

STAFF SELECTION COMMISSION
COMBINED GRADUATE LEVEL (TIER-I)

SOLVED PAPER

(13th August 2020: Shift-1)

Time Allotted: 1 hour

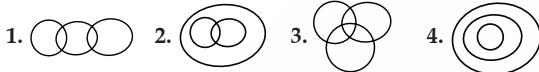
Max marks: 200

General Intelligence and Reasoning

- Select the option that is related to the third number in the same way as the second number is related to the first number.
12 : 60 :: 16 : ?
1. 210 2. 112 3. 121 4. 201
- Select the option that is related to the third word in the same way as the second word is related to the first word.
Depression : Mood :: Insomnia : ?
1. Sleep 2. Night 3. Thinking 4. Dreams
- Study the given pattern carefully and select the number that can replace the question mark (?) in it.

4	7	6
15	?	21
44	68	60

1. 19 2. 20 3. 18 4. 24
- Select the Venn diagram that best illustrates the relationship among the following classes.
Women, Researchers, Introverts



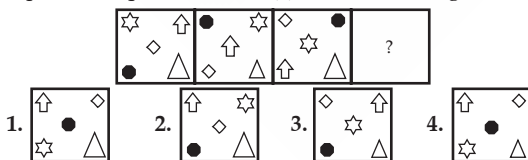
- A cube is made by folding the given sheet. In the cube so formed, what would be the symbol on the opposite side of the # symbol?
1. + 2. % 3. & 4. \$
- Select the option figure that is embedded in the given figure (rotation is NOT allowed).



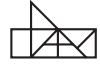
- Select the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.



1. j F O O v M 2. W λ Δ O E j
3. j F O Q v M 4. W λ Δ O E j
- How many triangles are there in the given figure?
1. 11 2. 13 3. 10 4. 12
- Select the figure from among the given options that can replace the question mark (?) in the following series.



- In a certain code language, 'PERMIT' is written as 'VVLNOG'. How will 'INERTIA' be written in that language?
1. OHYXZCU 2. XOYHCZU 3. OMYIZRU 4. XYOHBCU



- P, L, T, B, N and D are six members of a business family. N is the son of B, who is not the mother of N. L is the brother of B. D and B are a married couple. T is the daughter of D, who is the sister of P. How is N related to T?
1. Sister 2. Mother 3. Father 4. Brother
- Four words have been given, out of which three are alike in some manner and one is different. Select the word that is different.
1. Memory 2. Weight 3. Intelligence 4. Aptitude
- Select the number from among the given options that can replace the question mark (?) in the following series.
24, 35, 51, 73, 102, ?
1. 139 2. 151 3. 149 4. 131

- Out of the total number of players, 100/3 % are in hotel X and the remaining are in hotel Y. If 20 players from hotel Y are shifted to hotel X, then the number of players in hotel X becomes 50% of the total number of players. If 20 players from hotel X are shifted to hotel Y, then the number of players in hotel X becomes what per cent of the total number of players?
1. 26.34% 2. 12.75% 3. 20.67% 4. 16.67%

- 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.
1. 14 : 210 2. 18 : 342 3. 17 : 307 4. 12 : 156
- 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:

- All polygons are angles.
- All angles are diagonals.
- All cones are cubes.
- All cubes are decagons.
- No diagonal is a cube.

Conclusions:

- I. Some diagonals are polygons.
 - II. All diagonals are decagons.
 - III. No polygon is a cone.
 - IV. Some cubes are angles.
- Both conclusions II and IV follow.
 - Only conclusion I follows.
 - Both conclusions I and II follow.
 - Both conclusions I and III follow.

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

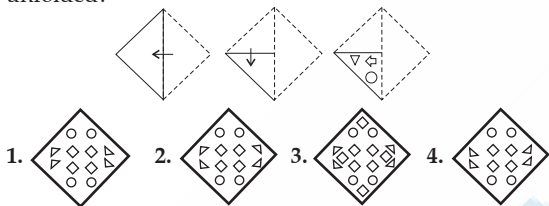
- Horses : Neigh
- Parrots : Bray
 - Figs : Buzz
 - Hares : Boom
 - Ducks : Quack

18. Select the combination of letters that, when sequentially placed in the blanks of the given series, will complete the series.

L _ UA _ Z _ N _ AP _ L _ U _ PZ

1. N, P, L, U, Z, N, A 2. N, L, P, A, N, U, Z
3. P, N, L, Z, U, A, N 4. P, L, U, Z, N, A, N
19. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.
PNNA, RPPE, TRRI, VTTO, ?
1. YUUV 2. XWWU 3. YVVU 4. XVVU
20. Select the option in which the numbers are related in the same way as the numbers of the following set.
(25, 18, 225)

1. (15, 34, 190) 2. (24, 22, 264) 3. (9, 16, 170) 4. (17, 15, 220)
21. In a certain code language, 'AROUND' is coded as '52182412144' and 'FIX' is coded as '63624'. How will 'PLASTIC' be coded in that language?
1. 1612521920363 2. 1612261920183
3. 1612522021363 4. 1812521920383
22. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.
1. CYUQ 2. TPLH 3. NJFA 4. FBXT
23. Select the correct combination of mathematical signs that can sequentially replace the * signs and balance the given equation.
 $42 * 7 * 64 * 11 * 6 * 4$
1. $\times, +, -, \div, =$ 2. $\times, -, +, \div, =$ 3. $\div, +, -, \times, =$ 4. $\div, -, +, \times, =$
24. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?



25. Select the correct option that indicates the arrangement of the given words in the order in which they appear in an English dictionary.
1. freeze 2. freedom 3. fryer 4. frozen
5. fraud 6. fringe
1. 5, 2, 1, 6, 4, 3 2. 5, 1, 2, 6, 4, 3
3. 5, 2, 1, 6, 3, 4 4. 5, 6, 2, 1, 4, 3

General Awareness

26. Electron-volt is a unit of ____.
1. potential difference 2. current
3. energy 4. power
27. Who among the following had written Kitab-ul-Hind that gave an incisive description of early 11th Century India?
1. Al-Kindi 2. Al-Biruni
3. Al-Bukhari 4. Al-Khwarizmi
28. Which of the following schemes is aimed at helping accelerate the uptake of broadband internet services?
1. PM-DHWANI 2. PM-INTERNET
3. PM-WANI 4. PM-VAARTA
29. ____ is the structural and functional unit of kidney.
1. Medulla 2. Nephron 3. Cortex 4. Ureter
30. Which of the following is the application of sciences such as Physics, Chemistry, Biology, Computer Science and Engineering to matters of law and to the identification of various facts of civilian investigation?
1. Kalology 2. Morphology
3. Psychology 4. Forensic science
31. Which of the following is a process in which hot, less dense materials rise upward and are replaced by colder, more dense materials?
1. Convection 2. Conduction
3. Radiation 4. Condensation
32. Which of the following places is famous for a copper mine?
1. Satna 2. Gaya 3. Khetri 4. Keonjhar
33. Who won the Toyota Thailand Open Women's Singles Title in Bangkok in January 2021?
1. Ashwini Ponnappa 2. PV Sindhu
3. Tai Tzu-ying 4. Carolina Marin
34. In December 2020, the Ministry of Home Affairs declared the entire State of ____ as a 'disturbed area' for six more months under the Armed Forces (Special Powers) Act, 1958 (AFSPA).
1. West Bengal 2. Punjab
3. Jharkhand 4. Nagaland
35. For which of the following franchise teams did AB de Villiers play in IPL 2020?
1. Kolkata Knight Riders 2. Mumbai Indians
3. Royal Challengers Bangalore
4. Delhi Capitals
36. Baghmara Pitcher Plant Sanctuary is located in which of the following states?
1. Karnataka 2. Assam 3. Goa 4. Meghalaya
37. As per the Union Budget of 2021-22, how many regional national institutes of virology will be set up?
1. Four 2. Two 3. Six 4. Three
38. Gurdwara Patalpuri Sahib is located on the bank of river ____.
1. Sutlej 2. Yamuna 3. Ganga 4. Beas
39. In which of the following years was the Planning Commission of India set up?
1. 1950 2. 1945 3. 1958 4. 1962
40. In which of the following years was the Second Round Table Conference in London held?
1. 1939 2. 1925 3. 1941 4. 1931
41. Which of the following statements about Swami Dayanand Saraswati is INCORRECT?
1. He was the founder of Arya Samaj.
2. His birthplace was Gujarat.
3. He authored the book 'Satyarth Prakash'.
4. He was the founder of Brahmo Samaj.
42. Who among the following was one of the founders of the Hindustan Republic Association?
1. Ram Prasad Bismil 2. Lala Lajpat Rai
3. Jatindranath Mukherjee 4. Surya Sen
43. Which of the following has the same dimension as that of linear momentum?
1. Impulse 2. Energy 3. Work 4. Stress
44. In Leh, the first ever ice climbing festival was celebrated in ____ valley in January 2021.
1. Markha 2. Ripchar 3. Dras 4. Nubra
45. Who among the following was elected as the President of Veterinary Council of India in January 2021?
1. Umesh Sharma 2. Dipankar Seth
3. Rajeev Arora 4. KK Verma
46. Which of the following is NOT a town/city on the west coast of India?
1. Karwar 2. Mangalore 3. Surat 4. Gopalpur
47. Who among the following won the '3rd Rabindranath Tagore Literary Prize' for his novel 'The City and the Sea' in December 2020?
1. Rajdeep Sardesai 2. Siddhartha Sarma
3. Raj Kamal Jha 4. Shekhar Gupta

