# 2022

*Time - 3 hours*

*Full Marks - 80*

*Answer **both groups** as per instructions.*
*Figures in the right hand margin indicate marks.*

## GROUP - A

Answer all questions by choosing the correct answer from the given alternatives. [1 × 40

1. Which is the whole number ?

   (i) –2 (ii) –1

   (iii) 0 (iv) None of these

2. If $3^n = 27$, then the value of $2^{n-1}$ is _____.

   (i) 1 (ii) 4 (iii) 2 (iv) 9

3. What is the value of $(25)^{\frac{3}{2}}$.

   (i) 5 (ii) 25 (iii) 125 (iv) 625

4. If $2^a \times 8^2 = 2^8$ then the value of a is _____.

   (i) 2 (ii) 3 (iii) 6 (iv) 7

5. Find the least value of * for which the number 8550*1 is divisible by 3.

(i) 2 (ii) 3 (iii) 4 (iv) 6

6. Find the least value of * for which the number 13*1 is divisible by 11.

(i) 1 (ii) 2 (iii) 3 (iv) 4

7. Find out $\sqrt{66049}$.

(i) 275 (ii) 257 (iii) 237 (iv) 273

8. Ram's salary increased from ₹ 24,000 to ₹ 30,000. Find the incerased %.

(i) 20% (ii) 25% (iii) 30% (iv) 35%

9. Find S.I. on ₹ 2,000 at the rate of interest 10% p.a. for 2 years.

(i) 200 (ii) 400 (iii) 600 (iv) 800

10. Divide 240 into two parts in the ratio 2 : 3.

(i) 48, 192 (ii) 120, 120 (iii) 100, 140 (iv) 96, 144

11. The sides of a triangle are in the ratio $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ and its perimeter is 78 cm. Find the length of the sides of the triangle.

(i) 30, 24, 18 (ii) 36, 20, 18

(iii) 36, 24, 18 (iv) 36, 24, 15

12. A can do piece of work in 30 days while B alone can do it in 40 days. In how many days can A and B working together do it ?

(i) $13\frac{1}{7}$ days (ii) $15\frac{1}{7}$ days

(iii) $17\frac{1}{7}$ days (iv) None of these

13. Two pipes A and B can fill a tank in 12 and 24 minutes respectively. If both the pipes are used together, then how long will it take to fill the tank ?

(i) 12 minutes (ii) 10 minutes

(iii) 8 minutes (iv) None of these

14. Express speed 72 km/hr in m/s.

(i) 10 m/s (ii) 15 m/s (iii) 20 m/s (iv) 25 m/s

15. A man crossed a 600 metre along street in 5 minutes. What is his speed in km per hour ?

(i) 7.2 km/hr (ii) 6.3 km/hr (iii) 7.3 km/hr (iv) 6.2 km/hr

16. Find the perimeter of the triangle having length of the sides 5cm, 8cm, 7cm.

(i) 20 cm (ii) 40 cm (iii) 60 cm (iv) 120 cm

17. Find the area of the equilateral triangle having sides of length 8 cm.

(i) $16\sqrt{3}$ cm$^2$ (ii) $8\sqrt{3}$ cm$^2$

(iii) $16\sqrt{3}$ cm (iv) $8\sqrt{3}$ cm

18. Find the area of the square having sides 6 cm.

(i) 24 cm (ii) 24 cm$^2$ (iii) 36 cm (iv) 36 cm$^2$

19. Find the circumference of a circle having radius 21 cm.

(i) 132 cm (ii) 123 cm (iii) 132 cm$^2$ (iv) 123 cm$^2$

20. Find the area of the circle having radius 7 cm.

(i) 145 cm$^2$ (ii) 154 cm (iii) 154 cm$^2$ (iv) 145 cm

21. Find the mean of 5, 11, 16, 10, 18.

(i) 60 (ii) 12 (iii) 45 (iv) 24

22. Find the median for the data 36, 53, 1.2, 3.9, 47, 12.6 .

(i) 36 (ii) 24.3 (iii) 23.4 (iv) 63

23. Find the median for the set containing squares of all the even numbers between 1 to 20.

(i) 10 (ii) 100 (iii) 12 (iv) 144

24. Find mode of the data set :

53, 23, 18, 23, 23, 96, 84, 53, 107, 88, 53.

