students in the class increased by 0.55 kg. The number of students initially in the class were:
1. 25 2. 40 3. 35 4. 30
71. The value of $\frac{5\frac{1}{2} \div 3\frac{2}{3} \text{ of } \frac{1}{4} + (5\frac{1}{9} - 7\frac{7}{8} \div 9\frac{9}{20}) \times \frac{9}{11}$ is:
1. $1\frac{4}{5}$ 2. $9\frac{1}{2}$ 3. $3\frac{4}{5}$ 4. $1\frac{9}{10}$
72. In ΔPQR , $\angle Q = 85^\circ$ and $\angle R = 65^\circ$. Points S and T are on the sides PQ and PR, respectively such that $\angle STR = 95^\circ$, and the ratio of QR and ST is 9 : 5. If PQ = 21.6 cm, then the length of PT is:
1. 12 cm 2. 10.5 cm 3. 9.6 cm 4. 9 cm
73. A and B, working together, can complete a work in d days. Working alone, A takes $(8 + d)$ days and B takes $(18 + d)$ days to complete the same work. A works for 4 days. The remaining work will be completed by B alone in:
1. 18 days 2. 24 days 3. 16 days 4. 20 days
74. The marked price of an article is ₹ 740. After two successive discounts of 15% and $x\%$, it is sold for ₹ 566.10. What is the value of x ?
1. 10 2. 12 3. 5 4. 20
75. If $30x^2 - 15x + 1 = 0$, then what is the value of $25x^2 + (36x^2)^{-1}$?
1. $\frac{9}{2}$ 2. $\frac{55}{12}$ 3. $\frac{65}{12}$ 4. $6\frac{1}{4}$

English Comprehension

76. Select the word which means the same as the given group of words.
A sudden rush of a large number of frightened people or animals.
1. Stampede 2. Lunacy 3. Scapegoat 4. Recluse
77. Select the most appropriate meaning of the given idiom.
The bee's knees
1. Problematic 2. Foolish
3. Extraordinary 4. Observant
78. Select the most appropriate word to fill in the blank.
A reward is a _____ which motivates a person to achieve excellence in his field.
1. recognition 2. memorial 3. collection 4. monument
79. Select the most appropriate ANTONYM of the given word.
Obsolete.
1. Rigid 2. Outdated 3. Remote 4. Recent.
80. Select the word which means the same as the given group of words.

One who loads and unloads ships

1. Spinster 2. Stevedore 3. Rustic 4. Captain
81. Select the correctly spelled word.
1. Conscinteous 2. Encouragement
3. Comotion 4. Embarasment

Comprehension:

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

Discipline is doing any with rules and regulations. It is (1) _____ misunderstood as a restriction to freedom but it makes our life organised. Discipline is a (2) _____ for students and people in different professions. A discipline person always (3) _____ in each and every field of life. Disciplined people (4) _____ is discipline society and a powerful nation. Discipline should not be (5) _____ upon the people, rather it should come from within.

82. Select the most appropriate option for blank number (1).
1. proudly 2. slowly 3. usually 4. happily
83. Select the most appropriate option for blank number (2).
1. disadvantage 2. virtue
3. curse 4. dream
84. Select the most appropriate option for blank number (3).
1. succeed 2. succeeds 3. success 4. successful
85. Select the most appropriate option for blank number (4).
1. had made 2. makes 3. make 4. made
86. Select the most appropriate option for blank number (5).
1. adorned 2. imposed 3. curbed 4. reposed
87. Select the most appropriate ANTONYM of the given word.
Derogatory
1. Intricate 2. Complimentary
3. Insulting 4. Depreciating
88. Select the most appropriate word to fill in the blank.
The government should take stringent steps against terrorists and foil their _____ designs.
1. exemplary 2. conducive
3. benevolent 4. malicious
89. Select the most appropriate meaning of the given idiom.
To throw a fit
1. Faint and fall down 2. Become unconscious
3. Express extreme anger 4. Caution someone about fitness
90. In the sentence, identify the segment which contains the grammatical error.
Those who follow a healthy routine is likely enjoying good health.
1. Those who follow 2. a healthy routine
3. is likely enjoying 4. good health
91. Given below are four jumbled sentences. Out of the given options, pick the one that gives their correct order.
A. They can then purchase them on subsidised rates with additional loan facilities.
B. It will import technologically advanced medical instruments and provide them to entrepreneurs.
C. The Indian Government has announced certain facilities in the budget session.
D. This will help in strengthening the economic condition of entrepreneurs.
1. BDCA 2. DCAB 3. CBAD 4. CADB
92. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No improvement'.
The mathematical calculation of this problem is easy than a previous one.
1. easiest than the 2. No Improvement
3. easy than the 4. easier than the
93. Select the most appropriate synonym of the given word.
Acknowledgement
1. Confusion 2. Elimination
3. Compensation 4. Confirmation

94. In the sentence, identify the segment which contains the grammatical error.
When I reached the cinema hall, the movie had already began.
1. the cinema hall
 2. When I reached
 3. the movie had
 4. already began
95. Select the correct indirect form of the given sentence.
The teacher said to me, "You have not submitted the assignment."
1. The teacher told to me that I have not submitted that assignment.
 2. The teacher said to me that I have not submitted the assignment.
 3. The teacher said me that I had not submitted the assignment.
 4. The teacher told me that I had not submitted the assignment.
96. Select the correctly spelt word.
1. Employeed
 2. Rehersal
 3. Veterinary
 4. Seperable
97. Select the correct passive form of the given sentence.
His elder sister taught him English.
1. His elder sister is taught English by him.
 2. He is being taught English by his elder sister.
 3. He was taught English by his elder sister.
 4. He has been taught English by his elder sister.
98. Select the most appropriate option to substitute the underlined segment in the given sentence.
No effort has been made by the Indian cricket team to cash off on its vibrant image in the World Cup.
1. for cash through in
 2. for cashing off on
 3. to cash in on
 4. to cash up on
99. Given below are four jumbled sentences. Out of the given options, pick the one that gives their correct order.
- A. This is because of its aroma, flavour and variety in the market.
 - B. Thus, it leads to poor health and mental disorders among children.
 - C. Children as well as teenagers are tempted towards junk food.
 - D. It has no or negligible nutritional value and high content of sugar and salt.
1. CDAB
 2. BCDA
 3. CADB
 4. ACDB
100. Select the most appropriate synonym of the given word.
Prodigal
1. Trivial
 2. Extravagant
 3. Arrogant
 4. Humble