48. A Unique Transaction Reference number is a _____ character code used to uniquely identify a transaction in the RTGS system.
 1. 45 2. 22 3. 34 4. 17
49. Who among the following replaced Morarji Desai as the Prime Minister of India in 1979?
 1. Jagjivan Ram 2. Charan Singh
 3. Devi Lal 4. Chandrasekhar
50. Who among the following is a Padma Vibhushan awardee of 2021?
 1. Tarlochan Singh 2. Sumitra Mahajan
 3. Sudarshan Sahoo 4. Mouma Das

Quantitative Aptitude

51. Study the following table and answer the question:
 Number of cars sold by dealers A, B, C, D and E during the first six months of 2018.

Month	January	February	March	April	May	June
Dealer A	620	640	628	635	430	625
B	600	642	635	580	450	620
C	640	635	640	540	625	740
D	520	645	722	740	600	780
E	548	638	720	740	650	800

The ratio of the total number of cars sold by dealer B in January, April and June to the total number of cars sold by dealers A and D in March is:

1. 8 : 9 2. 7 : 5 3. 4 : 3 4. 10 : 9
52. To do a certain work, A and B work on alternate days with B beginning the work on the first day. A alone can complete the same work in 24 days. If the work gets completed in $11\frac{1}{3}$ days, then B alone can complete $\frac{7}{9}$ th part of the original work in:
 1. $4\frac{1}{2}$ days 2. 4 days 3. $5\frac{1}{2}$ days 4. 6 days
53. The value of $20 \div 5$ of $8 \times [9 \div 6 \times (6 - 3)] - (10 \div 2$ of 20) is:
 1. 0 2. 2 3. 1 4. 6
54. X, Y are two points in a river. Points P and Q divide the straight line XY into three equal parts. The river flows along XY and the time taken by a boat to row from X to Q and from Y to Q are in the ratio 4 : 5. The ratio of the speed of the boat downstream to that of the river current is equal to:
 1. 3 : 4 2. 4 : 3 3. 10 : 3 4. 3 : 10
55. What is the compound interest (in ₹) on a sum of ₹ 8,192 for $1\frac{1}{4}$ years at 15% per annum, if the interest is compounded 5- monthly?
 1. 1,740 2. 1,640 3. 1,735 4. 1,634
56. A chord 21 cm long is drawn in a circle of diameter 25 cm. The perpendicular distance of the chord from the centre is:
 1. $\sqrt{46}$ 2. $\sqrt{56}$ 3. $\sqrt{23}$ 4. $\sqrt{41}$
57. Study the table and answer the question.
 The table shows District-wise data of the number of primary school teachers posted in schools of a city.

District	Male teachers	Female teachers
East	1,650	2,375
North	1,075	2,651
West	1,280	1,520
South	1,170	1,085
Central	690	859

What is the ratio of the number of male teachers to the number of female teachers in the city?

1. 78 : 113 2. 195 : 283 3. 586 : 849 4. 391 : 566
58. If $\frac{\cos^2 \theta}{\cot^2 \theta + \sin^2 \theta - 1} = 3, 0^\circ < \theta < 90^\circ$, then the value of $(\tan \theta + \operatorname{cosec} \theta)$ is:
 1. $\frac{4\sqrt{3}}{3}$ 2. $2\sqrt{3}$ 3. $3\sqrt{3}$ 4. $\frac{5\sqrt{3}}{3}$
59. When x is subtracted from each of 19, 28, 55 and 91, the numbers so obtained in this order are in proportion. What is the value of x ?
 1. 5 2. 8 3. 7 4. 9
60. A shopkeeper earns a profit of 21% after selling a book at 21% discount on the printed price. The ratio of the cost price and selling price of the book is:
 1. 121 : 100 2. 79 : 100 3. 100 : 79 4. 100 : 121
61. If $8(x + y)^3 - 27(x - y)^3 = (5y - x)(Ax^2 + By^2 + Cxy)$, then what is the value of $(A + B - C)$?
 1. -26 2. -16 3. 16 4. 36
62. Study the table and answer the question.
 In the table, production and sale (in 1,000 tonnes) of a certain product of a company over 5 years is given.
- | Years | Production (in 1,000 tonnes) | Sale (in 1,000 tonnes) |
|-------|------------------------------|------------------------|
| 2015 | 1,250 | 1,000 |
| 2016 | 1,400 | 1,290 |
| 2017 | 1,450 | 1,100 |
| 2018 | 1,500 | 1,450 |
| 2019 | 1,600 | 1,390 |
- In which year(s) sale is more than 90% of the production?
 1. 2015, 2017, 2019 2. 2016, 2017
 3. 2017, 2018 4. 2016, 2018
63. If $x + \frac{1}{x} = 4$, then the value of $x^5 + \frac{1}{x^5}$ is:
 1. 736 2. 776 3. 684 4. 724
64. $\Delta ABC \sim \Delta PQR$. The areas of ΔABC and ΔPQR are 64 cm² and 81 cm², respectively and AD and PT are the medians of ΔABC and ΔPQR , respectively. If PT = 10.8 cm, then AD = ?
 1. 8.4 cm 2. 12 cm 3. 9 cm 4. 9.6 cm
65. The average of 28 numbers is 77. The average of the first 14 numbers is 74 and the average of last 15 numbers is 84. If the 14th number is excluded, then what is the average of the remaining numbers? (correct to one decimal places)
 1. 73.1 2. 74.7 3. 77 4. 76.9
66. Let $\Delta ABC \sim \Delta PQR$ and $\frac{\operatorname{ar}(\Delta ABC)}{\operatorname{ar}(\Delta QPR)} = \frac{144}{49}$, If AB = 12 cm, BC = 7 cm and AC = 9 cm, then PR (in cm) is equal to:
 1. $\frac{108}{7}$ 2. $\frac{21}{4}$ 3. 12 4. $\frac{49}{12}$
67. Study the following table and answer the question:
 Number of cars sold by dealers A, B, C, D & E during the first six months of 2018.

Month Dealer	January	February	March	April	May	June
A	620	640	628	635	430	625
B	600	642	635	580	450	620
C	640	635	640	540	625	740
D	520	645	722	740	600	780
E	548	638	720	740	650	800

In July 2018, if the sales of cars by the dealer D increases by the same percentage as in June 2018 over its previous month, then what is the number of cars sold by D in July 2018?

