GG RS LEARNING HUB PVT. LTD.

IMO CLASS 8

Total Questions: 50 **Time: 1hr.**

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Rational Numbers, Squares and Square Roots, Cubes and Cube Roots, Exponents and Powers, Comparing Quantities, Algebraic Expressions and Identities, Linear Equations in One Variable, Understanding Quadrilaterals, Constructions, Mensuration, Visualising Solid Shapes, Data Handling, Direct and Inverse Variations, Factorisation, Introduction to Graphs, Playing with Numbers.

Section – 3 : Syllabus as per Section – 2.

Section – 4 : Higher Order Thinking Questions - Syllabus as per Section – 2.

SECTION 01 LOGICAL REASONING

1. 'Pull' is related to 'Push' in the same way as 'Low' is related to
   (A) Medium
   (B) High
   (C) More
   (D) Long
2. In a certain code MEAN is written as '8964' and NOBLE is written as '47529'. How is LOAM written in that code?
   (A) 2768
   (B) 2758
   (C) 2968
   (D) 2468
3. 'Red' is related to 'Stop' in the same way as 'Green' is related to
   (A) Colour
   (B) Paint
   (C) Lamp
   (D) Start
4. How many such pairs of letters are there in the word SECURITY each of which has as many letters between them in the word as in the English alphabet?
   (A) None
   (B) One
   (C) Two
   (D) Three
5. If it is possible to make only one meaningful word with the first, the third, the fourth and the sixth letters of the word LEARNING, using each only once, which of the following will be the third letter of that word? If more than one such word can be formed, give 'Y' as the answer and if no such word can be formed, give 'Z' as the answer.
   (A) I
   (B) R
   (C) A
   (D) Y
6. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
   (A) Lotus
   (B) Lily
   (C) Rose
   (D) Petal

Directions (Q. 7-11): Study the following arrangement carefully and answer the questions given below:
R D A K 5 B I 2 M J E N 9 7 U Z V I W 3 H 4 F Y 8 P 6 T G

7. How many such numbers are there in the above arrangement each of which is immediately preceded by a consonant and immediately followed by a vowel?
(A) None
(B) One
(C) Two
(D) Three

8. Which of the following is the eighth to the left of the seventeenth from the left end?
(A) M
(B) J
(C) 8
(D) 5

9. Which of the following is the sixth to the right of the nineteenth from the right end?
(A) 5
(B) Z
(C) V
(D) 1

10. The consider above arrangement, to find the how many such consonants are there in each of which is immediately preceded by a number and immediately followed by another consonant?
(A) One
(B) Two
(C) Three
(D) None

11. Four of the following five are alike in a certain way based on their positions in the above arrangement and so form a group. Which is the one that does not belong to that group?
(A) E9J
(B) Z1U
(C) HW4
(D) B2K

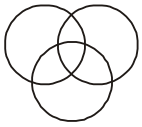
12. **Direction:** Choose the alternatives which closely resembles the mirror-image of the given combinations.15UP5062
(A) 5062UP15
(B) 2605PU51
(C) 2605PU51
(D) 5062UP51

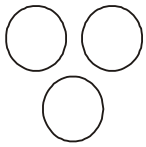
13. **Direction:** Select the best alternative which fits in place of (?) mark.
Horse: Jockey:: Car: ?
(A) Mechanic
(B) Brack
(C) Wheels
(D) Chauffeur

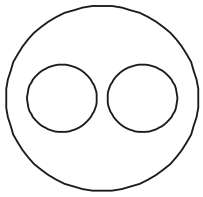
14. **Direction:** Complete the block (?) by selecting a suitable diagram from the alternatives (1), (2), (3) and (4).

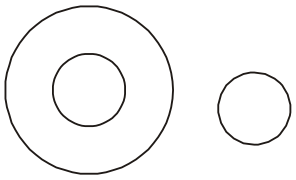
(A) (B) (C) (D)

15. **Directions:** Choose the best relationship amongst the three classes in the following questions.

(1) 

(2) 

(3) 

(4) 

Males, Father, Mother

(A) 1
(B) 2
(C) 3
(D) 4

SECTION02 MATHEMATICAL REASONING

16. A conical tent of given capacity has to be constructed. The ratio of the height to the radius of the base for the minimum amount of canvas required for the tent is:

(A) 1:2
(B) 2:1
(C) $1:\sqrt{2}$
(D) $\sqrt{2}:1$

17. One man can do as much work in one day as a woman can do in 2 days. A child does one third the work in a day as a woman. If an estate-owner hires 39 pairs of hands, men, women and children in the ratio 6: 5: 2 and pays them in all Rs. 1113 at the end of the days work. What must the daily wages of a child be, if the wages are proportional to the amount of work done?

(A) Rs.14

(B) Rs.5

(C) Rs.20

(D) Rs.7

18. Let x, y and z be distinct integers. x and y are odd and positive, and z is even and positive. Which one of the following statements cannot be true?