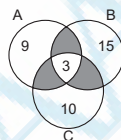
Answer Key

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

Answers with Explanations

General Intelligence and Reasoning

1. **Option (2) is correct.**
Those persons who can speak exactly two languages lie in the intersection area of AB, BC, AC viz. $2 + 11 + 5 = 18$.
2. **Option (1) is correct.**
There are different type of Spices and Turmeric is one of them, in the same way, there are different types of Dry Fruits and Dates is one of them.
3. **Option (2) is correct.**
When the mirror is placed in the right position, then all the objects appear on the left will appear on the right side, and objects appear on the right side will appear on the left side.
4. **Option (1) is correct.**
Let the price of product $b = x$ and price of product A will be $x + 2$
According to the question, we get
- | | |
|------------------|------|
| $(x + 2) + 2(x)$ | = 17 |
| $x + 2 + 2x$ | = 17 |
| $3x + 2$ | = 17 |
| $3x$ | = 15 |
| x | = 5 |
- or
- Using options, we can solve
From option (1)
- | | | |
|------------|------------|-------------|
| B | = 5, A = 7 | (A = B + 2) |
| $7 + 2(5)$ | = 17 | |



5. **Option (1) is correct.**

$(2)^2$	= 4
$(5)^2$	= 25
$(11)^2$	= 121
$(17)^2$	= 289
$(23)^2$	= 529
$(31)^2$	= 961

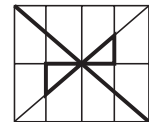
A square of an alternate prime number is used in the pattern.

6. **Option (1) is correct.**

The pattern is $(6)^3 + (6)^2 = 252$
$(5)^3 + (5)^2 = 150$

7. **Option (3) is correct.**

In the above diagram, the embedded figure is highlighted.



8. **Option (3) is correct.**

GUM is coded as G and placed at 7th position in the English alphabet and $7^2 = 49$

U is placed at 21 and $21^2 = 441$.

Similarly, M is placed at 13 and $13^2 = 169$.

In the same way, WAX will be coded,

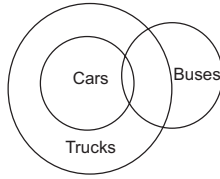
W is placed at 23 and $23^2 = 529$

and A positioned at 1 and $1^2 = 1$ similarly X is placed at 24 and $24^2 = 576$.

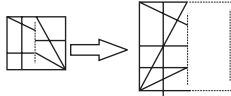
Hence, WAX will be coded as 5291576.

9. Option (3) is correct.

From the above Venn diagram, only conclusion II follows.



10. Option (1) is correct.



11. Option (3) is correct.

Find the position of all letters in the English alphabet

From option 1: $D = 4, V = 22, R = 18$

Here, $18 + 4 = 22$ ($R + D$) which is the position of 2nd letter.

From option 2: $G = 7, M = 13, F = 6$

$G + F = 7 + 6 = 13$ which is the position of 2nd letter.

From option 3: $H = 8, F = 6, E = 5$

$H + E = 8 + 5 = 13$ as $13 \neq 6$

12. Option (2) is correct.

Grapes is one of the type of Fruits. Similarly, Pepper is one of the type of Spices.

13. Option (2) is correct.

$W - 6 \rightarrow Q$

$Q - 5 \rightarrow L$

$L - 4 \rightarrow H$

$H - 3 \rightarrow E$

$E - 2 \rightarrow C$

14. Option (4) is correct.

Jhalrapatan is the town, and the remaining are all cities.

15. Option (4) is correct.

We can arrange them in their respective ascending orders of size.

Options 1 and 3 are ruled out because micron is the smallest size, followed by millimetre. Now we'll look for the longest, which is a mile, and the shortest, which must be 3.

Hence, 1-4-6-2-5-3 is the correct answer.

16. Option (2) is correct.

17. Option (3) is correct.

Using option 3, we get

$$36 \div 2 + 62 - 13 \times 2$$

$$= 18 + 62 - 26$$

$$= 80 - 26 = 54$$

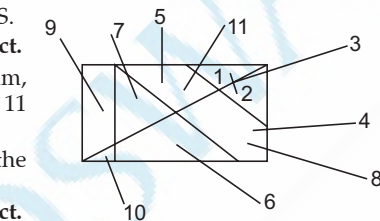
Hence, LHS = RHS.

18. Option (2) is correct.

In the above diagram, there are total 11 triangles.

Hence, 11 is the correct answer.

19. Option (3) is correct.



- A + 2 — C
- C + 2 — E
- E + 2 — G
- G + 2 — I
- O + 2 — Q
- Q + 2 — S
- S + 2 — U
- U + 2 — W
- S + 2 — U
- U + 2 — W
- W + 2 — Y
- Y + 2 — A

Hence, 'ESW' is the correct answer.

20. Option (3) is correct.

Taking row by row, we get,

$$\text{Row 1 : } (10 - 3) \times 2 = 14$$

$$\text{Row 2 : } (49 - 15) \times 2 = 68$$

$$\text{Row 3 : } (33 - 19) \times 2 = 28$$

21. Option (2) is correct.

As 143 is divisible by 11 and 155 is divisible by 5. Similarly, 174 is divisible by 6 but 138 is not divisible by 8.

Hence, 8-138 is correct answer.

22. Option (3) is correct.

The pattern follows $11 = 1(1^3)$

$$28 = 2(2^3)$$

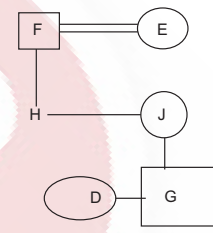
$$327 = 3(3^3)$$

$$464 = 4(4^3)$$

$$5,125 = 5(5^3)$$

23. Option (2) is correct.

In the blood relationship tree, a single straight line represents the brother-sister relationship, while two straight lines represent the husband-wife relationship, e.g., D and G are brother and sister, and the circle represents the female gender and the rectangle represents the male gender and there are generations in the first generation and there will always be brother sister and then in the above generation there will be father mother; similarly, in the above there will be grandfather and grandmother.



From the above blood relation tree, D is female and D is the niece of H.

Hence, niece is the correct answer.

24. Option (2) is correct.

First, we will look for signs that are in both the cubes.