1. 1,014 2. 959 3. 975 4. 1,020
68. Some fruits are bought at 15 for ₹140 and an equal number of fruits at 10 for ₹120. If all the fruits are sold at ₹132 per dozen, then what is the profit per cent in the entire transaction?
1. 3 2. $3\frac{1}{8}$ 3. $2\frac{1}{4}$ 4. $4\frac{1}{2}$
69. Sides AB and DC of a cyclic quadrilateral ABCD are produced to meet at E and sides AD and BC are produced to meet at F. If $\angle ADC = 78^\circ$ and $\angle BEC = 52^\circ$, then the measure of $\angle AFB$ is:
1. 32° 2. 28° 3. 30° 4. 26°
70. If $x + y = 4$ and $\frac{1}{x} + \frac{1}{y} = \frac{16}{15}$, then what is the value of $(x^3 + y^3)$?
1. 18 2. 16 3. 21 4. 19
71. $\frac{\operatorname{cosec} \theta}{\operatorname{cosec} \theta - 1} + \frac{\operatorname{cosec} \theta}{\operatorname{cosec} \theta + 1} - \tan^2 \theta$, $0^\circ < \theta < 90^\circ$, is equal to:
1. $\sec^2 \theta + 1$ 2. $\sec^2 \theta$ 3. $2 \sec^2 \theta$ 4. $1 - \tan^2 \theta$
72. Length of each side of a rhombus is 13 cm and one of the diagonal is 24 cm. What is the area (in cm^2) of the rhombus?
1. 300 2. 240 3. 60 4. 120
73. The income of A is 45% more than the income of B and the income of C is 60% less than the sum of the incomes of A and B. The income of D is 20% more than that of C. If the difference between the incomes of B and D is ₹13,200, then the income (in ₹) of C is:
1. 75,000 2. 73,500 3. 72,000 4. 72,500
74. Find the value of $\cot 25^\circ \cot 35^\circ \cot 45^\circ \cot 55^\circ \cot 65^\circ$.
1. $\frac{1}{\sqrt{3}}$ 2. $\sqrt{3}$ 3. 1 4. $\frac{\sqrt{3}}{2}$
75. If the 5-digit number 676xy is divisible by 3, 7 and 11, then what is the value of $(3x - 5y)$?
1. 11 2. 10 3. 7 4. 9

English Comprehension

76. Select the most appropriate ANTONYM of the given word. (Seize)
1. Snatch 2. Catch 3. Loosen 4. Grab
77. Select the INCORRECTLY spelt word.
1. Creature 2. Specified 3. Decrease 4. Pieciful
78. Select the most appropriate ANTONYM of the given word. (Gradual)
1. Slow 2. Regular 3. Gentle 4. Abrupt
79. Select the option that expresses the given sentence in passive voice.
- The invigilator is advising the students not to carry calculators into the examination hall.
1. The students were advised not to carry calculators into the examination hall.

2. The students are being advised by the invigilator not to carry calculators into the examination hall.
3. The students have been advised not to carry calculators into the examination hall by the invigilator.
4. The students were advised the invigilator not to carry calculators into the examination hall.
80. Select the most appropriate synonym of the given word. Regime
1. Country 2. Rule 3. Space 4. Territory
81. Select the most appropriate synonym of the given word. Generic
1. Definite 2. Universal 3. Precise 4. Specific
82. Select the most appropriate meaning of the given idiom. Raise the bar
1. To raise the price 2. To grow taller
3. To set higher goals 4. To win a competition
83. The following sentence has been split into four segments. Identify the segment that contains a grammatical error. Had you / not reached in time, / we will have / lost our lives.
1. not reached in time 2. Had you
3. we will have 4. lost our lives
84. Select the most appropriate meaning of the given idiom. Bang for the buck
1. More value for money 2. Less value for money
3. Dash against something 4. A sorrowful heart
85. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select 'No substitution'.
The toy drummer plays the drum if you press the button at the back.
1. playing the drum if you pressed
2. will play the drum if you will press
3. played the drum if you are pressing
4. No substitution
86. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select 'No substitution'.
While washing your hands, rub them together for 20 seconds to remove the microbes on them.
1. No substitution 2. the microbes on their
3. the microbes on they 4. the microbes on those
87. Select the option that can be used as a one-word substitute for the given group of words.
A group of three novels or plays, each complete in itself
1. Trivet 2. Trilogy 3. Triplet 4. Triumvir
88. Select the option that expresses the given sentence in indirect speech.
"Everything is going to be alright," said the doctor.
1. The doctor said that everything will be alright.
2. The doctor said that everything was going to be alright.
3. The doctor said that everything is going to be alright.
4. The doctor said that everything are going to be alright.
89. Select the most appropriate option to fill in the blank.
India is formally moving ahead to _____ 21 MIG-29 and 12 Sukhoi-30MKI fighters from Russia along with upgrades of their existing fleets.
1. procure 2. achieve 3. accomplish 4. advance
90. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.
- A. When we got near, we saw it was the steam rising from hot springs.
B. We saw in the distance a great column of smoke.

- C. We wondered if it came from a chimney or a burning house.
 D. We thought of taking a bath in the hot water.
 1. BCAD 2. ACDB 3. BCDA 4. ABCD
91. Select the most appropriate option to fill in the blank.
 Work and domestic _____ made Kajal short-tempered.
 1. gravities 2. weights 3. forces 4. pressures
92. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.
 A. But the eagle, in wrath, gave the beetle a flap of his wing, and straightaway seized upon the hare and devoured him.
 B. The beetle therefore interceded with the eagle, begging of him not to kill the poor suppliant, and pleaded with him not to kill so small an animal.
 C. When the eagle flew away, the beetle flew after him, to learn where his nest was.
 D. A hare, being pursued by an eagle, took himself for refuge to the nest of a beetle, whom he begged to save him.
 1. DBAC 2. ACDB 3. CBAD 4. DCAB
93. Select the option that can be used as a one-word substitute for the given group of words.
 A herd or flock of animals being driven in a body
 1. Drove 2. Cluster 3. Throng 4. Crowd
94. The following sentence has been divided into parts. One of them contains an error. Select the part that contains the error from the given options.
 You must avoid riding in a crowded bus / or travelling in a metro / during rush hour / as both are quiet unpleasant experiences.
 1. or travelling in a metro 2. You must avoid riding in a crowded bus
 3. as both are quiet unpleasant experiences
 4. during rush hour
95. Select the INCORRECTLY spelt word.
 1. Exterminated 2. Voilence
 3. Wildernesses 4. Unmanageable
- 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.
 What every tourist must take back from Bhutan is pure honey, especially Putka, "Antibiotic" honey produced (1)_____ Melipona Bees (stingless bees) a breed found in protected areas (2)_____ 700 to 1,500 metres above sea level. Due (3)_____ their small size, they can get larger nutrients (4)_____ regular honeybees. It has a tangy/sour taste and can (5)_____ your sore throat in a matter of minutes.
96. Select the most appropriate option to fill in blank number 1.
 1. with 2. by 3. through 4. of
97. Select the most appropriate option to fill in blank number 2.
 1. after 2. between 3. among 4. midst
98. Select the most appropriate option to fill in blank number 3.
 1. for 2. to 3. of 4. at
99. Select the most appropriate option to fill in blank number 4.
 1. and 2. then 3. though 4. than
100. Select the most appropriate option to fill in blank number 5.
 1. appease 2. pacify 3. calm 4. soothe

Answer Key

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

Answers with Explanations

General Intelligence and Reasoning

1. Option (2) is correct.

The pattern is as follows: 12 : 60 →

$$12 \times [(12 \div 2) - 1] = 12 \times [6 - 1] = 12 \times 5 = 60$$

Similarly, 16 : ?

$$16 \times [(16 \div 2) - 1] = 16 \times [8 - 1] = 16 \times 7 = 112$$

2. Option (1) is correct.

Depression is a mood disorder that is characterised by sadness similarly Insomnia is a sleep disorder.

3. Option (4) is correct.

The logic is as follows: Column 1: $(15 - 4) \times 4 = 11 \times 4 = 44$

Column 3: $(21 - 6) \times 4 = 15 \times 4 = 60$. Similarly,

Let the missing number be in Column 2:

$$(? - 7) \times 4 = 68$$

$$? - 7 = \frac{68}{4}$$

$$? - 7 = 17$$

$$? = 17 + 7$$

$$? = 24$$

4. Option (3) is correct.

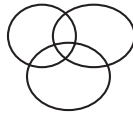
The pattern followed here is:

Some women are researchers and introverts.

Some researchers are women and introverts.

Some introverts are researchers and women.

The Venn diagram that best illustrates the relationship among Women, Researchers, and Introverts is as shown below:



5. Option (3) is correct.

When the box is constructed, the following symbols will be opposite each other, as shown below:

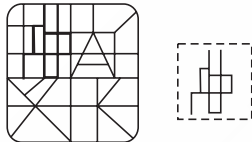
& % @
+ \$

So, when the box is constructed, the symbols & and # will be opposite each other.

Hence, & is the correct answer.

6. Option (4) is correct.

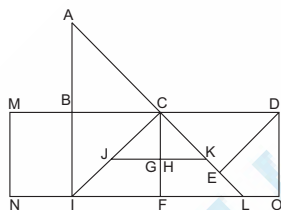
Hence, option 4 is embedded in the given image.



