

STAFF SELECTION COMMISSION

CGL TIER – I MODEL PAPER

No. of Questions: 100

Total Marks: 200

Time: 1 Hr.

GENERAL INTELLIGENCE & REASONING

Directions (Q. 1 – 5): In each of the following questions, select the related letter/word/ figure/ number from the given alternatives.

1. Boat : Oar :: Bicycle : ?

- 1) Pedal 2) Seat 3) Road 4) Wheel

2. C : 16 :: F : ?

- 1) 31 2) 40 3) 48 4) 50

3. Travel : Companion :: Profession : ?

- 1) Ally 2) Accomplish
3) Colleague 3) Partner

4. EGIK : FILO :: FHJL : ?

- 1) GJMP 2) GMJP 3) JGMP 4) JGPM

5. Apostate : Religion :: ? : ?

- 1) Teacher : Education 2) Traitor : Country
3) Potentate : Kingdom 4) Jailer : Law

Directions (Q. 6 – 9): Find the odd word / letter / number from the given alternatives.

6. 1) MEWG 2) PBQT 3) DRBSN 4) CGHKV

7. 1) 27 2) 64 3) 125 4) 144

8. 1) CXGT 2) EVBY 3) DXEY 4) AZDW

9. 1) Star 2) Ring 3) Mesh 4) Topology

10. Arrange the following words as per order in the dictionary.

- i. Intense ii. Intellect
iii. Intend iv. Intelligent
1) i, ii, iii, iv 2) iv, ii, i, iii 3) iii, ii, i, iv 4) ii, iv, iii, i

11. From the given alternatives, select the word which can't be formed using the letters of the given word.

DUTIFUL

- 1) LIFT 2) TILL 3) FLU 4) FLIT

12. Reaching the place of meeting 20 min before 8 : 50 am, Sumit found himself 30 min earlier than the man who was 40 min late. What was the scheduled time of the meeting?

- 1) 8 : 00 am 2) 8 : 05 am 3) 8 : 10 am 4) 8 : 20 am

13. In the given series find the number which is wrong?

3, 10, 27, 4, 16, 64, 5, 25, 125

- 1) 3 2) 4 3) 10 4) 27

14. A policeman left his police post and proceeded 4 km South on hearing a loud sound from point A. On reaching the place, he heard another sound and proceeded 4 km to his left to the point B. From B, he proceeded left to reach another place C, 4 km away. In which direction, he has to go to reach his police post?

- 1) North 2) South 3) East 4) West

15. In a caravan, in addition to 50 hens, there are 45 goats and 8 camels with some keepers. If the total number of feet be 224 more than the number of heads in the caravan, the number of keepers is

- 1) 5 2) 8 3) 10 4) 15

16. If ZIP = 198 and ZAP = 246, then how will you code VIP?

- 1) 174 2) 222 3) 888 4) 990

17. If '+' = '-', '-' = 'x', '÷' = '+' and 'x' = '÷', then $15 - 3 + 10 \times 5 \div 5$ is equal to

- 1) 5 2) 22 3) 48 4) 52

Directions (Q. 18 – 19): In the given series, some letter / number / digit is missing. Choose the appropriate option.

18. T, R, O, K, F, Z,

- 1) S 2) T 3) U 4) V

19. 4, 2, 5, 3, 6, 4, 7, 5, 8,

- 1) 4 2) 7 3) 6 4) 3

20. **Statement:**

All aeroplanes are trains.

Some trains are chairs.

Conclusions:

- I. Some aeroplanes are chairs.
- II. Some chairs are aeroplanes.
- III. Some chairs are trains.
- IV. Some trains are aeroplanes.

- 1) None follows
2) I and II follow
3) II and III follow
4) III and IV follow

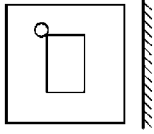
21. From the given options choose the missing number.



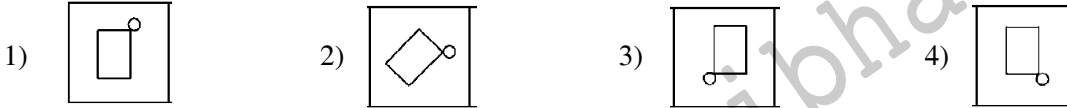
- 1) 10 2) 11 3) 12 4) 13

22. Which of the following answer figure is the correct mirror image of the question figure?

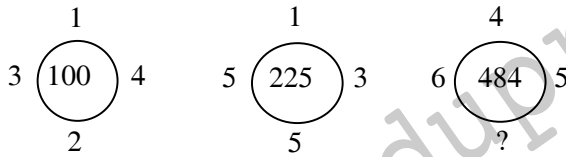
Question Figure:



Answer Figure:

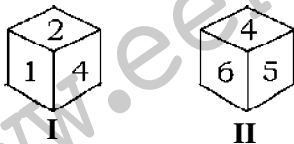


23. Find the missing number.



- 1) 8 2) 6 3) 7 4) 5

24. The two positions of a cube are shown, which digit will be on opposite face of 3?



- 1) 2 2) 4 3) 5 4) 6

25. Jatin starting from a fixed point, goes 15 m towards North and then after turning to his right, he goes 15 m. Then, he goes 10 m, 15 m and 15 m after turning to his left each time. How far is he from his starting point?