& is in both 2nd and 3rd, and when we start writing them clockwise, we get

& @ *
& # <

25. Option (4) is correct.

The series follows the vowel position in the English alphabet: A, E, I, O, U.

- A → 1
- E → 5
- I → 9
- O → 15
- U → 21

General Awareness

26. Option (4) is correct.

Ohm was born in Erlangen, Bavaria, on March 16, 1789. He conducted experiments on the newly discovered phenomenon of electromagnetism while teaching at Jesuit College. He observed the magnetic flux's dependence on the conductor material. Later, in 1827, he passed a law establishing the relationship between voltage, electric current, and resistance, but he was heavily criticised for it and was fired. However, the significance of his research was recognised in 1841, and in 1849 he was offered a position as Experimental Physics Professor at the University of Munich. The resistance unit 'Ohm' was named after him. Ohm's Law states that the amount of electric current passing through a conductor is directly proportional to the voltage across its two ends.

27. Option (3) is correct.

Amit Shah published the book Karmyodha Granth. The book will be available on January 7, 2020. The book is based

on Honourable Prime Minister Narendra Modi's life. During the book's launch, Amit Shah addressed the audience and discussed various phases of the Prime Minister's life. Mr Shah also described a Karmyodha as a man with a beating heart for people, a statesman, a hard taskmaster, an able administrator, and an ideal leader. He also discussed the difficulties Mr Modi faced while living in poverty.

28. Option (4) is correct.

Pattabhi Sitaramayya served as Madhya Pradesh's first governor from 1952 to 1957. Bhogaraju Pattabhi Sitaramayya was a political leader and Indian independence activist from the state of Andhra Pradesh. On November 28, 1923, he founded Andhra Bank in Machilipatnam, which is now one of India's major commercial banks. Its present headquarter is in Hyderabad.

29. Option (3) is correct.

Bone marrow is the soft tissue found within a bone's medullary cavities. It is primarily found in the hip and thigh bones. Bone marrow generates immature cells known as stem cells, which can later transform into different types of cells. Bone marrow produces two types of stem cells: mesenchymal and hematopoietic. Mesenchymal cells become fat, cartilage, and bones, whereas hematopoietic cells become blood cells (RBC, WBC and Platelets).

30. Option (4) is correct.

Madurai is a city in Tamil Nadu, located on the banks of the Vaigai River. It first appears in the texts of Kautilya and Megasthenes in the third century BC. The ancient city served as the capital of the Pandya Kingdom. The city was designed in the shape of a Lotus. The magnificent Hindu temples of Madurai, such as Meenakshi Amman Temple and Koodal Azhagar Temple, are the main attractions.

31. Option (3) is correct.

Methane, with the chemical formula CH_4 , is the hydrocarbon with the lowest molecular mass. Marsh gas gets its name from the large amounts of it that are released from marshes where anaerobic bacteria decompose matter. Alessandro Volta discovered it in 1776. It is the primary component of both biogas and compressed natural gas (CNG). It is a greenhouse gas with 28–36 times the global warming potential of CO_2 . Methane emissions from paddy fields are also significant.

32. Option (1) is correct.

The mission Intensified Mission Indradhanush 2.0 is based on Intensified Mission Indradhanush, which was previously based on Mission Indradhanush. It aims to complete immunisation in all 272 identified districts across 27 states. This mission was to be completed in four phases, the first beginning in December 2019 and continuing in January, February and March 2020.

33. Option (3) is correct.

Thrissur and Thiruvalla are not India's twin cities. Thrissur and Thiruvalla both cities are located in the state of Kerala. The name Thrissur is thought to be an anglicised form of the original name of the city, Thrissivaperur. The word Thrissivaperur means 'Town of the Sacred Siva'. It was also referred to as 'Vrishabhadiapuram' and 'Ten Kailasam'. Saktan Tanpuram is regarded as the city's architect. Thiruvalla was originally known as 'Valla Vai,' a town on the Vallapuzha river (now Manimala).

34. Option (4) is correct.

John Maynard Keynes was born in England. John Maynard Keynes was born in Cambridge on June 5, 1883. He finished his Mathematics degree and joined the British Civil Service. He represented the British Treasury at the Conference of Versailles but resigned in protest of Germany's heavy fine. In his book 'The Economic Consequences of Peace,' he expressed his concerns about the fine imposed on Germany. He published a book titled 'A Tract on Monetary Reform' in

1923. The publication of 'The General Theory of Employment, Interest, and Money' in 1936 marked a watershed moment in economics as a subject.

35. Option (4) is correct.

More than 90% of Jupiter's mass is made up of swirling gases, mostly hydrogen and helium; storms of incredible magnitude rage and swirl in this incredibly thick, dense atmosphere. The Great Red Spot is the largest of these storms, and it is frequently visible from Earth with even a small telescope. Jupiter's day lasts only 9 hours and 56 minutes, making it the solar system's fastest-rotating planet. Jupiter has a volume of 1,300 times that of Earth and a mass 320 times that of Earth. Jupiter has a rocky core composed of material similar to Earth's crust and mantle.

36. Option (3) is correct.

Madhya Pradesh is where the Jawara Dance originated. Jawara Dance, also known as Harvest Dance, is popular in Madhya Pradesh's Bundelkhand region. This dance is performed by both men and women to celebrate their wealth and happiness after harvesting their Jowar crop. Women balance the Jawara-filled baskets on their heads while dancing. This dance is performed while wearing brightly coloured clothing and jewellery.

37. Option (2) is correct.

Nagpur was the site of the Jhanda Satyagrah. The Satyagraha began in Jabalpur and ended in the city of Nagpur. Under Sunderlal's leadership, the tricolour was first hoisted in Bilaspur's town hall in March 1923. However, following Sunderlal's arrest, the leadership was handed over to Mahatma Bhagwandin. Because he had a popular base in Nagpur, the spark shifted from Jabalpur to Nagpur. On the 13th of April, the anniversary of the Jallianwala Bagh Massacre, a flag March was organised, which was met with opposition from residents of civil lines. Following this, the Satyagraha was brutally suppressed, with approximately 17,000 people arrested, but a few volunteers kept the nonviolent Satyagraha alive. Satyagrah was finally put to an end on August 17, 1923, under the leadership of Sardar Patel.