7. Option (1) is correct.

When we place the mirror on PQ, the objects on the left appear on the right, and the objects on the right appear on the left.

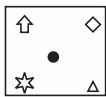
8. Option (1) is correct.



ABC, ACI, AIL, BCI, CED, CKH, CJG, CIL, CIE, CFL, CJK.

Hence, there are total 11 triangles in the figure.

9. Option (4) is correct.



10. Option (3) is correct.

Letters at the even position of the word are coded according to the equivalent opposite letter of a particular letter of the word and letters at odd positions are coded according to the logic shown below:

P E R M I T

+6 -6 +6

V V L N O G

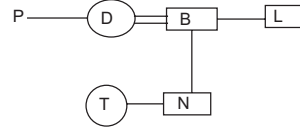
Similarly,

I N E R T I A

+6 -6 +6 -6

O M Y I Z R U

11. Option (4) is correct.



In the above blood relationship tree, we use a rectangle to represent males and a circle to represent females, there is no gender if there is no rectangle or circle. A single line represents brother-sister relationship, e.g., N is the brother of T and double line represents husband-wife relationship, e.g., D is the wife of B.

Hence, N is the brother of T.

12. Option (2) is correct.

The mind uses memory to store information.

Aptitude is the ability to think something through.

Intelligence is the ability to acquire and apply knowledge and skills.

Weight is the heaviness of a person or thing.

Except for weight, all options are related to a person's skills; weight, on the other hand, is a characteristic of anything.

13. Option (1) is correct.

$$35 - 24 = 11 + 5 = 16$$

$$51 - 35 = 16 + 6 = 22$$

$$73 - 51 = 22 + 7 = 29$$

$$102 - 73 = 29 + 8 = 37$$

$$102 + 37 = 39$$

The series will be 24, 35, 51, 73, 102, 139.

14. Option (4) is correct.

Let the total players be = A

$$\text{Players in Hotel X} = \frac{100}{3}\% \text{ of } A = \frac{A}{3}$$

$$\text{Players in Hotel Y} = A - \frac{A}{3} = \frac{2A}{3}$$

According to the question:

$$\frac{A}{3} + 20 = \frac{50}{100} \times A$$

$$\frac{A}{3} + 20 = \frac{A}{2}$$

$$\frac{A}{2} - \frac{A}{3} = 20$$

$$\frac{A}{6} = 20$$

$$A = 20 \times 6$$

$$A = 120$$

$$\text{Now, players in Hostel X} = \frac{120}{3} = 40$$

$$\text{Players in Hostel Y} = 120 - 40 = 80$$

Now, if 20 players from hotel X are shifted to hotel Y, then the number of players in hotel X becomes,

$$40 - 20 = 20.$$

And the number of players in hotel X becomes what per cent of the total number of players:

$$\frac{20}{120} \times 100 = 16.67\% = 16.67\%$$

15. Option (3) is correct.

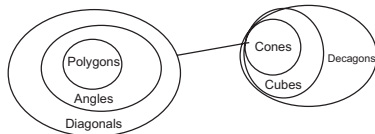
$$\frac{210}{14} = 15$$

$$\frac{342}{18} = 19$$

$$\frac{307}{17} = 18.05$$

$$\frac{156}{12} = 13$$

16. Option (4) is correct.



Some diagonals are polygons is true.
No polygon is a cone.

Hence, only conclusions I and III follow.

17. Option (4) is correct.

The sound made by the Horse is called Neigh in the same way the sound made by Ducks is called Quack.

18. Option (1) is correct.

We first count the total number of letters, which is 18 so we will now divide this group of 18 into similar groups e.g., 3 letters in each group and there will be 6 such groups, or 6 letters with 3 groups.

In these letters, there are more than 3 letters used, so the letter would be taking 6 letters from each group and there will be total 3 groups $6 \times 3 = 18$.

So, the first group will be LNUAPZ, LNUAPZ, LNUAPZ.

19. Option (4) is correct.

P	N	N	A
+2	+2	+2	
R	P	P	E
+2	+2	+2	
T	R	R	I
+2	+2	+2	
V	T	T	O
+2	+2	+2	
X	V	V	U

Hence, XVVU is the correct answer.

20. Option (2) is correct.

$$\text{The pattern is : } \frac{25 \times 18}{2} = 225$$

$$\frac{24 \times 22}{2} = 264$$

21. Option (1) is correct.

The pattern followed here is:

Here, consonants of the words are coded according to their positional values in the English alphabetical series.

Consonants → Same positional value

The vowels are coded according to the opposite letter place value $\times 2$.

Vowels → Opposite letter positional value $\times 2$.

For AROUND = 52182412144

For FIX = 63624

For PLASTIC = ?

P	L	A	S	T	I	C
16	12	26	19	20	18	3
16	12	52	19	20	36	3

Hence, '1612521920363' is the correct answer.

22. Option (3) is correct.

From option 1: CYUQ → C-4=Y, Y-4=U, U-4=Q.

From option 2: TPLH → T-4=P, P-4=L, L-4=H.

From option 3: NJFA → N-4=J, J-4=F, F-5=A.

From option 4: FBXT → F-4=B, B-4=X, X-4=T.

23. Option (3) is correct.

Using option (3), we get

$$42 \div 7 + 64 - 11 \times 6 = 4 \text{ (LHS)}$$

$$= 6 + 64 - 66$$

$$= 70 - 66 = 4$$

Hence, LHS = RHS

24. Option (2) is correct.



In the above figure, we first copy 1st into the second which will be the half figure and then copy the half into the full figure to get the final image.

25. Option (1) is correct.

FR is the same for all the words. Now, we will start from 3rd letter of every word viz, the third letter of 5th word is 'a' and that will be the first word of the arrangement; now, the third letter of 2nd word is 'e' which comes before the 3rd letter like Y, O, I. Now the 2nd word must be the 2nd word in the series which is in options 1 and 3. Similarly, we will get 5, 2, 1, 6, 4, 3.

General Awareness

26. Option (3) is correct.

An electron volt is a common unit of energy in atomic and nuclear physics. An electron volt is the amount of energy gained by the charge of a single electron moved across a 1-volt electric potential difference. It is frequently used in atomic and nuclear physics. The electron volt symbol is eV. $1\text{eV} = 1.602 \times 10^{-19}\text{J}$, $1\text{eV} = 1.602 \times 10^{-12}\text{erg}$. Other types of energy include: The SI unit of energy is the joule. The joule unit is named after English physicist James Prescott Joule. The SI base unit of Joule is $\text{kgm}^2\text{s}^{-2}$. A calorie is a type of energy unit that is commonly used in nutrition.

27. Option (2) is correct.

Al-Biruni was a scholar from Iran. He is regarded as the founder of modern geodesy. Kitab-ul-Hind is an 11th-century Arabic book written by Al-Biruni. Tarikh-ul-Hind is another name for Kitab-ul-Hind. The "caste system" in India is the subject of the book. In this book, he compares Indian culture to other cultures extensively. Al-Biruni referred to Kerala as Malabar. Al-book, Biruni's Kitab al-Tafhim, was written in both Persian and Arabic languages.

28. Option (3) is correct.

PM WANI is an abbreviation for Prime Minister Wi-Fi Access Network Interface. PM-WANI is a programme designed to help accelerate the adoption of broadband internet services. The initiative aims to improve the country's wireless internet connectivity. The Department of Telecommunications announced the PM-WANI scheme. As part of the WANI scheme, the government intends to provide internet connectivity through Public Data Offices (PDOs). There will be no licence fee for providing broadband internet services under this scheme.

29. Option (2) is correct.

Kidneys are bean-shaped organs found in humans. The kidney's primary function is excretion. The kidneys serve as the body's filter. The nephron is the kidney's structural and functional unit. The Bowman's capsule refers to the cup-shaped part of the nephron. A renal corpuscle and a renal tubule make up a nephron. Each human kidney contains about 1,00,000 nephrons. Nephrology is the study of kidneys.

30. Option (4) is correct.

Forensic science is the application of scientific methods or expertise to investigate crimes or examine evidence that may be presented in a court of law. It is also referred to as criminalistics. It is the application of scientific disciplines such as Physics, Chemistry, Biology, Computer science and Engineering to legal issues and the identification of various facts in a civilian investigation. From fingerprint and DNA analysis to anthropology and wildlife forensics, forensic science encompasses a wide range of disciplines. During an investigation, forensic scientists collect, preserve, and analyse scientific evidence.