- 1) 15 m 2) 5 m 3) 10 m 4) 20 m

GENERAL AWARENESS

26. The National Emergency in India declared by the President of India due to the external aggression or armed revolt through?

- 1) Article - 352 2) Article - 356
3) Article - 360 4) Article - 368

27. Which of the following is not in the infrastructure sector?

- 1) Power generation 2) Construction of roads
3) Food production 4) Expansion of airports

28. The minimum number of geostationary satellites needed for uninterrupted global coverage is?

- 1) 3 2) 2 3) 4 4) 1

29. Which of the following is NOT one of the important steps in processing of tea leaves?

- 1) Rolling 2) Drying 3) Fermenting 4) Plucking

30. The number of chambers in a human heart is?

- 1) Four 2) Two 3) Three 4) Five

31. Headquarters of World Health Organisation are situated at
1) Hague 2) Oslo 3) Geneva 4) New York
32. Which of the following is not correctly matched?
1) Jeev Milkha Singh (Football)
2) Sania Mirza (Tennis)
3) Saina Nehwal (Badminton)
4) Vishwanathan Anand (Chess)
33. During photosynthesis in plants, the gas evolved is?
1) Carbon dioxide 2) Nitrogen 3) Oxygen 4) Hydrogen
34. The technique of collecting information about an object from a distance without making physical contact with it is?
1) Remote sensing 2) Remote control
3) Remote accessing 4) Space shuttle
35. Name the crop-season in India that opens in May-June with major crops like rice and millets.
1) Zaid season 2) Rabi 3) Kharif 4) Winter season
36. Match the following:
List-I (Sobriquets)
(a) Frontier Gandhi
(b) Grand old Man India
(c) Mahamana
(d) Iron Man of India

(a) (b) (c) (d)
1) iv ii iii v
3) iv ii v i
- List-II (Names)**
i. Madan Mohan Malaviya
ii. Vallabhbhai Patel
iii. Dadabhai Naoroji
iv. Balgangadhar Tilak
v. Abdul Gaffar Khan

(a) (b) (c) (d)
2) v iii i ii
4) v iii ii iv
37. Winner of 4th season Pro-Kabaddi league is?
1) Puneri Paltan 2) Bengal Warriors
3) Patna Pirates 4) Jaipur Pink Panthers
38. Thomas Cup is related to which game?
1) Badminton 2) Basketball 3) Cricket 4) Tennis
39. ATM is the abbreviation for
1) Automatic Teller Machine
2) Automated Teller Machine
3) Authentic Teller Machine
4) Authorised Teller Machine
40. Copper is refined by?
1) roasting 2) oxidation 3) electrolysis 4) zone refining

41. A water tank appears shallower when it is viewed from top due to?
1) rectilinear propagation of light 2) reflection
3) total internal reflection 4) refraction
42. Which State has the lowest percapita income in India?
1) Bihar 2) Orissa 3) Rajasthan 4) Gujarat
43. A body absorbs heat most if it is?
1) black and rough 2) black and smooth
3) white and rough 4) white and smooth
44. The term 'epicentre' is associated with?
1) earthquake 2) folding 3) faulting 4) earth's interior
45. Where is the objective of "social justice" articulated in the Constitution of India?
1) Article 14 2) Article 15 3) Article 16 4) Preamble
46. Which of the following exhibits unidirectional flow in an ecosystem?
1) Light 2) Energy 3) Water 4) Biomass
47. Who of the following attended all the Three Round Table Conferences?
1) B.R. Ambedkar 2) M.M. Malavia
3) Vallabhbhai Patel 4) Gandhiji
48. The 'sorrow of Bihar' is
1) Damodar 2) Kosi 3) Son 4) Gandak
49. Soap is prepared by boiling caustic soda with?
1) Alcohol 2) Kerosene oil 3) Glycerine 4) Fats
50. The highest dam in India, Bhakra is built on?
1) Vyas river 2) Jhelum river
3) Sutlej river 4) Ghaghara river