38. Option (2) is correct.

Parthenocarp is the development of fruit without fertilisation. Pollen from the stamen reaches the stigma and then travels down to the ovary, where pollen and ovule combine to form an embryo during normal fruit development. The embryo develops into a zygote, then into a seed, and finally into a fruit. Parthenocarp occurs when fruit production occurs without the use of fertiliser (natural or artificial).

39. Option (4) is correct.

Lucknow is well-known for its Chikankari Embroidery style. Originally done on muslin, the threadwork is very intricate and delicate. The work is now used to decorate a wide range of fabrics. There are various theories as to where this embroidery style originated: some believe it originated in Persia and was taught to Indians by a Persian trader. According to other sources, the art was mentioned in Magasthenes' accounts dating back to the third century BC, implying that it originated only in India. Meanwhile, Noor Jahan, Jahangir's queen, is credited with introducing Chikankari to India.

40. Option (4) is correct.

Kuldeep Yadav is the first Indian to record two International hat-tricks. He completed his second hat-trick against the West Indies in December 2018. Kuldeep scored his first hat-trick against Australia at Eden Gardens in 2017. Wasim Akram, Saqlain Mushtaq, Chaminda Vaas and Trent Boult are the other international cricketers with double hat-tricks. Lasith Malinga is the only cricketer with three hat-tricks, which he achieved against Australia, Kenya and South Africa.

41. Option (1) is correct.

Sucheta Kripalani became Uttar Pradesh's first female chief minister. On June 25, 1908, Sucheta Kriplani was born. After graduating, she joined the freedom struggle and became a disciple of Gandhiji. She married JB Kriplani in 1936. In 1940, she also established the Women's wing of Congress. During the freedom struggle, she was in charge of nonviolent underground political activities. In 1946, she was elected to the Constituent Assembly. On August 14, 1947, she sang Vande Mataram at the opening session of parliament. However, due to ideological differences with Nehru, she and her husband left Congress after the country's independence. She founded a new political party, Kisan Majdoor Praja Party, and served as a Member of Parliament from New Delhi. However, she rejoined Congress in 1957 and was elected as Chief Minister of Uttar Pradesh in 1963.

42. Option (1) is correct.

The Victoria Terminus station in Mumbai was built between 1878 and 1888. The construction of the Victoria terminus began in 1878 to replace the old Bori Bunder railway station with a new railway station. The architect FW Stevens created the design in the rich Italian Gothic style. The terminus was named after Queen Victoria, who celebrated her 50th year as monarch in 1887. To honour the great legend, the terminus was renamed Chhatrapati Shivaji terminus in 1996. In May 2017, the word Maharaja was added, and the terminal is now known as the Chhatrapati Shivaji Maharaj Terminus.

43. Option (3) is correct.

Union Home Minister Amit Shah presided over the Island Development Agency's sixth meeting. In January 2020, this meeting was held in New Delhi. The meeting was attended by the Lt. Governor of Andaman and Nicobar Islands, the Administrator of Lakshadweep, the Cabinet Secretary, the CEO of NITI Aayog, as well as secretaries and officials from various Ministries. Outcomes: Tourism promotion plans, as well as the export of seafood and coconut-based products, have been implemented. Tourism development on land and on the water will be accelerated. Submarine Optical Fibre Cables will improve digital connectivity between the two Archipelagos islands. Improvements to air and sea connectivity, as well as airports on the Greater Nicobar and Minicoy Islands, have been proposed. On June 1, 2017, the Island Development Agency was established to oversee island development.

44. Option (2) is correct.

Harsh Vardhan Shringla was appointed as India's foreign secretary in January 2020. Harsh Vardhan Shringla took over as India's Foreign Secretary on January 29, 2020, succeeding Vijay Gokhale. He is an Indian Foreign Service (IFS) officer from the 1984 batch. His most recent assignment was as India's envoy to the United States. This time, the government chose him over Ruchi Ghanshyam, the Indian High Commissioner to the United Kingdom, breaking with tradition. The foreign secretary is the administrative head of the Ministry of External Affairs, and he or she is appointed for a two-year term. Ranjan Mathai became Foreign Secretary in 2011.

45. Option (1) is correct.

Jellyfish are an example of the phylum – Cnidaria. Jellyfish are not fish, but rather invertebrates (without a spinal cord). These free-swimming sea creatures are found in almost all parts of the ocean and move in the direction of ocean currents. Some jellyfish are also immobile and cling to seafloors. The majority of jellyfish have an umbrella or bell-shaped body that is completely transparent (some of them can have fascinating colours). They have an internal opening through which they eat their prey and discard their waste. Their fossils also show that they existed before dinosaurs.

46. Option (4) is correct.

Roger Federer will have a Swiss coin minted in his honour. The Swiss Mint has announced that Roger Federer will be honoured with 20 Franc coins in December 2019. With this, he will become the only living Swiss personality to have a coin minted in his honour. Roger Federer is a tennis player from Switzerland. He holds the most Grand Slam titles in the men's category, with 20. Serena Williams is an American tennis player who has won 23 Grand Slams, the most of any player in the modern era.

47. Option (1) is correct.

Hasan Minhaj was named one of the "20 People to Watch in the 2020s" by Forbes India. Hasan Minhaj is a comedian and political commentator of Indian origin, who was born in the United States. He has criticised Indian elections and the political system. He was denied entry to the Howdy Modi event in Texas because of his personality. This list also includes Mahua Moitra (TMC Lok Saha member), Dushyant Chautala (Haryana Deputy Chief Minister), and Prashant Kishor (poll strategist). Kanhaiya Kumar, Garima Arora, and Aditya Mittal are also on the list.

48. Option (1) is correct.

From the given options, only SBI is established by government under State Bank of India Act, 1955. Hence it's not nationalised bank but it is a public sector bank. Imperial Bank has renamed the State Bank of India (SBI). The RBI purchased 60% of the company, and SBI became a Public Sector Undertaking under the control of the government. SBI was already under government control in 1969, so there was no need to nationalise it.

49. Option (1) is correct.

Kristalina Georgieva has been appointed as the International Monetary Fund's managing director (IMF). Prior to becoming the IMF's Managing Director, Kristalina Georgieva was the CEO of the World Bank. She succeeded Christine Lagarde as IMF Managing Director on October 1, 2019. She is a Bulgarian lady who has chaired and worked on numerous international platforms that contribute to climate change and other humanitarian crises. She has also served as a member of the Economic Commission and previously worked for the World Bank.