31. Option (1) is correct.

Convection is a method of heat transfer that involves the movement of matter. Convection is the process by which hot, less dense materials rise to the surface and are replaced by colder, denser materials. Convection is only possible in fluids. Convection can be both natural and forced. Natural convection is heavily influenced by gravity. In forced convection, the material is forced to move by a pump or another physical means. Common examples of forced convection include forced-air heating systems in homes and the human circulatory system.

32. Option (3) is correct.

Khetri is a town in Rajasthan's Jhunjhunu district. Khetri is located in the Aravalli Range's foothills. Khetri is well-known for its copper mines. Hindustan Copper Ltd. owns the Khetri mines. Copper contamination is high in the Khetri region, with higher levels in the soil near overburdened material and tailings. Regular mining in Khetri came to an end in 1872. Keonjhar is an Odisha mineral-producing district. It is well-known for the extraction of iron ore, manganese ore, chromite, quartzite, bauxite, gold, and pyrophyllite. Satna is a Madhya Pradesh city.

33. Option (4) is correct.

Carolina Marin is a Spanish professional badminton player. She won the women's singles World Championship three times, in 2014, 2015, and 2018. Carolina Marin won the Toyota Thailand Open Women's Singles title in January 2021 in Bangkok. In the final, she defeated Taiwanese Tai Tzu-Ying. Between 2014 and 2021, she won the European Championships five times in a row (2014, 2016, 2017, 2018 and 2021.) She is currently the brand ambassador for LaLiga's international promotion in other countries. She won the Women's Singles gold medal in Rio de Janeiro in 2016.

34. Option (4) is correct.

Under the Armed Forces (Special Powers) Act of 1958, the Ministry of Home Affairs declared the entire state of Nagaland a "disturbed area" for six months more in December 2020 (AFSPA). The decision was made in response to reports of killings, looting, and extortion in various parts of the state. The AFSPA gives security forces the authority to conduct operations anywhere and arrest anyone without a warrant.

35. Option (3) is correct.

AB de Villiers is a former South African professional cricketer. He set the record for the quickest ODI century in 31 balls. In IPL 2020, he played for Royal Challengers Bangalore. His first franchise in the Indian Premier League was the Delhi Daredevils (now Delhi Capitals). In the fourth season of the league, he joined Royal Challengers Bangalore (RCB).

36. Option (4) is correct.

Baghmara Pitcher Plant Sanctuary is located in Meghalaya's South Garo Hills district. It is named after Nepenthes khasiana, a rare insectivorous Pitcher Plant. Nepenthes khasiana is only found in the state of Meghalaya. Locals call the Pitcher plant "Me'mang-Koksi" (Ghost Basket). Locals refer to it as the Ghost Basket or a sacred plant. The Baghmara Pitcher Plant Sanctuary is Meghalaya's only sanctuary dedicated to Pitcher Plant conservation. The Sanctuary also prevents soil erosion and supplies water to some of the surrounding villages.

37. Option (1) is correct.

The 2021–22 Union Budget was the first digital Union Budget. The central government has announced the establishment of four regional institutes of virology in the Union Budget for 2021–22. Regional NIV will aid in the efficient response to future viral pandemics/epidemics. In addition to the new virology institutes, the budget proposals call for establishing a regional research platform for the WHO South-East Asia region.

38. Option (1) is correct.

Gurdwara Patal Puri is located in the Punjab district of Rupnagar. It is situated on the banks of the Sutlej River. Guru Hargobind and Guru Har Rai were both cremated in Gurdwara Patal Puri in 1644 and 1661, respectively. The Sutlej River flows from Rakshastal Lake. Shatadru is another name for the Sutlej River (Ancient name). The Sutlej River is a major

tributary of the Indus. The Sutlej River enters India via the Shipki La pass. The Sutlej River is crossed by the Bhakra-Nangal Dam.

39. Option (1) is correct.

The Planning Commission was an institution in the Government of India, which formulated India's Five-Year Plans, among other functions. The planning commission was established in 1950. The planning commission is merely a consultative body. The Planning Commission's headquarters are in New Delhi. It was founded on the recommendation of an advisory planning board chaired by K. C. Niyogi.

40. Option (4) is correct.

In 1931, the Second Round Table Conference was held in London. It lasted from September 7 to December 1, 1931. Gandhiji was present at the Second Round Table Conference. The Second Round Table Conference is associated with the Gandhi-Irwin Pact. Due to strong disagreements among the participants, the Second Round Table Conference has been deemed a failure. Gandhiji resumed the civil disobedience movement in 1932, following the failure of the Second Round Table Conference. All three round table discussions took place in London.

41. Option (4) is correct.

Instead of Swami Dayanand Saraswati, Raja Ram Mohan Roy was the founder of the Brahmo Samaj. Brahmo Samaj was a Hindu monotheistic sect. It was established in 1828 as the Brahmo Sabha. Brahmo Sabha was renamed Brahmo Samaj later. Swami Dayananda Saraswati was an Indian subcontinent social reformer. Gujarat is where he was born. Mul Shankar was Swami Dayananda Saraswati's childhood name. He is the founder of Arya Samaj.

42. Option (1) is correct.

Ram Prasad Bismil founded the Hindustan Republican Association, a revolutionary organisation. The Hindustan Republican Association was founded to fight against British colonial rule in India and, if necessary, achieve independence for the country through armed rebellion. It was the first national revolutionary movement against the British. The Hindustan Republican Association's constitution was drafted in Allahabad in 1923.

43. Option (1) is correct.

The result of impulsive force is impulse. Impulse is the force that causes a body's momentum to change. Impulse has the same dimension as linear momentum. $\text{Time} = \frac{\text{Impulse (I)}}{\text{Force (F)}} (V)$. The force and time dimensional formulas are $[MLT^{-2}]$ and $[T]$, respectively. Impulse Dimensional Formulae = MLT^{-1} (A) Linear momentum is defined as the product of an object's mass (m) and its velocity (v). $\text{Mass} \times \text{Velocity} = \text{Linear Momentum}$. The mass and velocity dimensional formulas are $[M]$ and $[LT^{-1}]$, respectively. Linear momentum dimensional formulae = MLT^{-1} (B) (A) = (B) Linear momentum dimensions = Impulse dimensions.

44. Option (4) is correct.

The first-ever ice climbing festival was held in Nubra Valley in January 2021 in Leh. Nubra Adventure Club organised it. The ice climbing festival was organised to promote Nubra Valley's winter tourism. The festival lasted seven days. The ice climbing event drew 18 participants from the Nubra Valley, including four women. The northernmost region of Jammu and Kashmir is Nubra Valley.

45. Option (1) is correct.

Umesh Sharma was elected President of the Veterinary Council of India in January 2021. The Indian Veterinary Council Act of 1984 established the Veterinary Council of India as a statutory body. It was founded in 1984 under the Ministry of Agriculture of the Government of India. The Veterinary Council of India is headquartered in New Delhi. The first council elections were held in 1999. Haryana's additional chief secretary is Rajeev Arora.

46. Option (4) is correct.

Only Gopalpur does not belong to a town or city on India's west coast. Gopalpur is a city on India's east coast. Gopalpur

is an Odisha coastal town. During ancient times, Gopalpur served as an important port for ancient Kalinga's seafarers. During World War I, it was an important military port where soldiers embarked on a journey to Burma. Gopalpur was the site of the world's first modern hotel. Gopalpur port is a deep seaport built on the Bay of Bengal's shores. The Gopalpur port is linked to the Kolkata-Chennai railway line as well as national highways.

47. Option (3) is correct.

Raj Kamal Jha is an Indian novelist and newspaper editor. He is the Editor-in-Chief of The Indian Express at the moment. He was honoured with the 3rd Rabindranath Tagore Literary Prize for his novel 'The City and The Sea' in December 2020. The India Chapter of the International Advertising Association honoured him with the Editor of the Year award in September 2021. He was honoured with the Commonwealth Writers Prize for Best First Book for his work 'The Blue Bedsread' in 2000.

48. Option (2) is correct.

RTGS is an abbreviation for Real-Time Gross Settlements. RTGS is a system that allows for the continuous and real-time settlement of fund transfers on a transaction-by-transaction basis. A UTR number is a 22-character code that is used to uniquely identify a transaction in the RTGS system. In India, a unique Transaction Reference number is used to identify a specific bank transaction. UTR numbers are used by all banks in India for all types of money transfers.