QUANTITATIVE APTITUDE

51. Two stations A and B are 110 km apart on a straight railway line. One train starts from A at 8 a.m. and travels towards B at 40 km per hour. Another train starts from B at 10 a.m. and travels towards A at 50 km/h. At what time will they meet?
1) 8.30 a.m. 2) 8.30 p.m. 3) 10.20 a.m. 4) 10.20 p.m.
52. The rate of interest on a sum of money is 4 percent per annum for the first 2 years, 6 percent per annum for the next 4 years and 8 percent per annum for the period beyond 6 years. If the simple interest accrued by the sum for a total period of 9 years is Rs.1120, what is the sum?
1) Rs.2000 2) Rs.2200 3) Rs.2400 4) Rs.2500
53. A person buys 100 cups at Rs.10 each. On the way 10 cups break. He sells the remaining cups at Rs.11 each. His loss percent is
1) $\frac{1}{2}$ % 2) 1% 3) $1\frac{1}{2}$ % 4) 2%

54. A bag contains Rs.410 in the form of Rs.5, Rs.2 and Rs.1 coins. The number of coins are in ratio 4 : 6 : 9. Find the number of `2 coins.
1) 40 2) 50 3) 60 4) 70
55. A certain number of men complete a piece of work in 60 days. If there were 8 men more, the work could be finished in 10 days less. How many men were originally there?
1) 30 men 2) 40 men 3) 45 men 4) 50 men
56. A dishonest dealer professes to sell his goods at cost price, but he uses a weight of 950 gm for one kg weight. Find his gain percent. (rounded to two decimals)
1) 5.20% 2) 5.26% 3) 5.30% 4) 5.28%
57. A and B rent a pasture for 10 months and A puts in 90 oxen for 7 months. How many oxen can B put in for the remaining 3 months, if he pays half as much as A?
1) 105 2) 110 3) 115 4) 120
58. 3 men and 4 boys can earn Rs.756 in 7 days. 11 men and 13 boys can earn Rs.3008 in 8 days. In what time will 7 men with 9 boys earn Rs.2480?
1) 8 2) 10 3) 15 4) 20
59. Nand Kishore gives 35 percent of the money he had to his wife and gave 50 percent of the money he had to his sons. Remaining amount of Rs.11,250 he kept for himself. What was the total amount of money Nand Kishore had?
1) Rs.63,750 2) Rs.75,000 3) Rs.73,650 4) Rs.72,450
60. The price of sugar is increased by 20%. As a result, a family has decreased its consumption by 20%. The expenditure of the family on sugar is decreased by?
1) 0 percentage 2) 2.5 percentage 3) 4 percentage 4) 5 percentage
61. By selling a horse for Rs. 570, a tradesman would lose 5 percent. At what price must he sell it to gain 5 percent?
1) Rs.530 2) Rs.58 3) Rs.620 4) Rs.630
62. One man adds 3 litres of waters to 12 litres milk and another 4 litres of water to 10 litres of milk. What is the rate of the strengths of milk in the two mixtures?
1) 28 : 25 2) 27 : 25 3) 26 : 25 4) 25 : 26
63. A number being divided by 52 gives remainder 45. If the number is divided by 13, the remainder will be
1) 5 2) 6 3) 12 4) 7
64. A cricketer whose bowling average is 12.4 runs per wicket, takes 5 wickets for 26 runs and thereby decreases his average by 0.4. The number of wickets taken by him till the last match is?
1) 64 2) 72 3) 80 4) 85
65. If $x - y = \frac{x + y}{7} = \frac{xy}{4}$, the numerical value of xy is
1) $\frac{4}{3}$ 2) $\frac{3}{4}$ 3) $\frac{1}{4}$ 4) $\frac{1}{3}$
66. How many square tiles, each of 4 decimetre of length, will be required to cover the floor of a room 8 m long and 6 m broad?
1) 200 2) 260 3) 280 4) 300

67. The length of the diagonal BD of the parallelogram ABCD is 18 cm. If P and Q are the centroid of the ΔABC and ΔADC respectively, then the length of the line segment PQ is?

- 1) 4 cm 2) 6 cm 3) 9 cm 4) 12 cm

68. If the sum of two angles is 135° and their difference is $\frac{\pi}{12}$ then the circular measure of the greater angle is?

- 1) $\frac{2\pi}{3}$ 2) $\frac{3\pi}{5}$ 3) $\frac{5\pi}{12}$ 4) $\frac{\pi}{3}$

69. A circle with centre at O is touching two intersecting lines AX and BY. The two points of contact A and B subtend an angle of 65° at any point C on the circumference of the circle. If P is the point of intersection of the two lines, then the measure of $\angle APO$ is?

- 1) 25° 2) 65° 3) 90° 4) 40°

70. If θ be a positive acute angle satisfying $\cos^2 \theta + \cos^4 \theta = 1$, then the value of $\tan^2 \theta + \tan^4 \theta$ is?