(i) 53 (ii) 23 (iii) 88 (iv) both (i) & (ii)

25. Find the probability of getting an odd no. when a dice is thrown :

(i) $\frac{1}{2}$ (ii) $\frac{1}{3}$ (iii) $\frac{1}{4}$ (iv) $\frac{1}{6}$

26. A number is chosen at random from the numbers 4, 6, 1, 92, 32, 56, 98, 11, 55. What is the probability that a < 50 ?

(i) $\frac{9}{5}$ (ii) $\frac{5}{9}$ (iii) $\frac{4}{9}$ (iv) $\frac{9}{4}$

27. A coin is tossed twice. Find the probability of getting at least one tail.

(i) 1 (ii) $\frac{3}{4}$ (iii) $\frac{4}{3}$ (iv) $\frac{2}{3}$

28. The product of two numbers is 18 and the sum of their square is 45. The sum of the numbers is _____.

(i) 81 (ii) 9 (iii) 45 (iv) 18

29. If one-third of one-fourth of a number is 15. Then three-tenth of that number is _____.

(i) 180 (ii) 45 (iii) 54 (iv) 90

30. Divide 12 by $2\sqrt{2}$.

(i) $2\sqrt{2}$ (ii) $3\sqrt{2}$ (iii) $1\sqrt{2}$ (iv) $2\sqrt{3}$

31. Simplify $(25)^{\frac{-3}{2}}$.

(i) $\frac{1}{25}$ (ii) $\frac{1}{5}$ (iii) $\frac{1}{125}$ (iv) 125

32. If $2^a = 32$, then find the value of $2^{a-3}$.

(i) 8 (ii) 6 (iii) 5 (iv) 4

33. Find 8% of 125.

(i) 50 (ii) 35 (iii) 10 (iv) 20

34. Day : Night : : _____ : _____

(i) Half : full (ii) Tall : fat

(iii) East : west (iv) Food : vegetable

35. School : Education : : Court : _____.

(i) Justice (ii) Magistrate

(iii) Police (iv) Lawyer

36. Ring : finger : : shoe : _____

(i) socks (ii) case (iii) foot (iv) market

37. Which number would replace '?' in the series : 7, 12, 19, ? , 39 ?

(i) 29 (ii) 28 (iii) 26 (iv) 24

38. Which is the number that comes next in the following sequence : 4, 6, 12, 14, 28, 30, ?

(i) 32 (ii) 60 (iii) 62 (iv) 64

39. Which fraction comes in the sequence $\frac{1}{2}, \frac{3}{4}, \frac{5}{8}, \frac{7}{16}, ?$

(i) $\frac{9}{32}$ (ii) $\frac{10}{17}$

(iii) $\frac{11}{34}$ (iv) $\frac{12}{35}$

40. Solve the series : JAF, JEF, JIF, JOF, ?

(i) PIG (ii) PET

(iii) JUF (iv) JVE

## GROUP - B

*Answer **ALL** questions.* [2 × 20

41. How many terms are there in the series 201, 208, 215, ....., 369 ?

(i) 23 (ii) 24 (iii) 25 (iv) 26

42. In the series 7, 14, 28, ....., what will be the 10th term ?

(i) 3548 (ii) 3584

(iii) 3458 (iv) 3854

43. Which is the number that comes next in the sequence : 0, 6, 24, 60, 120, 210, ?

(i) 240 (ii) 290

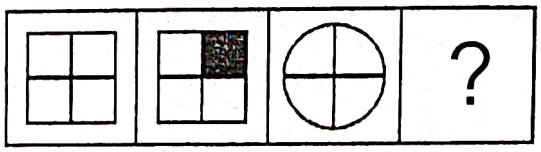
(iii) 336 (iv) 504

44. If only each of the vowels in the word IMPOSE is changed to the next letter in the English alphabet, then which of the following will be the fifth letter from the left end ?

(i) P (ii) J (iii) F (iv) S

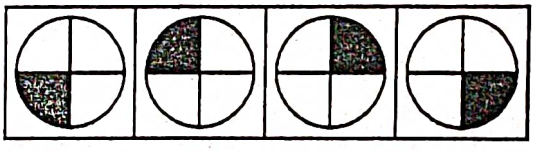
45. Which figure can be placed in place of question mark ?

Question figure




(a) (b) (c) (c)

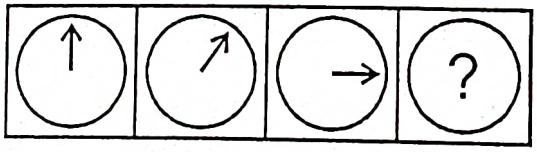
Answer figure



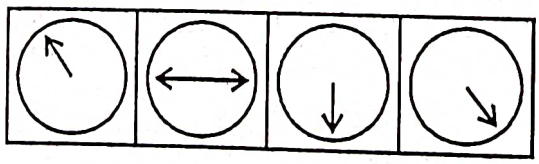
(i) (ii) (iii) (iv)

46. Continue the series :

Problem pattern




Answer pattern



(i) (ii) (iii) (iv)

47. In a certain code language, the word ROAD is written as WTFI. Following the same rule of coding, what should be the word for the code GJFY ?

