

This Question Paper contains 7 printed pages.  
(Section - A, B, C & D)

Sl.No. 2461

12 (E)

(MARCH, 2018)  
(NCERT SRT)

Time : 3 Hours]

[Maximum Marks : 80

**Instructions :**

- 1) There are four sections and total 30 questions.
- 2) All the questions are compulsory. Internal options are available in certain questions.
- 3) Draw figure, wherever necessary. Maintain the lines and arcs of the construction.
- 4) Use of calculator is not permitted.

**SECTION - A**

■ Question 1 to 6 carry one mark each:

- 1) Which among  $\frac{3}{6}, \frac{2}{6}$  and  $\sqrt{3}$  has non-terminating recurring decimal expansion? [1]
- 2) Find the discriminant of  $3x^2 - 2x + \frac{1}{3} = 0$  and discuss the nature of roots. [1]

- 3) What is the sum of first 'n' odd positive integers? [1]
- 4) Angle of elevation of the top of a tower from a point on the ground, which is 'a' metre away from the foot of the tower is  $45^\circ$ . What is the height of the tower? [1]
- 5) Write the formula to find the volume of a frustum of a cone. [1]
- 6) A jar contains 12 marbles, some are red and some are blue. If a marble is drawn at random from the jar, the probability that it is red is  $\frac{2}{3}$ . How many red marbles are there in the jar? [1]

### SECTION - B

■ Question numbers 7-12 carry 2 marks each:

- 7) Find the smallest four digit number divisible by both 72 and 120. [2]
- 8) Find the zeros of  $P(x) = 2x^2 - 8x + 6$  and verify the relationship between the zeros and the coefficients. [2]

- 9) Solve the pair of equations,  $8x + 7y = 15xy$ ,  $7x - 2y = 5xy$  by reducing them to a pair of linear equations in two variables. [2]
- 10) Is it possible to design a rectangular park whose perimeter is six times its breadth and the area is  $800\text{m}^2$ . If possible find its length and breadth. [2]
- 11) Find the co-ordinates of the points of trisection of the line segment joining the points  $A(2, -2)$  and  $B(-7, 4)$ . [2]
- OR
- 11) Find the ratio in which the line segment joining  $A(1, -5)$  and  $B(-4, 5)$  is divided by X-axis. [2]
- 12) A chord of a circle of radius 10cm subtends a right angle at the centre. Find the area of minor segment formed by the chord. [use  $\pi = 3.14$ ] [2]

### SECTION - C

■ Question numbers 13 to 22 carry 3 marks each:

- 13) Prove that  $\sqrt{2}$  is irrational. [3]
- 14) On dividing  $3x^3 + x^2 + 2x + 5$  by a polynomial  $g(x)$  the quotient and remainder were  $3x - 5$  and  $9x + 10$  respectively. Find  $g(x)$  [3]
- 15) Five years ago Ramya was 5 times as old as her daughter. Ten years later she will be twice old as her daughter. What was Ramya's age when her daughter was born? [3]