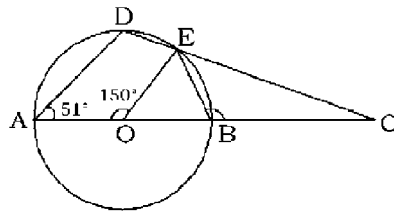
- 1) $\frac{3}{2}$ 2) 1 3) $\frac{1}{2}$ 4) 0

71. If $9x - \frac{9}{2x} = 18$, then find the value of $x^3 - \frac{1}{8x^3}$

- 1) 9 2) 8 3) 27 4) 11

72. In the following figure, AB is the diameter of a circle whose centre is O. If $\angle AOE = 150^\circ$, $\angle DAO = 51^\circ$ then the measure of $\angle CBE$ is?

- 1) 115°
2) 110°
3) 105°
4) 120°



73. The value of $x + y$ in the solution of the equations

$$\frac{x}{4} + \frac{y}{3} = \frac{5}{12} \text{ and } \frac{x}{2} + y = 1$$

- 1) $\frac{1}{2}$ 2) 2 3) $\frac{5}{2}$ 4) $\frac{3}{2}$

74. The base of right prism is a triangle whose perimeter is 28 cm and the inradius of the triangle is 4 cm. If the volume of the prism is 366 cm, then its height is?

- 1) 6 cm 2) 8 cm 3) 4 cm 4) None of these

75. If $11x - 13 = -2x + 78$, then $x = ?$

- 1) 7 2) 8 3) 6 4) 4

ENGLISH LANGUAGE

Directions (Q. 76 – 78): Some part of the sentences have errors and some are correct. Find out which part of a sentence has an error. If a sentence is free from error, your answer is (4).

76. The scientists (1)/ could not hardly (2)/ complete all the experiments. (3)/ No error (4)
77. No sooner the bell rang (1)/ than there was a scramble (2)/ for getting out of the theatre. (3)/ No error (4)

78. I am very thirsty (1)/ so give me (2)/ little water to drink. (3)/ No error (4)

Directions (Q. 79 – 80): Sentences given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

79. Being the judge gave a favourable verdict.

- 1) sagacious 2) pugnacious 3) malicious 4) tenacious

80. School days are considered to be the best years of your life. When my year in school began, I began to think of those past enjoyable days and of my future also.

- 1) penultimate 2) absolute 3) integral 4) termination

Directions (Q. 81 – 82): Out of the four alternatives, choose the one which best expresses the meaning of the given word.

81. **Rivalled**

- 1) Hatred 2) Revised 3) Competed 4) Contradicted

82. **Pester**

- 1) Annoy 2) Insect 3) Upset 4) Paste

83. Choose the word opposite in meaning to the given word.

VENIAL

- 1) Minor 2) Pardonable 3) Unpardonable 4) Clean

84. Four words are given in each question, out of which only one word is spelt correctly. Find the word spelt correct.

- 1) Narcisism 2) Narcissism 3) Narcisim 4) Narsisism

Directions (Q. 85 – 87): Four alternatives are given for the Idiom / Phrase. Choose the alternative which best expresses the meaning of the Idiom / Phrase.

85. To run amuck

- 1) To run a race
2) To run about in frenzy
3) To feel exhausted
4) To run to somebody's help

86. A baker's dozen

- 1) Twelve 2) Charity 3) Thirteen 4) Allowance

87. To have full hands

- 1) To be fully occupied 2) To be rich
3) To be in lot of troubles 4) To lead an easy life

Directions (Q. 88 – 90): A sentence/ a part of the sentence is underlined. Below are given alternatives to the underlined part at (1), (2), (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4).

88. Fuji's invention of supercomputer will be enable to make Japan supersede America in computer technology.

- 1) will make Japan 2) will enable Japan
3) can make Japan 4) No improvement

89. She cries all the time.

- | | |
|----------------------|-----------------------|
| 1) mostly everything | 2) day in and day out |
| 3) pretty frequently | 4) No improvement |

90. How, is beyond my understanding, the boy could fall into the ditch.

- 1) How the boy could fall into the ditch is beyond my understanding
- 2) Beyond my understanding is how the boy could the boy fall into the ditch
- 3) How could the boy fall into the ditch is beyond my understanding
- 4) No improvement

Directions (Q. 91 – 93): In the following question, out of the four alternatives, choose the one which can be substituted for the given sentence.

91. A person who is greatly respected because of wisdom

- | | | | |
|--------------|---------------|--------------|-----------|
| 1) Veracious | 2) Vulnerable | 3) Venerable | 4) Verger |
|--------------|---------------|--------------|-----------|

92. Atonement for one's sins

- | | | | |
|---------------|---------------|--------------|---------------|
| 1) Redemption | 2) Repentance | 3) Salvation | 4) Expedition |
|---------------|---------------|--------------|---------------|

93. Expressions of sympathy

- | | |
|-------------------|-----------------|
| 1) Congratulation | 2) Condolence |
| 3) Compliment | 4) Condemnation |

Directions (Q. 94 – 95): You are provided with the first and the last part of a sentence. The remaining sentence is broken into four parts labelled (P), (Q), (R) and (S). You are required to arrange this parts so as to form a complete meaningful sentence and then choose the correct combination from (1), (2), (3) and (4).