50. Option (3) is correct.

The achievements of Samudra Gupta have been inscribed on the Allahabad Pillar. The Prayag Prashasti Pillar is thought to have been built during the Mauryan Empire. In this inscription, Harisena, a poet in Samudraguta's Court, inscribed the ruler's accomplishments. The inscription, which is written in Sanskrit, also applauds and praises the ruler for his conquests.

Quantitative Aptitude

51. Option (1) is correct.

Let the total number of goods = 300

And C.P. of each good = ₹ 1

S.P. of $\frac{1}{3}$ goods = $100 \times \frac{115}{100} = ₹ 115$

S.P. of 25% or $\frac{1}{4}$ goods = $75 \times \frac{120}{100} = ₹ 90$

S.P. of rest goods = $125 \times \frac{80}{100} = ₹ 100$

We have, Total profit = $[(115 + 90 + 100) - 300] = ₹ 5$

₹ 5 is the profit when total amount of goods is ₹ 300.

₹ 138.50 is the profit when total amount of goods is = $\frac{300}{5} \times 138.5 = ₹ 8310$

52. Option (3) is correct.

$$\begin{aligned}
 &7 \sin^2\theta - \cos^2\theta + 2 \sin \theta = 2 \\
 \Rightarrow &7 \sin^2\theta - \cos^2\theta + 2 \sin \theta - 2 = 0 \\
 \Rightarrow &7 \sin^2\theta - (1 - \sin^2\theta) + 2 \sin \theta - 2 = 0 \\
 \Rightarrow &8 \sin^2\theta + 2 \sin \theta - 3 = 0 \\
 \Rightarrow &8 \sin^2\theta + 6 \sin \theta - 4 \sin \theta - 3 = 0 \\
 \Rightarrow &2 \sin \theta (4 \sin \theta + 3) - 1(4 \sin \theta + 3) = 0 \\
 \Rightarrow &(2 \sin \theta - 1)(4 \sin \theta + 3) = 0 \\
 \text{We have,} & \quad 0^\circ < \theta < 90^\circ
 \end{aligned}$$

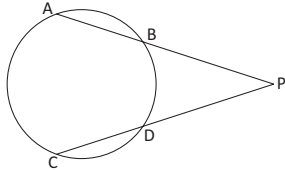
So, $\sin \theta = \frac{1}{2}$
 $\theta = 30^\circ$

Now $\frac{\sec 2\theta + \cot 2\theta}{\operatorname{cosec} 2\theta + \tan 2\theta} = \frac{\sec 60 + \cot 60}{\operatorname{cosec} 60 + \tan 60}$

$$\Rightarrow \frac{2 + \frac{1}{\sqrt{3}}}{\frac{2}{\sqrt{3}} + \sqrt{3}} = \frac{2\sqrt{3} + 1}{5}$$

$$\Rightarrow \frac{1}{5}(2\sqrt{3} + 1)$$

53. Option (2) is correct.



We have, AB = 7 cm, BP = 4.2 cm, PD = 2.8 cm
 By property,

$$\Rightarrow \frac{AP}{BP} = \frac{PC}{PD}$$

$$\Rightarrow \frac{7 + 4.2}{4.2} = \frac{PC}{2.8}$$

$$\Rightarrow PC = 16.8 \text{ cm}$$

So, CD = PC - PD = 16.8 - 2.8 = 14 cm

54. Option (3) is correct.

Average revenue of the sale of product A over 6 years

$$\begin{aligned}
 &= \frac{98 + 94 + 80 + 95 + 110 + 115}{6} \\
 &= 98.66
 \end{aligned}$$

So, only 2 years 2013 and 2017 have more revenue of product D than average of product A.

55. Option (1) is correct.

As per the question,

$$\begin{aligned}
 P \times Q \div R &= \frac{x^4 - 8x}{x^3 - x^2 - 2x} \times \frac{x^2 + 2x + 1}{x^2 - 4x - 5} \times \frac{x - 5}{2x^2 + 4x + 8} \\
 &= \frac{x(x^3 - 2^3)}{x(x^2 - x - 2)} \times \frac{(x + 1)^2}{x^2 - 5x + x - 5} \times \frac{x - 5}{2(x^2 + 2x + 4)} \\
 &= \frac{x(x - 2)(x^2 + 4 + 2x)}{x(x - 2)(x + 1)} \times \frac{(x + 1)^2}{(x - 5)(x + 1)} \times \frac{x - 5}{2(x^2 + 2x + 4)} = \frac{1}{2}
 \end{aligned}$$

56. Option (2) is correct.

If $x35624$ is divisible by 11.

Then, $x + 5 + 2 = 3 + 6 + 4$

So, $x = 6$

If $1257y4$ is divisible by 72.

Then, sum of digits must be divisible by 9. So only possible value of $y = 8$.

So, $5x - 2y = 30 - 16 = 14$

57. Option (1) is correct.

We have,

$$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - (ab + bc + ca))$$

We have, $a + b + c = 7$ and $ab + bc + ca = -6$

Squaring both sides,

$$a^2 + b^2 + c^2 + 2(ab + bc + ca) = 49$$

$$\Rightarrow a^2 + b^2 + c^2 = 49 + 12 = 61$$

$$\begin{aligned}
 \text{So, } a^3 + b^3 + c^3 - 3abc &= (a + b + c)(a^2 + b^2 + c^2 - (ab + bc + ca)) \\
 &= 7(61 + 6) = 469
 \end{aligned}$$

58. Option (1) is correct.

Total revenue of the company from the sale of products B, C and D in 2014 = $92 + 96 + 92 = 280$

Total revenue from the sale of products C and D in 6 years = $82 + 74 + 98 + 102 + 96 + 92 + 88 + 93 + 93 + 97 + 103 + 102 = 1120$

$$\text{Required percentage} = \frac{280}{1120} \times 100 = 25\%$$

59. Option (3) is correct.

$$\begin{aligned}
 &3 \sec^2\theta \tan^2\theta + \tan^6\theta - \sec^6\theta \\
 &= 3 \sec^2\theta \tan^2\theta + (\tan^2\theta)^3 - (\sec^2\theta)^3 \\
 &= 3 \sec^2\theta \tan^2\theta - [(\sec^2\theta - \tan^2\theta)(\sec^4\theta + \tan^4\theta + \sec^2\theta \tan^2\theta)] \\
 &= 3 \sec^2\theta \tan^2\theta - (\sec^4\theta + \tan^4\theta + \sec^2\theta \tan^2\theta) \\
 &= 2 \sec^2\theta \tan^2\theta - (\sec^4\theta + \tan^4\theta) \\
 &= -(\sec^2\theta - \tan^2\theta)^2 = -1
 \end{aligned}$$