(A) $y(x - z)^2$ is even

(B) $y^2(x - z)$ is odd

(C) $y(x - z)$ is odd

(D) $z(x - y)^2$ is even

19. A certain city has a circular wall around it, and this wall has four gates pointing north, south, east and west. A house stands outside the city, 3 km north of the north gate, and it can just be seen from a point 9 km east of the south gate. What is the diameter of the wall that surrounds the city?

(A) 6 km

(B) 9 km

(C) 12 km

(D) None of these

20. A can complete a piece of work in 4 days. B takes double the time taken by A, C takes double that of B, and D takes double that of C to complete the same task. They are paired in groups of two each. One pair takes two-thirds the time needed by the second pair to complete the work. Which is the first pair?

(A) A and B

(B) A and C

(C) B and C

(D) A and D

21. Three classes X, Y and Z take an algebra test. The average score in class X is 83.The average score in class Y is 76. The average score in class Z is 85.The average score of all students in classes X and Y together is 79.The average score of all students in classes Y and Z together is 81.What is the average for all the three classes?

(A) 81

(B) 81.5

(C) 82

(D) 84.5

22. All the page numbers from a book are added, beginning at page 1. However, one page number was added twice by mistake. The sum obtained was 1000. Which page number was added twice?

(A) 44

(B) 45

(C) 10

(D) 12

23. For a Fibonacci sequence, from the third term onwards, each term in the sequence is the sum of the previous two terms in that sequence. If the difference in squares of 7th and 6th terms of this sequence is 517, what is the 10th term of this sequence?

(A) 147

(B) 76

(C) 123

(D) Cannot be determined

24. A set of consecutive positive integers beginning with 1 is written on the blackboard. A student came along and erased one number. The average of the remaining numbers is $35\frac{7}{17}$. What was the number erased?

(A) 7

(B) 8

(C) 9

(D) None of these

DIRECTIONS for questions 25 and 26:

Read the information given below and answer the question.

A truck travelled from town A to town B over several days. During the first day, it covered 1/p of the total distance, where p is a natural number. During the second day, it travelled 1/q of the remaining distance, where q is a natural number. During the third day, it travelled 1/p of the distance remaining after the second day, and during the fourth day, 1/q of the distance remaining after third day. By the end of the fourth day the truck had travelled 3/4 of the distance between A and B:

25. The value of p + q is:

(A) 4

(B) 5

(C) 6

(D) 7

26. If the total distance is 100 kilometres, the minimum distance that can be covered on day 1 is_____kilometres.

(A) 25

(B) 30

(C) 33

(D) 35

27. ABCD is a rectangle with AD = 10. P is a point on BC such that $\angle APD = 90°$. If DP = 8 then the length of BP is

(A) 6.4

(B) 5.2

(C) 4.8

(D) 3.6

28. ABCD is a quadrilateral. The diagonals of ABCD intersect at the point P. The area of the triangles APD and BPC are 27 and 12 respectively. If the areas of the triangles APB and CPD are equal then the area of triangle APB is

(A) 21

(B) 18

(C) 16

(D) 15

Direction (29 – 31): A, B, C, D, E and F are six positive integers such that B + C + D + E = 4A, C + F = 3A, C + D + E = 2F, F = 2D, E + F = 2C + 1

If A is a prime number between 12 and 20, then

29. The value of C is

(A) 23
(B) 21
(C) 19
(D) 17

30. The value of F is

(A) 14
(B) 16
(C) 20
(D) 28

31. Which of the following must be true?

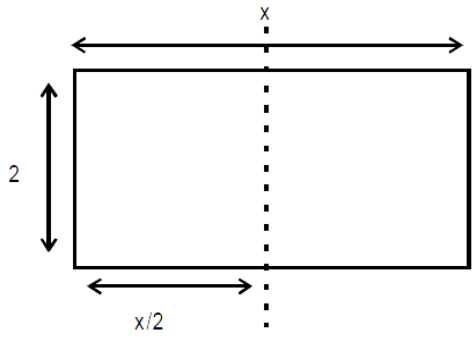
(A) D is the lowest integer and D = 14

(B) C is the greatest integer and C = 23

(C) B is the lowest integer and B = 12

(D) F is the greatest integer and F = 24

32. A rectangular sheet of paper, when halved by folding it at the midpoint of its longer side, results in a rectangle, whose longer and shorter sides are in the same proportion as the longer and shorter sides of the original rectangle. If the shorter side of the original rectangle is 2, what is the area of the smaller rectangle?



(A) $4\sqrt{2}$

(B) $2\sqrt{2}$

(C) $\sqrt{2}$

(D) None of these

33. Navjivan Express from Ahmedabad to Chennai leaves Ahmedabad at 6.30 a.m. and travels at 50 kmph towards Baroda situated 100 km away. At 7.00 a.m. Howrah-Ahmedabad Express leaves Baroda towards Ahmedabad and travels at 40 kmph. At 7.30 a.m. Mr Shah, the traffic controller at Baroda realizes that both the trains are running on the same track. How much time does he have to avert a head-on collision between the two trains?