(i) REAP (ii) TAKE (iii) BEAT (iv) LATE

48. If "tee see pee" means "drink fruit juice" ; "see kee lee" means "juice is sweet" and "lee ree mee" means "he is intelligent", which word in that language means "sweet" ?

(i) see (ii) kee (iii) lee (iv) pee

49. If 'DELHI' is coded as '73541' and 'CALCUTTA' as '82589662', how can 'CALICUT' be coded ?

(i) 5279431 (ii) 5978213 (iii) 8251896 (iv) 8543691

50. Pointing to a person, a man said to a women, "His mother is the only daughter of your father". How was the woman related to the person ?

(i) Aunt (ii) Mother (iii) Wife (iv) Daughter

51. Which of the two conclusions can be concluded on the basis of given statements ?

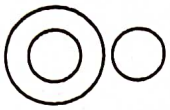
Statements : (I) All flowers are candles

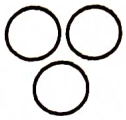
(II) All lanterns are candles

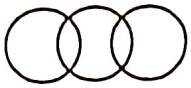
Conclusion : (I) Some flowers are lanterns

(II) Some candles are lanterns

52. Which of the following diagrams indicates the best relation between Travelers, Train and Bus ?

(i) 

(ii) 

(iii) 

(iv) 

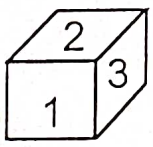
53. The population of a town is 10,000. Out of these 5,400 persons read newspaper A and 4,700 read newspaper B. 1,500 persons read both the newspapers. Find the number of persons who do not read either of the two papers.

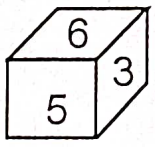
54. Which among the following illustrations specifies the correct mirror image of OBSTINATE ?

(i) ƎTAИITSBO (ii) BOSTINATE

(iii) ETANITSBO (iv) SOBTNIATE

55. Which digit will appear on the face opposite to the face with number 4 ?

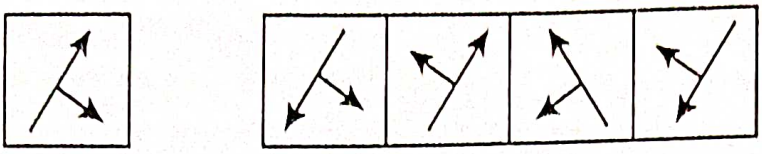



(i) 3 (ii) 5 (iii) 6 (iv) $\frac{2}{3}$

56. A cube having a side of 6 cm is painted red on all the faces and then cut into smaller cubes of 1 cm each. Find the total number of smaller cubes so obtained.

57. Chose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X) (1) (2) (3) (4)

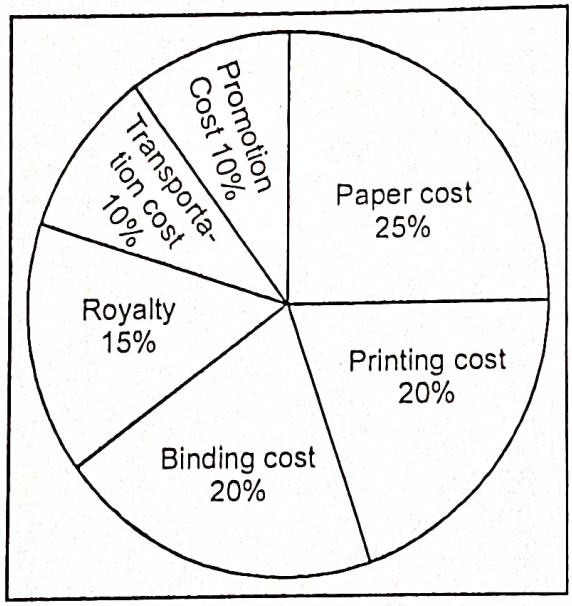
58. Choose the alternative which closely resembles the mirror image of the given combination ?

ANS43Q12

(i) AИS4ƎQ1Z (ii) ZIQƎ4SИA

(iii) ƧИAƎ4QZI (iv) IZQ4ƎAИƧ

59. The following pie-chart shows the percentage distribution of the expenditure incurred in publishing a book. Study the pie-chart and answer the question based on it.




Promotion cost on the book is less than the paper cost by what percentage ?

(i) 25% (ii) 40% (iii) 50% (iv) 60%

60. If the radius of a circle is decreased by 50%, then find the % decrease in area.

(i) 60%

(ii) 45%

(iii) 70%

(iv) 75%