94. Every body

P : attracts every other

Q : whether big or small,

R : body with the force

S : in the universe of gravitation

- | | | | |
|------------|------------|------------|------------|
| 1) P R S Q | 2) Q P R S | 3) R S P Q | 4) S Q P R |
|------------|------------|------------|------------|

95. The little girl

P : for the mother to leave

Q : said to her friend

R : little children on their own

S : it was not quite right and go to work

- | | | | |
|------------|------------|------------|------------|
| 1) P R Q S | 2) Q S P R | 3) R P S Q | 4) S Q R P |
|------------|------------|------------|------------|

Directions (Q. 96 – 100): In the following passages some of the words have been left out. Read the passages carefully and choose the correct answer to each question out of the four alternative and fill in the blanks. 'Quit India' came not from the lips, but the aching hearts of millions. In this open rebellion, the Indian **..(96)..** reached its climax. The British were not only **..(97)..** by it, but also were obliged to quit unilaterally. The importance of Quit India can be **..(98)..** from Lord Linlithgow's statement, 'I am engaged here in meeting by far the most **..(99)..** rebellion since, that of 1857, the gravity and extent of which we have so far **..(100)..** from the world for reasons of military security'.

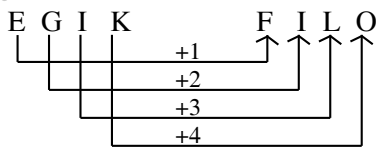
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|------|---------------|----------------|----------------|---------------|
| 96. | 1) freedom | 2) patriotism | 3) liberation | 4) revolution |
| 97. | 1) threatened | 2) inspired | 3) attacked | 4) impressed |
| 98. | 1) diffused | 2) deduced | 3) established | 4) determined |
| 99. | 1) trivial | 2) magnificent | 3) serious | 4) auspicious |
| 100. | 1) excluded | 2) elicited | 3) prevented | 4) concealed |

ANSWERS

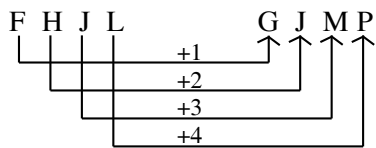
1-1; 2-1; 3-3; 4-1; 5-2; 6-1; 7-4 ; 8-3; 9-4; 10-4; 11-2; 12-4; 13-3; 14-4; 15-4; 16-2; 17-3; 18-1; 19-3; 20-4; 21-2; 22-1; 23-3; 24-2; 25-3; 26-1; 27-3; 28-1; 29-4; 30-1; 31-3; 32-1; 33-3; 34-1; 35-1; 36-2; 37-3; 38-1; 39-2; 40-1; 41-4; 42-1; 43-1; 44-1; 45-4; 46-2; 47-1; 48-2; 49-4; 50-3; 51-3; 52-1;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

HINTS & SOLUTIONS

- Second denotes the part on which the effort is applied.
- According to alphabetical order
 $C = 3$ and $3 \times 5 + 1 = 16$
 In the same way,
 $F = 6$ and $6 \times 5 + 1 = 31$
- An associate in a travel is called companion. Similarly, an associate in a profession is called colleague.
- As,

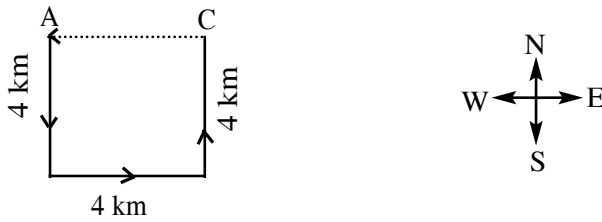


Similarly,



- Apostate is one who renounces religion similarly, traitor is one who betrays his country.
- This is the only group containing a vowel.
- Each of the numbers except 144 is a perfect cube.
- In all other groups, the first and second letters occupy the same positions from the beginning and end of alphabet and so do the third and fourth letters.
- Star, Ring and Mesh are types of topology.
- The correct alphabetical order of the given words is Intellect, Intelligent, Intend, Intense.
- Because of letter L used twice, the word TILL cannot be formed using the letters of originals word.
- Sumit reached at the place 20 min before 8 : 50 am. i.e., at 8 : 30 am. Clearly the man who was 40 min late would reach the place at 9 : 00 am. So, the scheduled time of the meeting was 40 min before 9 : 00 am. i.e., 8 : 20 am.

13. The correct sequence is 3, 32, 33, 4, 42, 43, 5, 52, 53 So, 10 is wrong and it must be replaced by 32 i.e., 9.
14. The movement of policeman is shown in the figure below.



For reaching A (starting point) from C, policeman will have to move in the West direction.

