

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



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**SYLLABUS**

**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, Linear Equations in One Variable, Understanding Quadrilaterals, Mensuration, Data Handling, Direct and Inverse Proportions, Factorisation, Introduction to Graphs.

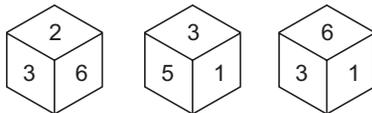
**Section – 3 :** Syllabus as per Section – 2.

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

**LOGICAL REASONING**

- Pointing to a man in a photograph, a woman says, "He is the only son of the only daughter-in-law of my only son's father." How is the man related to the woman?  
(A) Son (B) Father  
(C) Son-in-law (D) Grandson

- Three different positions of a dice are given below:



- Which number is on the face opposite to 1?  
(A) 6 (B) 2  
(C) 3 (D) 5

- The digits of each of the following five numbers are written in reverse order and five new numbers are obtained :

513 726 492 865 149

- Which of the following will be the third digit of the second highest new number?  
(A) 1 (B) 5  
(C) 7 (D) 8

**MATHEMATICAL REASONING**

- The area of a rectangle is given by  $6x^2y + 4y^2x$  and the width of the rectangle is given by  $2xy$ . Find the perimeter of rectangle.  
(A)  $6x + 8y + 2xy$  (B)  $3x + 4y + 2xy$   
(C)  $8x + 6y + 4xy$  (D)  $6x + 4y + 4xy$

- (A)  $\frac{2}{5}$  (B)  $\frac{3}{4}$   
(C)  $\frac{3}{5}$  (D)  $\frac{3}{10}$

- In a class of 100 students, 30% of the students offered English, 20% offered Hindi. If a student is selected at random, then what is the probability that he has offered English?

- If  $3^{x+y} = 81$  and  $81^{x-y} = 3^8$ , then find the values of  $x$  and  $y$  respectively.  
(A) 3, 1 (B) 1, 3  
(C) -1, 3 (D) -1, -3

**EVERYDAY MATHEMATICS**

- Sanket earns twice as much in the month of March as in each of the other months of the year. What part of his entire annual earnings was earned in March?

- (A)  $\frac{1}{7}$  (B)  $\frac{1}{6}$   
(C)  $\frac{2}{11}$  (D)  $\frac{2}{13}$

8. The perimeter of a triangular field is  $6p^2 - 4p + 9$  and two of its sides are  $p^2 - 2p + 1$  and  $3p^2 - 5p + 3$ . Find the third side of the field.

- (A)  $8p^2 + 11p - 7$       (B)  $2p^2 + 3p + 5$   
 (C)  $3p^2 + 5p - 4$       (D)  $5p^2 - 5p + 9$

### ACHIEVERS SECTION

9. Fill in the blanks and select the correct option.
- (i) A number ending in (P) number of zeroes is never a perfect square.
- (ii) The square of an (Q) natural number can always be written as the sum of two consecutive positive integers.
- (iii) The sum of the first  $n$  odd natural numbers is (R).
- (iv) If  $(3 \times 3 \times 7)^2 = 3969$ , then  $\sqrt{3969} = \underline{\text{(S)}}$ .
- |          | <b>(P)</b> | <b>(Q)</b> | <b>(R)</b> | <b>(S)</b> |
|----------|------------|------------|------------|------------|
| (A) Odd  | even       | $2n$       | 62         | 69         |
| (B) Even | odd        | $n^2$      | 69         | 39         |
| (C) Even | even       | $n^3$      | 39         | 63         |
| (D) Odd  | odd        | $n^2$      | 63         |            |

10. Fill in the blanks and select the correct option.
- (i) The cost of digging a cuboidal pit which is 8 m long, 6 m broad and 3 m deep at the rate of ₹ 30 per  $m^3$  is ₹ P.
- (ii) A petrol tank is in the form of a cylinder diameter of which is 3 m and length is 7 m. The quantity of petrol that can be stored in it is Q litres. ( $1000 \text{ cm}^3 = 1 \text{ litre}$ )
- |          | <b>P</b> | <b>Q</b> |
|----------|----------|----------|
| (A) 4320 | 35800    | 49000    |
| (B) 4080 | 49500    | 30500    |
| (C) 4320 | 30500    |          |
| (D) 3150 |          |          |

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 SPACE FOR ROUGH WORK

### ANSWERS

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