60. Option (4) is correct.

$$\angle QRP = 28^\circ$$

$$\angle ORP = 90^\circ$$

Then, $\angle QRO = 90^\circ - 28^\circ = 62^\circ$

Now, $\angle QRO = \angle OQR = 62^\circ$

We have, $\angle PQR + \angle OQR = 180^\circ$

So, $\angle PQR = 180^\circ - 62^\circ = 118^\circ$

In ΔPQR ,

$$\angle QPR + \angle PRQ + \angle PQR = 180^\circ$$

$$\angle QPR + 28^\circ + 118^\circ = 180^\circ$$

$$\angle QPR = 180^\circ - 28^\circ - 118^\circ = 34^\circ$$

So, $\angle QPR = \angle SPR = 34^\circ$

61. Option (3) is correct.

Let the income of B = 100

Then, income of A = 40%

of 100 = 40

Now, B's expenditure =

$$40 \times \frac{100}{70} = \frac{400}{7}$$

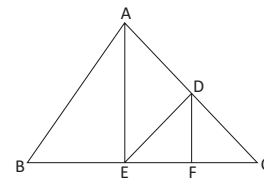
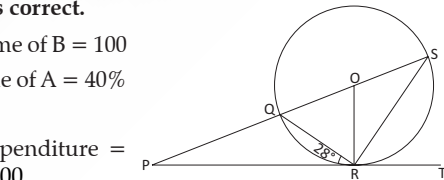
So, expenditure of A = $\frac{60}{100} \times \frac{400}{7} = \frac{240}{7}$

Saving of A = $40 - \frac{240}{7} = \frac{40}{7}$

And saving of B = $100 - \frac{400}{7} = \frac{300}{7}$

Required ratio = $\frac{40}{7} : \frac{300}{7} = 2 : 15$

62. Option (3) is correct.



In $\triangle CAE$,

$$\Rightarrow \frac{CF}{CE} = \frac{CD}{AC}$$

$$\Rightarrow \frac{CD}{AC} = \frac{2.5}{6} = \frac{5}{12} \quad \dots(1)$$

In $\triangle CAB$,

$$\Rightarrow \frac{CE}{BC} = \frac{CD}{AC}$$

$$\Rightarrow \frac{CD}{AC} = \frac{6}{BC} \quad \dots(2)$$

From Eqs. (1) and (2),

$$\Rightarrow \frac{6}{BC} = \frac{5}{12}$$

$$\Rightarrow BC = \frac{72}{5} = 14.4$$

63. Option (4) is correct.

Let the principal amount = P

Total amount when compounded yearly = 1.1P

Total amount when compounded half yearly

$$= P \times \frac{105}{100} \times \frac{105}{100} = 1.1025P$$

We have, $1.1025P - 1.1P = 88.80$

$$P = 35,520$$

We have,

$$\Rightarrow SI = (P \times R \times T)/100$$

$$\Rightarrow SI = (35,520 \times 10 \times 5)/(100 \times 3)$$

$$\Rightarrow SI = ₹ 5920$$

64. Option (3) is correct.

We have volume of vessel = $\pi r^2 h$

Where $r = 30$ cm and $h = 42$ cm

$$\text{So, volume} = \frac{22}{7} \times 30 \times 30 \times 42 = 1,18,800 \text{ cm}^3$$

Let the height of the rectangular tub = h

Then, volume of tub = lbh

Where $l = 75$ cm and $b = 44$ cm

So as per the question,

$$75 \times 44 \times h = 1,18,800$$

$$\Rightarrow h = 36 \text{ cm}$$

65. Option (3) is correct.

$$\frac{\tan^2 \theta - \sin^2 \theta}{2 + \tan^2 \theta + \cot^2 \theta} = \frac{\frac{\sin^2 \theta}{\cos^2 \theta} - \sin^2 \theta}{2 + \frac{\sin^2 \theta}{\cos^2 \theta} + \frac{\cos^2 \theta}{\sin^2 \theta}}$$

$$= \frac{\sin^2 \theta (1 - \cos^2 \theta) \cdot \sin^2 \theta \cdot \cos^2 \theta}{\cos^2 \theta (\sin^4 \theta + \cos^4 \theta + 2 \sin^2 \theta \cos^2 \theta)}$$

$$= \frac{\sin^6 \theta}{(\sin^2 \theta + \cos^2 \theta)^2} = \sin^6 \theta$$

66. Option (1) is correct.

Total revenue of the company from the sale of products A, B and D in 2012 and 2013 = $98 + 74 + 74 + 94 + 96 + 102 = 538$

Total revenue from the sale of product B in 2013 to 2016 = $96 + 92 + 84 + 98 = 370$

$$\text{Required percentage} = \frac{538 - 370}{370} \times 100 = 45.4\%$$

67. Option (3) is correct.

Let the number of boys = $7x$

And number of girls = $6x$

As per the question,

$$\Rightarrow \frac{7x+4}{6x-3} = \frac{4}{3}$$

$$\Rightarrow 21x + 12 = 24x - 12$$

$$\Rightarrow 3x = 24$$

$$\Rightarrow x = 8$$

So, total number of boys and girls initially in the group = $7x + 6x = 13 \times 8 = 104$

68. Option (4) is correct.

Speed of stream = 3 km/h

Let the speed of boat = x km/h

We have,

$$\Rightarrow \frac{13}{x+3} = \frac{7}{x-3}$$

$$\Rightarrow 13x - 39 = 7x + 21$$

$$\Rightarrow 6x = 60$$

$$\Rightarrow x = 10$$

$$\text{Required time} = \frac{44.8}{10} = \frac{448}{100} = 4 \frac{12}{25} \text{ h}$$

69. Option (4) is correct.

Total revenue of the company in 2014 from the sale

$$= 80 + 92 + 96 + 92 = 360$$

The total revenue from the sale of product C in 2014 to 2017

$$= 96 + 88 + 93 + 103 = 380$$

$$\text{Required ratio} = 360 : 380 = 18 : 19$$

70. Option (3) is correct.

The average weight of some students in a class = 58.4 kg

Let the total number of students be x .