15. Let number of keepers be x .

Then, total number of feet = $2 \times 50 + 4 \times 45 + 4 \times 8 + 2x = 2x + 312$

Total number of heads = $50 + 45 + 8 + x$
 $= 103 + x$

$\therefore (2x + 312) = (103 + x) + 224$ or $x = 15$

16. Taking $Z = 2, Y = 3, \dots, N = 14, \dots, B = 26, A = 27$, we have

$ZIP = (Z + I + P) \times 6 = (2 + 19 + 12) \times 6$
 $= 33 \times 6 = 198$

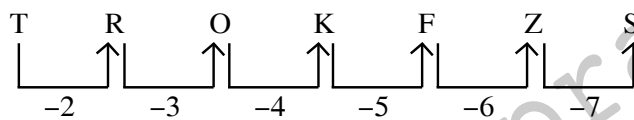
So, $VIP = (V + I + P) \times 6 = (6 + 19 + 12) \times 6$
 $= 37 \times 6 = 222$

17. Given equation, $15 - 3 + 10 \times 5 \div 5$

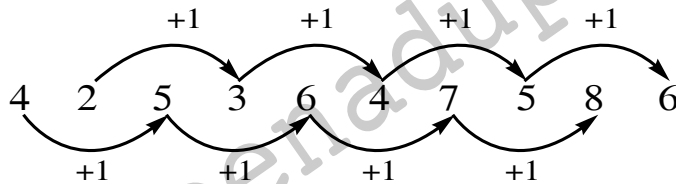
After interchanging the signs,

$15 \times 3 - 10 \div 5 + 5 = 15 \times 3 - 2 + 5$
 $= 45 - 2 + 5 \Rightarrow 50 - 2 = 48$

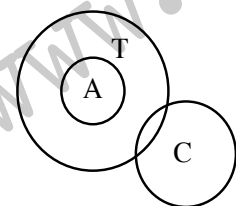
- 18.



- 19.



20. III and IV follows



- I. ✗ II. ✗
 III. ✓ IV. ✓

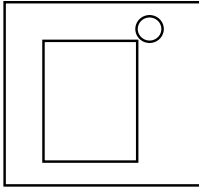
21. In right side the number is increasing by 1.

$$2 + 1 = 3, 3 + 1 = 4 \text{ and } 4 + 1 = 5$$

In left side, the number is decreasing by 2.

$$11 - 2 = 9, 9 - 2 = 7, 7 - 2 = 5$$

- 22.



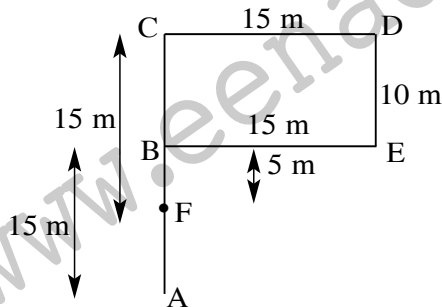
23. $3 + 1 + 4 + 2 = 10 \Rightarrow 10^2 = 100$

$$5 + 2 + 3 + 5 = 15 \Rightarrow 15^2 = 225$$

$$6 + 4 + 5 + 7 = 22 \Rightarrow 22^2 = 484$$

24. The number which is seen in both dice will be your answer. Here, the digit 4 is that number as it is a standard dice. So, 4 will be opposite of 3.

25. Let the fixed point from where Jatin starts his journey be A. Also, his walking directions are as follows.



$$\therefore AF = AB - FB = 15 - 5 = 10 \text{ meters}$$

So, Jatin is 10 meters away from the starting point.

51. Let the first train meet the second in x hrs after its start, then $40x + (x - 2) \times 50 = 110$

(the 2nd train takes $x - 2$ hrs. as the train starts two hours later than the 1st) or,

$$90x = 110 + 100 = 210$$

$$\therefore x = \frac{210}{90} \text{ hrs} = \frac{7}{3} \text{ hrs} = 2 \frac{1}{3} \text{ hrs}$$

= 2 hrs 20 min. = Two trains meet at 10.20 a.m.

52. S.I. at the rate of 4% for 2 years

$$= \frac{P \times 4 \times 2}{100} = \frac{P \times 4 \times 2}{100} \dots(i)$$

S.I. at the rate of 6% for next 4 years

$$= \frac{P \times 6 \times 4}{100} = \frac{24P}{100} \dots(ii)$$

For next 3 year

$$\text{S.I.} = \frac{P \times 8 \times 3}{100} = \frac{24P}{100} \dots(iii)$$

$$\begin{aligned} \text{Total S.I.} &= \frac{8P}{100} + \frac{24P}{100} + \frac{24P}{100} + \frac{56P}{100} \\ &= \text{Rs.}1120 \end{aligned}$$

