I M O
SOF INTERNATIONAL MATHEMATICS OLYMPIAD

Total Questions : 50

Time : 1 hr.

PATTERN & MARKING SCHEME				
Section	**(1) Logical Reasoning**	**(2) Mathematical Reasoning**	**(3) Everyday Mathematics**	**(4) Achievers Section**
No. of Questions	15	20	10	5
Marks per Ques.	1	1	1	3

Scan the QR code for more details

SYLLABUS

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Real Numbers, Polynomials, Pair of Linear Equations in Two Variables, Quadratic Equations, Arithmetic Progressions, Triangles, Coordinate Geometry, Introduction to Trigonometry, Some Applications of Trigonometry, Circles, Areas Related to Circles, Surface Areas and Volumes, Statistics, Probability.

Section – 3 : The syllabus of this section will be based on the syllabus of Mathematical Reasoning and Quantitative Aptitude.

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

LOGICAL REASONING

1. If '+' means '÷', '÷' means '–', '–' means '×', '×' means '+', then $12 + 6 \div 3 – 2 \times 8 =$
(A) – 2
(B) 2
(C) 4
(D) 8

2. How many such pairs of letters are there in the given word each of which has as many letters between them in the word as in the English alphabet?

ADVERTISEMENT
(A) Three
(B) Four
(C) Five
(D) More than five

3. Select the Venn diagram from the options which best illustrates the relationship amongst, "Teacher, Male and Player".
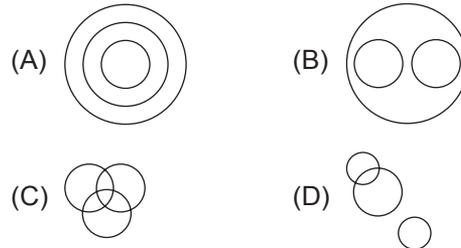
MATHEMATICAL REASONING

4. The sums of n terms of two arithmetic series are in the ratio of $7n + 1 : 4n + 27$. Find the ratio of their 11th terms.
(A) 4 : 3
(B) 5 : 4
(C) 7 : 4
(D) None of these

5. Which of the following is true?
(A) Three points (1, –2), (3, 4) and (4, 7) form a straight line.
(B) Any line parallel to x-axis is $y = b$.
(C) The point (3, 4) is at a distance of 5 units from the origin.
(D) All of these

6. A number is chosen at random from 1 to 120. The probability of the number chosen being a multiple of 3 and 15 both is _____.
(A) 1/15
(B) 1/16
(C) 1/17
(D) 1/19

EVERYDAY MATHEMATICS

7. The average score of a player in 10 innings was 77 runs. In the 11th inning he had scored zero runs. The overall average score in all the 11 innings was
(A) 77 runs
(B) 27 runs
(C) 11 runs
(D) 70 runs

8. A kite is flown with a thread of 250 m length. If the thread is assumed to be stretched and makes an angle of 60° with the horizontal, then the height of the kite above the ground is $\left(\text{Use } \sqrt{3} = 1.73\right)$ _____.
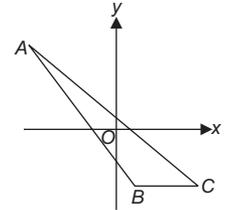
(A) 216.50 m
(B) 215.25 m
(C) 212.25 m
(D) 210.25 m

ACHIEVERS SECTION

9. Which of the following is incorrect?

(A) For $K = \dfrac{9}{8}$, the equation $2x^2 + 3x + K = 0$ will have real and equal roots.

(B) For $K = -1$, the equation $x^2 + K(4x + K - 1) + 2 = 0$ will have equal roots.

(C) For $K = 2$, the equation $x^2 - 2x(1 + 3K) + 7(3 + 2K) = 0$ will have equal roots.

(D) For $K = -3$, the equation $(K + 1)x^2 - 2(K - 1)x + 1 = 0$ will have equal roots.

10. The points $A(-5, 5)$, $B(1, -3)$ and $C(4, -3)$ are shown in the given figure.
Find :
(a) the coordinates of the midpoint of AC.
(b) the length of AB.

	(a)	(b)
(A)	(–1/2, 1)	9 units
(B)	(–1/2, 1)	10 units
(C)	(1/2, –1)	9 units
(D)	(1/2, –1)	10 units

SPACE FOR ROUGH WORK

ANSWERS

IMO – 1. (C)   2. (D)   3. (C)   4. (A)   5. (D)   6. (A)   7. (D)   8. (A)   9. (D)   10. (B)