So, total weight of x students = $58.4x$ kg

The average weight of 5 students = 62.8 kg

So, total weight of 5 students = $62.8 \times 5 = 314$ kg

The average weight of $(x + 5)$ students

$$= 58.4 + 0.55 = 58.95 \text{ kg}$$

Total weight of $(x + 5)$ students = $58.95(x + 5)$ kg

Total weight of x students + Total weight of

$$5 \text{ students} = 58.95(x + 5)$$

$$\Rightarrow 58.4x + 314 = 58.95(x + 5)$$

$$\Rightarrow 58.4x + 314 = 58.95x + 294.75$$

$$\Rightarrow 0.55x = 19.25$$

$$\Rightarrow x = \frac{1,925}{55} = 35$$

71. Option (4) is correct.

We have,

$$= \frac{\frac{11}{2} \div \frac{11}{3} \text{ of } \frac{1}{4} + \left(\frac{46}{9} - \frac{63}{8} \div \frac{189}{20} \right) \times \frac{9}{11}}{5 \div 5 \text{ of } \frac{1}{10} - 10 \times 10 \div 20}$$

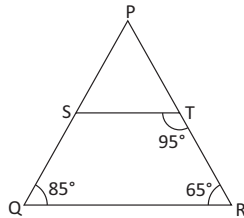
$$= \frac{\frac{11}{2} \div \frac{11}{3} \text{ of } \frac{1}{4} + \left(\frac{46}{9} - \frac{63}{8} \times \frac{20}{189} \right) \times \frac{9}{11}}{5 \div \frac{1}{2} - 10 \times \frac{1}{2}}$$

$$= \frac{\frac{11}{2} \times \frac{12}{11} + \left(\frac{46}{9} - \frac{5}{6}\right) \times \frac{9}{11}}{10 - 10 \times \frac{1}{2}}$$

$$= \frac{6 + \left(\frac{77}{18}\right) \times \frac{9}{11}}{5}$$

$$= \frac{6 + \frac{7}{2}}{5} = \frac{19}{10} = 1\frac{9}{10}$$

72. Option (1) is correct.



We have, $\angle PTS + \angle STR = 180^\circ$
 $\Rightarrow \angle PTS = 180^\circ - 95^\circ = 85^\circ$
 $\angle SQR + \angle QRT + \angle RTS + \angle TSQ = 360^\circ$
 $\Rightarrow 85^\circ + 65^\circ + 95^\circ + \angle TSQ = 360^\circ$
 $\Rightarrow \angle TSQ = 115^\circ$
 $\therefore \angle TSQ + \angle PST = 180^\circ$
 $\Rightarrow 115^\circ + \angle PST = 180^\circ$
 $\Rightarrow \angle PST = 65^\circ$

ΔPTS is similar to ΔPQR .

So, $\frac{ST}{QR} = \frac{PT}{PQ}$

We have, $QR : ST = 9 : 5$ and $PQ = 21.6$ cm

$$\Rightarrow \frac{5}{9} = \frac{PT}{21.6}$$

$$\Rightarrow PT = 12$$
 cm

73. Option (2) is correct.

As per the question,

$$\Rightarrow \frac{1}{8+d} + \frac{1}{18+d} = \frac{1}{d}$$

$$\Rightarrow \frac{18+d+8+d}{144+26d+d^2} = \frac{1}{d}$$

$$\Rightarrow 144+26d+d^2 = 26d+2d^2$$

$$\Rightarrow d^2 = 144$$

$$\Rightarrow d = 12$$

So, A and B together can complete the work in = 12 days

A alone can complete the work in = $12 + 8 = 20$ days

B alone can complete the work in = $12 + 18 = 30$ days

Let remaining work completed by B in x days,

As per the question,

$$\Rightarrow \frac{4}{20} + \frac{x}{30} = 1$$

$$\Rightarrow \frac{x}{30} = 1 - \frac{4}{5} = \frac{1}{5}$$

$$\Rightarrow x = 24$$
 days

74. Option (1) is correct.

The marked price of the article = ₹ 740

As per the question, $740 \times \frac{85}{100} \times \frac{100-x}{100} = 566.1$

$$\Rightarrow 100 - x = \frac{566.1 \times 100 \times 100}{740 \times 85}$$

$$\Rightarrow 100 - x = 90$$

$$\Rightarrow x = 10\%$$

75. Option (2) is correct.

We have $30x^2 - 15x + 1 = 0$

Dividing by x ,

$$\Rightarrow 30x - 15 + \frac{1}{x} = 0$$

$$\Rightarrow 5x - \frac{15}{6} + \frac{1}{6x} = 0$$

$$\Rightarrow 5x + \frac{1}{6x} = \frac{5}{2}$$

Squaring both sides,

$$\Rightarrow 25x^2 + \frac{1}{36x^2} + \frac{5}{3} = \frac{25}{4}$$

$$\Rightarrow 25x^2 + \frac{1}{36x^2} = \frac{25}{4} - \frac{5}{3}$$

$$\Rightarrow 25x^2 + \frac{1}{36x^2} = \frac{55}{12}$$

English Comprehension

76. Option (1) is correct.

- (1) 'Stampede' is a sudden panicked rush of large animals or many people.
- (2) 'Lunacy' is the state of being insane.
- (3) 'Scapegoat' is a person who is blamed for the mistakes or faults of others.
- (4) 'Recluse' means a person who lives a solitary life and tends to avoid other people.

77. Option (3) is correct.

'The bee's knees' is to be excellent or of an extremely high standard.

- (1) 'Problematic' means constituting or presenting a problem.
- (2) 'Foolish' means unwise.
- (3) 'Extraordinary' means remarkable.
- (4) 'Observant' means quick to notice things.

78. Option (1) is correct.

The sentence describes 'reward' as something that motivates an individual to do really well in a particular field.

- (1) 'Recognition' is acknowledgement of the existence, validity, or legality of something. It can motivate someone to continue doing well or to do better.
- (2) 'Memorial' is a statue or structure established to remind people of a deceased person or event.
- (3) 'Collection' refers to a group of things or people. It is not related to a reward.
- (4) 'Monument' is a statue or building erected in remembrance of a notable deceased person or event.

79. Option (4) is correct.

'Obsolete' means out of date.