49. Option (2) is correct.

Between 1979 and 1980, Charan Singh served as India's fifth Prime Minister. He was India's third Deputy Prime Minister. In 1977, he was appointed Deputy Prime Minister of India in the Morarji Desai government. Morarji Desai was India's fifth Prime Minister. He served as India's second Deputy Prime Minister. Charan Singh was India's first prime minister to lead a centre-left government.

50. Option (3) is correct.

Sudarshan Sahoo is an Indian sculptor from Puri in the state of Odisha. In 2021, he was awarded the Padma Vibhushan. Sudarshan Sahoo created the Puri Crafts Museum. It was founded in 1977. In 1981, he received the National Award for stone carving. In 1988, he was awarded the Padma Shri. In 2003, he received the Shilp Guru Award. Tarlochan Singh is a politician from India who was awarded the Padma Bhushan in 2021.

Quantitative Aptitude

51. Option (3) is correct.

Total number of cars sold by dealer B in Jan, April and June

$$= 600 + 580 + 620 = 1,800$$

Total number of cars sold by dealer A and D in Mar

$$= 628 + 722 = 1,350$$

$$\text{Required ratio} = 1,800 : 1,350 = 36 : 27 = 4 : 3$$

52. Option (4) is correct.

A alone can do a work in 24 days.

$$\text{So, A's one day work} = \frac{1}{24}$$

A and B can complete the work in $11\frac{1}{3}$ days

A and B works on alternate days where B started the work.

So, B worked for 6 days and A worked for $5\frac{1}{3}$.

$$\text{So, A's } 5\frac{1}{3} \text{ days work} = 5\frac{1}{3} \times \frac{1}{24} = \frac{2}{9}$$

$$\text{Remaining work} = 1 - \frac{2}{9} = \frac{7}{9}$$

So, B completed $\frac{7}{9}$ work in = 6 days

53. Option (2) is correct.

$$20 \div 5 \text{ of } 8 \times [9 \div 6 \times (6-3)] - (10 \div 2 \text{ of } 20)$$

$$\Rightarrow 20 \div 5 \text{ of } 8 \times [9 \div 6 \times 3] - 10 \div 40$$

$$\Rightarrow 20 \div 40 \times [4.5] - 0.25$$

$$\Rightarrow 0.5 \times 4.5 - 0.25 = 2$$

54. Option (3) is correct.

Let the total distance between X and Y = $3d$

Then, $XP = PQ = QY = d$

Let the speed of boat and steam be u km/h and v km/h, respectively.

So downstream speed = $(u + v)$ km/h

As per the question,

$$\Rightarrow \frac{2d}{u+v} : \frac{d}{u-v} = 4 : 5$$

$$\Rightarrow \frac{2(u-v)}{u+v} = \frac{4}{5}$$

$$\Rightarrow 5u - 5v = 2u + 2v$$

$$\Rightarrow \frac{u}{v} = \frac{7}{3}$$

$$\text{So, required ratio} = \frac{u+v}{v} = \frac{7+3}{3} = \frac{10}{3}$$

55. Option (4) is correct.

Given that,

The sum of amount = ₹ 8,192

Time = 15 months

Rate of interest = 15% per annum or 6.25% per 5 months

So, total amount after 15 months

$$= 8,192 \times \frac{106.25}{100} \times \frac{106.25}{100} \times \frac{106.25}{100}$$

$$= ₹ 9,826$$

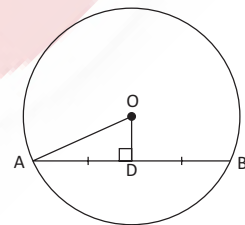
So, compound interest = $9,826 - 8,192 = ₹ 1,634$

56. Option (1) is correct.

Given that,

Chord = 21 cm and diameter = 25 cm

Perpendicular drawn at chord bisects the chord in two equal parts.



By pythagoras theorem,

$$OA^2 = OD^2 + AD^2$$

$$\Rightarrow \left(\frac{25}{2}\right)^2 = OD^2 + \left(\frac{21}{2}\right)^2$$

$$\Rightarrow OD^2 = \frac{625}{4} - \frac{441}{4} = 46$$

$$\Rightarrow OD = \sqrt{46}$$

57. Option (4) is correct.

Number of male teachers

$$= 1,650 + 1,075 + 1,280 + 1,170 + 690 = 5,865$$

Number of female teachers

$$= 2,375 + 2,651 + 1,520 + 1,085 + 859 = 8,490$$

Required ratio = $5,865 : 8,490 = 391 : 566$

58. Option (4) is correct.

$$\text{Given that, } \frac{\cos^2 \theta}{\cot^2 \theta + \sin^2 \theta - 1} = 3$$

$$\Rightarrow \frac{\cos^2 \theta}{\frac{\cos^2 \theta}{\sin^2 \theta} + \sin^2 \theta - 1} = 3$$

$$\begin{aligned} \Rightarrow \frac{\cos^2 \theta}{\frac{\cos^2 \theta}{\sin^2 \theta} - \cos^2 \theta} &= 3 \\ \Rightarrow \frac{1}{\frac{1}{\sin^2 \theta} - 1} &= 3 \\ \Rightarrow \tan^2 \theta &= 3 \\ \Rightarrow \tan \theta &= \sqrt{3} \\ \Rightarrow \theta &= 60^\circ \\ \text{So, } \tan \theta + \operatorname{cosec} \theta &= \tan 60^\circ + \operatorname{cosec} 60^\circ \\ &= \sqrt{3} + \frac{2}{\sqrt{3}} = \frac{5}{\sqrt{3}} = \frac{5\sqrt{3}}{3} \end{aligned}$$

59. Option (3) is correct.

As per the question,

$$\Rightarrow \frac{19-x}{28-x} = \frac{55-x}{91-x}$$

Applying componendo - dividendo method

$$\Rightarrow \frac{19-x+28-x}{19-x-28+x} = \frac{55-x+91-x}{55-x-91+x}$$

$$\Rightarrow \frac{47-2x}{-9} = \frac{146-2x}{-36}$$

$$\Rightarrow 188-8x = 146-2x$$

$$\Rightarrow x = 7$$

60. Option (4) is correct.

Let the MRP = ₹ 100

Then, SP = ₹ 79

$$\text{As per the question, CP} = \frac{79}{121} \times 100$$

$$\begin{aligned} \text{So, required ratio} &= \frac{79}{121} \times 100 : 79 \\ &= 100 : 121 \end{aligned}$$

61. Option (4) is correct.

We have,

$$8(x+y)^3 - 27(x-y)^3 = (5y-x)(Ax^2 + By^2 + Cxy)$$

As we know, $(a^3 - b^3) = (a-b)(a^2 + b^2 + ab)$

$$\Rightarrow (2x+2y-3x+3y)[4(x+y)^2 + 9(x-y)^2 +$$

$$6(x+y)(x-y)] = (5y-x)(Ax^2 + By^2 + Cxy)$$

$$\Rightarrow (5y-x)(4x^2 + 4y^2 + 8xy + 9x^2 + 9y^2 - 18xy +$$

$$6x^2 - 6y^2) = (5y-x)(Ax^2 + By^2 + Cxy)$$

$$\Rightarrow (5y-x)(19x^2 + 7y^2 - 10xy) = (5y-x)(Ax^2 + By^2 + Cxy)$$

Now, by comparing both sides,

$$A = 19$$

$$B = 7$$

$$C = -10$$

$$\text{So, } A + B - C = 19 + 7 + 10 = 36$$

62. Option (4) is correct.

We have,

90% of the production in 2015 = 90% of 1,250 = 1,125

90% of the production in 2016 = 90% of 1,400 = 1,260

90% of the production in 2017 = 90% of 1,450 = 1,305

90% of the production in 2018 = 90% of 1,500 = 1,350

90% of the production in 2019 = 90% of 1,600 = 1,440

From, above calculation, it is clear that only in 2016 and

2018 sales is more than 90% than production.