$$\therefore P = \frac{1120 \times 100}{56} = \text{Rs.}2000.$$

53. C.P. of 100 cups = Rs. 100 × 10 = Rs. 1000

10 cups are broken

∴ S.P. of 90 cups = Rs. (90 × 11) = Rs. 990

Loss = Rs. (1000 – 990) = Rs.10

$$\therefore \text{Loss percent} = \frac{10}{1000} = 100 = 1\%$$

54. First convert the ratio in Rs.1 form

$$4 : 6 : 9$$

$$\downarrow \quad \downarrow \quad \downarrow$$

$$4x \quad 6x \quad 9x$$

$$\downarrow \times 5 \quad \downarrow \times 2 \quad \downarrow \times 1$$

$$20x \quad 12x \quad 9x$$

Now, Total = Rs. 410;

$$[20x + 12x + 9x] = 410 \Rightarrow x = 10$$

∴ Value of Rs. 2 coin = 12 × 10 = 120

$$\therefore \text{No. of Rs. 2 coin} = \frac{120}{2} = 60$$

55. Let there be x men originally, then 1 man will do the work in 60x days.

In the second case, 1 man does the work in (x + 8) 50 days.

Now, 60x = 50(x + 8)

$$\therefore x = \frac{400}{10} = 40 \text{ men}$$

$$\begin{aligned} 56. \quad \% \text{ gain} &= \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100 \\ &= \frac{50}{950} \times 100 = 5 \frac{5}{19} \% = 5.26\%. \end{aligned}$$

$$57. \quad \frac{90 \times 7}{x \times 3} = \frac{2}{1} \Rightarrow x = \frac{90 \times 7}{2 \times 3} = 105$$

$$58. \quad 3M + 4C = \frac{756}{7}$$

3M + 4C = Rs. 108/day ...(i)

$$11M + 13C = \frac{3008}{8}$$

11M + 13C = Rs. 376 ...(ii)

From (i) and (ii)

$$\text{Equal} \begin{cases} 11 \times 3M + 4C = 108 \\ 3 \times 11M + 13C = 376 \end{cases}$$

$$33M + 44C = 1188$$

$$33M + 39C = 1128$$

$$\hline$$

$$5C = 60$$

$$\therefore C = 12, M = 20$$

Let the required time be x, then

$$x(7 \times 20 + 9 \times 12) = 2480$$

$$\Rightarrow x = \frac{2480}{248} = 10 \text{ days}$$

59. 15% = Rs. 11250

$$\begin{aligned} \text{Total amount i.e. } 100\% &= \frac{11250}{15} \times 100 \\ &= \text{Rs. } 75000 \end{aligned}$$

60. + 20% - 20% + (+ 20%) of (- 20%) = - 4%

61. S.P. = Rs. 570

$$L\% = 5\%$$

$$C.P. = \frac{100}{95} \times 570 = 660; P = 5\%$$

$$S.P. = \frac{100 + P\%}{100} \times C.P. = \frac{105}{100} \times 600 = \text{Rs. } 630$$

62. Strength of milk in the first mixture

$$= \frac{12}{12 + 3} = \frac{12}{15}$$

Strength of milk in the second mixture

$$= \frac{10}{10 + 4} = \frac{10}{14}$$

\(\therefore\) the ratio of their strengths

$$= \frac{12}{25} : \frac{10}{14} = 12 \times 14 : 15 \times 10 = 28 : 25.$$

63. Here, 52 is a multiple of 13. Hence, the required remainder is obtained on dividing 45 by 13.

$$\text{Required remainder} = 6$$

64. Required number of wickets = x (let)

According to question,

$$\Rightarrow 12.4 \times x + 26 = (x + 5)(12.4 - 0.4) = (x + 5) \times 12$$

$$\Rightarrow 12.4x + 26 = 12x + 60$$

$$\Rightarrow 12.4x - 12x = 60 - 26$$

$$\Rightarrow 0.4x = 34$$

$$\Rightarrow x = \frac{34}{0.4} = \frac{340}{4} = 85.$$

65. $x - y = k, x + y = 7k$

$$\Rightarrow x = 4k, y = 3k$$

$$\Rightarrow \frac{xy}{4} = k \Rightarrow \frac{4k \cdot 3k}{4} = k \Rightarrow k = \frac{1}{3}$$

$$\therefore xy = 4k = 4 \times \frac{1}{3} = \frac{4}{3}$$

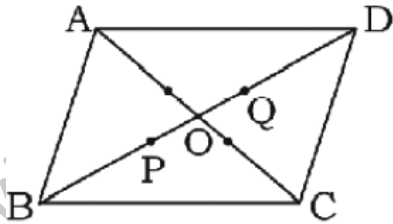
66. Area of the floor = $8 \times 6 = 48$ sq. m

$$= 4800 \text{ sq. dm.}$$

$$\text{Area of a square tile} = 4 \times 4 = 16 \text{ sq. dm}$$

$$\therefore \text{Number of tiles} = \frac{4800}{16} = 300$$

67.