- (1) 'Rigid' means not flexible.
- (2) 'Outdated' means out of date.
- (3) 'Remote' means distant or far off.
- (4) 'Recent' means new or latest.

80. Option (2) is correct.

- (1) 'Spinster' is an unmarried woman.
- (2) 'Stevadore' is a person employed at a dock to load and unload ships.
- (3) 'Rustic' means rural or unsophisticated.
- (4) 'Captain' refers to the person in command of a ship.

81. Option (2) is correct.

The correct spelling of the word is 'conscientious', which means wishing to do one's work or duty well and thoroughly.

- (2) The word is spelt correctly. 'Encouragement' is the action of giving someone support, confidence, or hope.
- (3) The correct spelling of the word is 'commotion', which is a state of confused and noisy disturbance.
- (4) The correct spelling of the word is 'embarrassment', which is a feeling of self-consciousness, shame, or awkwardness.

82. Option (3) is correct.

The blank needs an adverb to describe the adjective 'misunderstood'.

- (1) Something cannot be proudly misunderstood.
- (2) Something cannot be slowly misunderstood.
- (3) 'Usually' means generally.
- (4) The sentence doesn't talk of a happy misunderstanding but a usual one.

83. Option (2) is correct.

The blank needs a positive word.

- (1) 'Disadvantage' means drawback.
- (2) 'Virtue' is a behaviour showing high moral standards.
- (3) 'Curse' is a cause of harm or misery.
- (4) 'Dream' suggests something is not real.

84. Option (2) is correct.

The blank requires a verb that should agree with the subject 'a disciplined person'.

- (1) It is a plural verb. (2) It is a singular verb.
- (3) It is a noun. (4) It is an adjective.

85. Option (3) is correct.

The blank requires a verb that should agree with the subject 'disciplined people'. Also, it is a general statement and hence, should use present simple tense.

- (1) It is in past perfect tense.
- (2) It is singular.
- (3) It is plural and is in present simple tense.
- (4) It is past simple tense.

86. Option (2) is correct.

The sentence states that discipline should come from within and not forced.

- (1) 'Adorned' is to make something more beautiful or attractive.
- (2) 'Imposed' is to force an unwelcome decision or ruling on someone.
- (3) 'Curbed' is to keep restrain or keep in check.
- (4) 'Reposed' is to be situated or kept in a particular place.

87. Option (2) is correct.

'Derogatory' means showing a critical or disrespectful attitude.

- (1) 'Intricate' means very complicated or detailed.
- (2) 'Complimentary' means expressing a compliment.
- (3) 'Insulting' means disrespect or scornfully abusive.
- (4) 'Depreciating' means showing a lack of respect or courtesy.

88. Option (4) is correct.

The blank needs a negative adjective to describe the 'designs' of terrorists.

- (1) 'Exemplary' means perfect or ideal.
- (2) 'Conducive' means making a certain situation or outcome likely or possible.
- (3) 'Benevolent' means kind and warm-hearted.
- (4) 'Malicious' means something that is intended or intending to be harm.

89. Option (3) is correct.

'To throw a fit' is to be very shocked or angry.

90. Option (3) is correct.

The subject 'those' is plural and hence, should be followed by a plural verb. Also, after the adverb 'likely', the infinitive form of verb should be used. So, option (3) has an error. The correct phrase should be 'are likely to enjoy'.

91. Option (3) is correct.

Sentence B talks of the pronoun 'it', which can only refer to the 'Indian Government' mentioned in sentence C. So, CB is a mandatory pair, which is present only in option (3). CBAD is the right sequence.

92. Option (4) is correct.

There is a comparison here between two things. and hence, a comparative adjective is required here.

- (1) This option uses the superlative adjective.
- (2) A comparative adjective is needed here.
- (3) This option has the required comparative adjective.

93. Option (4) is correct.

'Acknowledgement' is the acceptance of the truth or existence of something.

- (1) 'Confusion' refers to uncertainty about what is happening, intended or required.
- (2) 'Elimination' is exclusion of someone or something from consideration.
- (3) 'Compensation' is something, typically money, awarded to someone in recognition of loss, suffering, or injury.
- (4) 'Confirmation' is the action of confirming something or the state of being confirmed.

94. Option (4) is correct.

The sentence talks of two past actions that happened one after another. When we talk about two past actions, the action that happened first must be indicated by past perfect tense. The correct phrase is 'already begun'.

95. Option (4) is correct.

The direct form is in simple past tense and hence, the indirect form will take past perfect.

- (1) The sentence is in present perfect tense. Also, 'told' doesn't take the preposition 'to'.
- (2) The sentence is in present perfect tense. Also, the reporting verb changes to 'told'.
- (3) The reporting verb changes to 'told'.
- (4) It is in past perfect tense and is with the correct reporting verb.

96. Option (3) is correct.

- (1) The correct spelling is 'employed', which means to have a paid job.
- (2) The correct spelling is 'rehearsal', which refers to a practice or trial performance of a play or other work for later public performance.
- (3) The spelling is correct. 'Veterinary' means related to the diseases, injuries, and treatment of farm and domestic animals.
- (4) The correct spelling is 'separable', which describes something that can be separated or treated separately.

97. Option (3) is correct.

The sentence is in simple past tense. Passive sentences in the simple past tense have the following structure: Object of the active sentence + was/were + past participle form of the verb + by + subject of the active sentence

- (1) The subject has not changed.
- (2) Simple past tense changes into was/were + past participle.
- (3) This option is in line with the given structure.
- (4) Simple past tense changes into was/were + past participle.

98. Option (3) is correct.

- (1) It is not the correct idiomatic usage.
- (2) 'Cashing off' is idiomatically incorrect.
- (3) 'To cash in on' is to take advantage of a situation.
- (4) 'To cash up' is to count and check takings at the end of a day's trading. This doesn't fit into the given context.

99. Option (3) is correct.

Sentence C introduces 'junk food' and talks of how children are tempted towards it. This is given in sentence A. So, CA is a mandatory pair, making option (3) the correct answer. So, the correct sequence is CADB.

100. Option (2) is correct.

'Prodigal' is a person who spends money in a recklessly, extravagant way.

- (1) 'Trivial' means unimportant.
- (2) 'Extravagant' means lacking restraint in spending money or using resources.
- (3) 'Arrogant' refers to someone who has or reveals an exaggerated sense of one's own importance of abilities.
- (4) 'Humble' is to be meek and respectful.