63. Option (4) is correct.

$$\text{We have, } x + \frac{1}{x} = 4 \quad \dots(1)$$

by squaring both the sides, $x^2 + \frac{1}{x^2} + 2 = 16$

$$\Rightarrow x^2 + \frac{1}{x^2} = 14 \quad \dots(2)$$

By cubing both sides of Eq. (1), $x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 64$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times 4 = 64$$

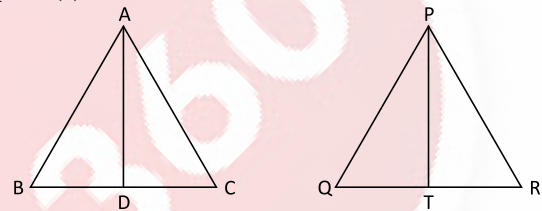
$$\Rightarrow x^3 + \frac{1}{x^3} = 52 \quad \dots(3)$$

By multiplying Eqs. (2) and (3),

$$x^5 + \frac{1}{x^5} + x + \frac{1}{x} = 14 \times 52$$

$$\Rightarrow x^5 + \frac{1}{x^5} + 4 = 728$$

$$\Rightarrow x^5 + \frac{1}{x^5} = 724$$

64. Option (4) is correct.

By similarity property,

$$\Rightarrow \frac{\text{Ar. } \triangle ABC}{\text{Ar. } \triangle PQR} = \frac{AD^2}{PT^2}$$

$$\Rightarrow \frac{64}{81} = \frac{AD^2}{10.8^2}$$

$$\Rightarrow AD = \frac{8}{9} \times 10.8 = 9.6$$

65. Option (2) is correct.

Given that,

Average of 28 numbers = 77

So, sum of 28 numbers = $77 \times 28 = 2,156$

Average of first 14 numbers = 74

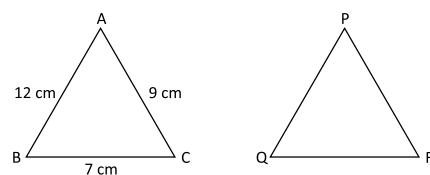
So, sum of first 14 numbers = $74 \times 14 = 1,036$

Average of last 15 numbers = 84

So, sum of last 15 numbers = $84 \times 15 = 1,260$ So, 14th number = $(1,036 + 1,260) - 2,156 = 140$

Average of remaining numbers

$$= \frac{2,156 - 140}{27} = 74.7$$

66. Option (2) is correct.

By similarity property,

$$\begin{aligned} \Rightarrow \frac{\text{Ar.}\Delta ABC}{\text{Ar.}\Delta PQR} &= \frac{AC^2}{PR^2} \\ \Rightarrow \frac{144}{49} &= \frac{9^2}{PR^2} \\ \Rightarrow PR^2 &= \frac{49 \times 81}{144} \\ \Rightarrow PR &= \frac{21}{4} \text{ cm} \end{aligned}$$

67. Option (1) is correct.

Percentage increase in sales by dealer D in the month of

$$\text{June} = \frac{780 - 600}{600} = 30\%$$

So, number of cars sold by D in July
= 130% of 780 = 1,014

68. Option (2) is correct.

Let 6 fruits be bought both the times.

$$\text{Cost price of 1 fruit} = \frac{140}{15} = ₹ \frac{28}{3}$$

$$\text{So, cost for 6 fruits} = \frac{28}{3} \times 6 = ₹ 56$$

$$\text{Now 2nd time, cost price of 1 fruit} = \frac{120}{10} = ₹ 12$$

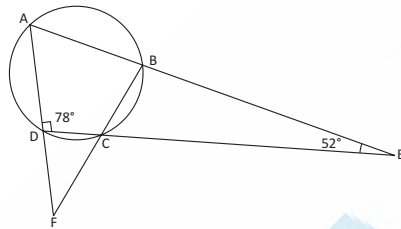
$$\text{So, cost for 6 fruits} = 12 \times 6 = ₹ 72$$

$$\text{Cost for 1 dozen fruits} = 56 + 72 = ₹ 128$$

$$\text{And sale price for 1 dozen fruits} = ₹ 132$$

$$\text{So, profit percentage} = \frac{132 - 128}{128} \times 100 = 3 \frac{1}{8} \%$$

69. Option (2) is correct.



$$\angle ADC = 78^\circ \text{ and } \angle BEC = 52^\circ$$

We have,

The sum of a pair of opposite angles is 180° of a cyclic quadrilateral.

$$\angle ADC + \angle ABC = 180^\circ$$

$$\Rightarrow \angle ABC = 180^\circ - 78^\circ = 102^\circ$$

$$\angle EBC = 180^\circ - 102^\circ = 78^\circ \quad [\text{Linear Pair}]$$

In triangle BEC

$$\angle BEC + \angle EBC + \angle BCE = 180^\circ$$

$$52^\circ + 78^\circ + \angle BCE = 180^\circ$$

$$\Rightarrow \angle BCE = 180^\circ - 130^\circ = 50^\circ$$

$$\angle ADE + \angle EDF = 180^\circ \quad [\text{Linear Pair}]$$

$$\Rightarrow \angle EDF = 180^\circ - \angle ADE = 180^\circ - 78^\circ = 102^\circ$$

In triangle DCF,

$$\angle D + \angle C + \angle F = 180^\circ$$

$$102^\circ + 50^\circ + \angle F = 180^\circ$$

$$\therefore \angle F = 180^\circ - 152^\circ = 28^\circ$$

70. Option (4) is correct.

Given that, $x + y = 4$

...(1)

$$\frac{1}{x} + \frac{1}{y} = \frac{16}{15} \quad \dots(2)$$

From equation. (2),

$$\Rightarrow \frac{x+y}{xy} = \frac{16}{15}$$

$$\Rightarrow \frac{4}{xy} = \frac{16}{15}$$

$$\Rightarrow xy = \frac{15}{4}$$

Squaring both the sides of equation. (1)

$$(x + y)^2 = 4^2$$

$$\Rightarrow x^2 + y^2 + 2xy = 16$$

$$\Rightarrow x^2 + y^2 + 2 \times \frac{15}{4} = 16$$

$$\Rightarrow x^2 + y^2 = 16 - \frac{15}{2} = \frac{17}{2}$$

$$\text{Now, } x^3 + y^3 = (x + y)(x^2 + y^2 - xy)$$

$$\begin{aligned} &= 4 \left(\frac{17}{2} - \frac{15}{4} \right) \\ &= 19 \end{aligned}$$

71. Option (1) is correct.

We have,

$$\frac{\operatorname{cosec} \theta}{\operatorname{cosec} \theta - 1} + \frac{\operatorname{cosec} \theta}{\operatorname{cosec} \theta + 1} - \tan^2 \theta$$

$$\Rightarrow \frac{\operatorname{cosec}^2 \theta + \operatorname{cosec} \theta + \operatorname{cosec}^2 \theta - \operatorname{cosec} \theta}{\operatorname{cosec}^2 \theta - 1} - \tan^2 \theta$$

$$\Rightarrow \frac{2 \operatorname{cosec}^2 \theta}{\cot^2 \theta} - \tan^2 \theta$$

$$\Rightarrow 2 \operatorname{cosec}^2 \theta \cdot \tan^2 \theta - \tan^2 \theta$$

$$\Rightarrow \tan^2 \theta (2 \operatorname{cosec}^2 \theta - 1)$$

$$\Rightarrow \tan^2 \theta (\operatorname{cosec}^2 \theta + \operatorname{cosec}^2 \theta - 1)$$

$$\Rightarrow \tan^2 \theta (\operatorname{cosec}^2 \theta + \cot^2 \theta)$$

$$\Rightarrow \sec^2 \theta + 1$$

72. Option (4) is correct.

We have,

$$S_1 = 13 \text{ cm}$$

$$D_1 = 24 \text{ cm}$$

$$\text{Then, } D_2 = 2\sqrt{(13^2 - 12^2)}$$

$$\Rightarrow D_2 = 2\sqrt{(169 - 144)}$$

$$\Rightarrow D_2 = 2\sqrt{25}$$

$$\Rightarrow D_2 = 10 \text{ cm}$$

$$\therefore \text{Area of rhombus} = \frac{1}{2} \times D_2 \times D_1$$

$$= \frac{1}{2} \times 24 \times 10 = 120 \text{ cm}^2$$

73. Option (2) is correct.

Let the income of B = ₹ 100

Then, income of A = ₹ 145

So, income of C = 40% of (100 + 145) = ₹ 98

Income of D = 120% of 98 = 117.6

As per the question,

$$(117.6 - 100)x = 13,200$$

$$\Rightarrow x = 750$$

Then, income of C = 98 × 750 = ₹ 73,500

74. Option (3) is correct.

$$\cot 25^\circ \cot 35^\circ \cot 45^\circ \cot 55^\circ \cot 65^\circ$$

$$= \cot (90 - 65)^\circ \cot (90 - 55)^\circ \cot 45^\circ \cot 55^\circ \cot 65^\circ$$

$$= \tan 65^\circ \tan 55^\circ \cot 45^\circ \cot 55^\circ \cot 65^\circ$$

$$= (\tan 65^\circ \cot 65^\circ) \cot 45^\circ (\cot 55^\circ \tan 55^\circ)$$

$$= 1 \times 1 \times 1 = 1$$

75. Option (4) is correct.

Given number = 676xy

Largest possible data from the above number is 67699.

$$\text{LCM}(3, 7, 11) = 231$$

$$\text{So, } 67,699 = 231 \times 293 + 16$$

So, 67,699 - 16 = 67,683 will be completely divisible by above three numbers.

$$\text{So, } x = 8 \text{ and } y = 3.$$

$$\text{Then, } 3x - 5y = 24 - 15 = 9$$

English Comprehension

76. Option (3) is correct.

'Seize' is to take hold of suddenly and forcibly.