Centroid is the point where medians intersect.

Diagonals of parallelogram bisect each other.

$$OP = \frac{1}{3} \times 9 = 3 \text{ cm}; OQ = \frac{1}{3} \times 9 = 3 \text{ cm}$$

$$\therefore PQ = 6 \text{ cm}$$

68. Two angles = A and B where $A > B$.

$$\therefore A + B = 135^\circ = \left(\frac{135 \times \pi}{180} \right) \text{radian}$$

$$\Rightarrow A + B = \left(\frac{3\pi}{4} \right) \text{radian} \dots (i)$$

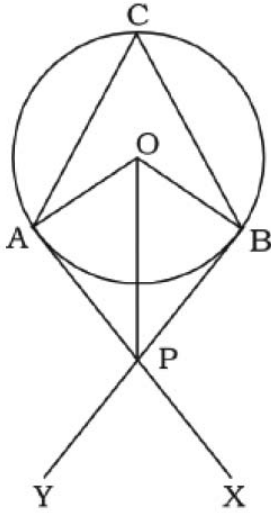
$$A - B = \frac{\pi}{12} \dots (ii)$$

On adding these equations,

$$2A = \frac{3\pi}{4} + \frac{\pi}{12} = \frac{9\pi + \pi}{12} = \frac{10\pi}{12} = \frac{5\pi}{6}$$

$$\therefore A = \frac{5\pi}{12} \text{radian}$$

69. $\angle ACB = 65^\circ$;
 $\angle AOB = 2 \times 65^\circ = 130^\circ$
 $\angle OAP = 90^\circ$; $\angle AOP = 65^\circ$
 $\therefore \angle APO = 180^\circ - 90^\circ - 65^\circ = 25^\circ$



70. $\cos^2 \theta + \cos^4 \theta = 1$
 $\Rightarrow \cos^4 \theta = 1 - \cos^2 \theta = \sin^2 \theta$
 $\Rightarrow \tan^2 \theta = \cos^2 \theta$
 $\Rightarrow \tan^2 \theta + \tan^4 \theta = \cos^2 \theta + \cos^4 \theta = 1$

71. $9x - \frac{9}{2x} = 18 \Rightarrow x - \frac{1}{2x} = 2$

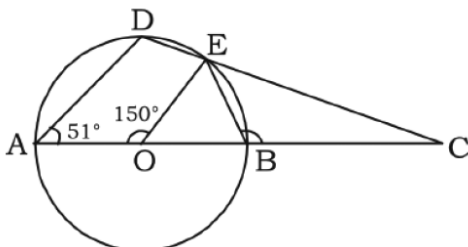
Cubing both sides,

$$x^3 - \frac{1}{8x^3} - 3x - \frac{1}{2x} \left(x - \frac{1}{2x}\right) = 8$$

$$\Rightarrow x^3 - \frac{1}{8x^3} - \frac{3}{2} \times 2 = 8$$

$$\Rightarrow x^3 - \frac{1}{8x^3} = 8 + 3 = 11$$

- 72.



$$\angle AOE = 150^\circ$$

$$\angle DAO = 51^\circ \text{ [Given]}$$

$$\angle EOB = 180^\circ - 150^\circ = 30^\circ$$

$$OE = OB$$

$$\therefore \angle OEB = \angle OBE = \frac{150}{2} = 75^\circ$$

$$\angle CBE = 180^\circ - 75^\circ = 105^\circ$$

73. Given equations are:

$$3x + 4y = 5 \dots (i)$$

$$x + 2y = 2 \dots (ii)$$

On solving of (i) & (ii)

$$\text{We find } x = 1, y = \frac{1}{2}$$

$$\therefore x + y = 1 + \frac{1}{2} = \frac{3}{2}$$

74. Volume of prism = Area of base \times height

$$\Rightarrow 366 = \frac{1}{2} \times 4 \times 28 \times h$$

$$\Rightarrow h = \frac{366}{56} = 6.53 \text{ cm}$$

75. $11x - 13 = -2x + 78$

$$\Rightarrow 11x + 2x = 78 + 13$$

$$\Rightarrow 13x = 91$$

$$\Rightarrow x = \frac{91}{13} = 7$$

76. Remove 'Hardly' as 'not' and 'hardly' together make the sentence superfluous.

77. A sentence starting with 'No sooner' always comes in inverted form i.e., helping verb + sub + main verb
Here, replace (1) by 'No sooner did the bell ring'.

78. Replace 'little water' by 'a little water', as little means equivalent to nothing. 'A little' means at least 'some'

89. 'Day in and day out' is the most appropriate which means 'every day for a long period of time' whereas 'all the time' means 'during the whole of a particular period of time'.

90. As the sentence is in affirmative form, the helping verb could must come after noun 'the boy'.

This model paper was prepared by subject experts of RACE Institute, Hyderabad.