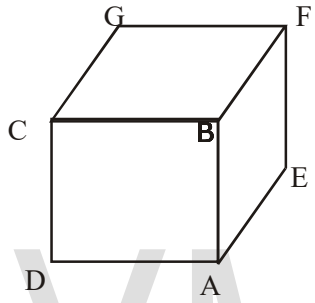
(A) 15 min

(B) 20 min

(C) 25 min

(D) 30 min

34. If the lengths of diagonals DF, AG and CE of the cube shown in the adjoining figure are equal to the three sides of a triangle, then the radius of the circle circumscribing that triangle will be



(A) Equal to the side of cube

(B) 3 times the side of the cube

(C) $1/\sqrt{3}$ times the side of the cube

(D) Impossible to find from the given information.

35. Alord got an order from a garment manufacturer for 480 Denim Shirts. He brought 12 sewing machines and appointed some expert tailors to do the job. However, many didn't report to duty. As a result, each of those who did, had to stitch 32 more shirts than originally planned by Alord, with equal distribution of work. How many tailors had been appointed earlier and how many had not reported for work?

(A) 12, 4

(B) 10, 3

(C) 10, 4

(D) None of these

SECTION 03 EVERYDAY MATHEMATICS

36. $2^{73} - 2^{72} - 2^{71}$ is the same as

(A) 269
(B) 270
(C) 271
(D) 272

Direction: Q. 37 and 38 are based on the given data:

There were a hundred schools in a town. Of these, the number of schools having a play – ground was 30, and these schools had neither a library nor a laboratory. The number of schools having a laboratory alone was twice the number of those having a library only. The number of schools having a laboratory as well as a library was one fourth the number of those having a laboratory alone. The number of schools having either a laboratory or a library or both was 35.

37. How many schools had none of the three viz., laboratory, library or play – ground?

(A) 20
(B) 5
(C) 30
(D) 35

38. What was the ratio of schools having laboratory to those having library?

(A) 1: 2

(B) 5: 3

(C) 2: 1

(D) 2: 3

39. Three machines, A, B and C can be used to produce a product. Machine A will take 60 hours to produce a million units. Machine B is twice as fast as Machine A. Machine C will take the same amount of time to produce a million units as A and B running together. How much time will be required to produce a million units if all the three machines are used simultaneously?

(A) 12 hours

(B) 10 hours

(C) 8 hours

(D) 6 hour

40. Let Y = minimum of $\{(x+2), (3–x)\}$. What is the maximum value of Y for $0 \leq x \leq 1$?

(A) 1.0

(B) 1.5

(C) 3.1

(D) 2.5

41. A bug crawls along a number line, starting at –2 It crawls to – 6, Turns around and crawls to 5. How many units does the bug crawl altogether?

(A) 9

(B) 11

(C) 6

(D) 15

42. Let angle ABC = 24° and angle ABD = 20° . What is the smallest possible degree measure for angle CBD?

(A) 0

(B) 2

(C) 4

(D) 12

43. The product of the numbers is 9. The reciprocal of one of these numbers is 4 times the reciprocal of the other number. What is the sum of the two numbers?

(A) 10/3
(B) 20/3
(C) 7
(D) 15/2

44. In a bag of marbles, 3/2 of the marbles are blue and the rest are red, If the number of red marbles is doubled and the number of blue marbles stays the same, what fraction of the marbles will be red ?

(A) 2/5

(B) 3/7

(C) 2/7

(D) 4/7

45. An iterative average of the numbers 1, 2, 3, 4, and 5 is computed the following way. Arrange the five numbers in some order. Find the mean of the first number. What is the difference between the largest and smallest possible values that can be obtained using this procedure?

(A) 31/16

(B) 2

(C) 17/8

(D) 3

SECTION04 ACHIEVER SECTION

46. Chubby makes non standard checkerboards that have 31 squares on each side. The checkerboards have a black square in every corner and alternate red and black squares along every row and column. How many black squares are there on such a checkerboard?

(A) 480

(B) 481

(C) 482

(D) 483

47. The sum of the first m positive odd integers is 212 more than the sum of the positive even integers. What is the sum of all possible values of n?

(A) 225
(B) 256
(C) 258
(D) 259

48. The players on basketball team made some three-point, shots, some two-point shots, and some one-point free throws. They scored as many points with two-point shots as with three-point shots. Their number of successful free throws was one more their number of successful two-point shots. The team's total score was 61 points. How many free throws did they make?

(A) 13

(B) 14

(C) 15

(D) 16

49. ABCD is rectangle with angle BAC = 32º. Determine angle DBC.

(A) 64

(B) 68

(C) 78

(D) 60°

50. Solve the equation ; $\frac{x}{5}+11=\frac{1}{15}$.

(A) -164/3
(B) 164/3
(C) 162/3
(D) -162/3