- (1) 'Snatch' is to quickly seize something in a rude or eager way.
- (2) 'Catch' is to grasp or try to grasp something.
- (3) 'Loosen' is to relax one's grip or muscles. It is an antonym of the given word.
- (4) 'Grab' is to grasp or seize suddenly and roughly.

77. Option (4) is correct.

- (1) 'Creature' is an animal, as distinct from a human being.
- (2) 'Specified' means identified clearly and definitely.
- (3) 'Decrease' is to make something smaller or fewer in size, amount, intensity, or degree.
- (4) The correct spelling is 'peaceful', which means free from disturbance.

78. Option (4) is correct.

'Gradual' is taking place or progressing slowly or by degrees.

- (1) 'Slow' means not quick or fast.
- (2) 'Regular' means consistent or something that recurs at uniform intervals.
- (3) 'Gentle' refers to having or showing a mild, kind, or tender temperament or character.
- (4) 'Abrupt' means sudden and unexpected. It is an antonym of the given word.

79. Option (2) is correct.

This sentence is in present continuous tense. The correct order of passive voice sentence is 'Object + auxiliary verb + past participle + by + subject'.

- (1) This sentence is in simple past tense. Also, the subject is missing in the given sentence.
- (2) This sentence is also in present continuous tense and follows the correct order.
- (3) This sentence is in present perfect tense.
- (4) The sentence is in simple past tense. Also, 'by' is missing before the subject.

80. Option (2) is correct.

'Regime' is a government, especially an authoritarian one.

- (1) 'Country' is a nation with its own government, occupying a particular territory.
- (2) 'Rule' refers to control of or dominion over an area or people. It is the synonym of the given word.
- (3) 'Space' is a continuous area or expanse which is free, available, or unoccupied.
- (4) 'Territory' is an area of land under the jurisdiction of a ruler or state.

81. Option (2) is correct.

'Generic' means general.

- (1) 'Definite' means clearly stated or decided.
- (2) 'Universal' means general. It is the synonym of the given word.
- (3) 'Precise' means marked by exactness and accuracy of expression or detail.
- (4) 'Specific' means clearly defined or identified.

82. Option (3) is correct.

'Raise the bar' is to raise the standards which need to be met in order to qualify for something.

83. Option (3) is correct.

'Had' is used for the third conditional, which is used for situations that could have occurred but can no longer occur. With 'had', the order of the main clause is 'subject + would have + past participle + object'. The correct phrase will be 'we would have'.

84. Option (1) is correct.

'Bang for the buck' means to get worth of one's money.

85. Option (2) is correct.

This sentence is correct. In zero conditionals, the result will always happen. Both the if clause and main clause use simple present verbs. So, the given sentence is correct as it is.

86. Option (1) is correct.

- (1) 'Them' refers to the hands.
- (2) 'Their' requires a noun after, which is missing.
- (3) 'They' is a subject pronoun, while what we required here is an object pronoun.
- (4) 'Those' is a demonstrative pronoun while an object pronoun is needed here.

87. Option (2) is correct.

- (1) 'Trivet' is an iron tripod or bracket for a cooking pot or kettle to stand on.
- (2) 'Trilogy' is a group of three related novels, plays, films, etc.
- (3) 'Triplet' is one of three children or animals born at the same birth.
- (4) 'Triumvir' is each of three public officers jointly responsible for overseeing any of the administrative departments.

88. Option (2) is correct.

The simple present tense will change to simple past.

- (1) This sentence uses future tense.
- (2) This option is in the correct tense.
- (3) This sentence maintains the present simple tense, which is incorrect.
- (4) This option has a subject-verb disagreement. 'Everything' is singular while 'are' is plural.

89. Option (1) is correct.

The sentence talks of India getting the fighter jets from Russia.

- (1) 'Procure' is to obtain (something), especially with care or effort.
- (2) 'Achieve' is to successfully bring about or reach a desired objective or result by effort, skill, or courage.
- (3) 'Accomplish' is to achieve or complete successfully.
- (4) 'Advance' is to move forward in a purposeful way.

90. Option (1) is correct.

Sentence B talks of 'a column of smoke' while sentence C talks of the speaker wondering about the origins of that smoke. Now, sentence A talk of finding out this origin. This makes BCA a mandatory sequence, which is present only in option (1). So, the correct sequence is BCAD.

91. Option (1) is correct.

The blank is described by the adjective 'domestic'. It is a noun which contributes to the anger experience by Kajal.

- (1) 'Gravities' refers to extreme importance.
- (2) 'Weights' are pieces of metal known to weigh a definite amount and used on scales to determine how heavy an object or quantity of a substance is.
- (3) 'Forces' refer to mental or moral strength or power.
- (4) 'Pressures' refer to the act of trying to make someone else do something by arguing, persuading, etc.

92. Option (1) is correct.

Sentence D introduces the situation and mentions a hare requesting a beetle for help. Sentence B talks of the beetle requesting the eagle to spare the hare. Sentence A talks of the eagle's reaction. This makes DBA a mandatory sequence, which is present only in option (1). So, the correct sequence is DBAC and option (1) is the correct answer.

93. Option (1) is correct.

- (1) 'Drove' is a large group of animals, especially cattle or sheep, moving from one place to another.
- (2) 'Cluster' is a group of similar things or people positioned or occurring closely together.
- (3) 'Throng' is a large, densely packed crowd of people or animals.
- (4) 'Crowd' is a large number of people gathered together in a disorganised or unruly way.

94. Option (3) is correct.

'Quiet' means to make no or little noise while 'quite' refers to the utmost degree or completely. So, there is an error in option (3). The correct phrase will be 'as both are quite unpleasant experiences'.

95. Option (2) is correct.

- (1) 'Exterminated' means destroyed completely.
- (2) The correct spelling is 'violence', which refers to behaviour involving physical force intended to hurt, damage, or kill someone or something.
- (3) 'Wilderness' refers to an uncultivated, uninhabited, and inhospitable region.
- (4) 'Unmanageable' means difficult or impossible to manage, manipulate, or control.

96. Option (1) is correct.

- (1) 'Produced with' refers to the raw material with which something is produced.
- (2) 'Produced by' refers to who/what has produced the mentioned honey.
- (3) 'Produced through' refers to the method of preparation.
- (4) 'Of' is not used with the verb 'produce'.

97. Option (2) is correct.

The blank is followed by a time duration.

- (1) 'After' is used to indicate the time following an event or another period of time.
- (2) 'Between' means during a particular time period.
- (3) 'Among' means situated more or less centrally in relation to several other things.
- (4) 'Midst' means in the middle of.

98. Option (2) is correct.

- (1) 'For' is not used with 'due'. 'For' refers to purpose.
- (2) 'Due to' means because of.
- (3) 'Of' is not used with 'due'. 'Of' is used to show possession.
- (4) 'At' is not used with 'due'. 'At' is used to show exact position or particular place.

99. Option (4) is correct.

The sentence talks of comparison between the nutrients got by Melipona Bees and the regular honeybees.

- (1) 'And' is a conjunction used to connect two words or clauses.
- (2) 'Then' is used to show sequence.
- (3) 'Though' means despite the fact that.
- (4) 'Than' is used for comparison.

100. Option (4) is correct.

The sentence talks of healing sore throat.

- (1) 'Appease' is to satisfy someone's demand or feeling.
- (2) 'Pacify' is to quell someone's anger or excitement.
- (3) 'Calm' is to soothe a person. This doesn't fit the given context.
- (4) 'Soothe' is to reduce pain or discomfort in a part of the body.

OSWAAL