

# TENTH CLASS MODEL PAPER

## SUMMATIVE ASSESSMENT - 2

### MATHEMATICS PAPER - I

Time: 2 Hrs. 45 Min.

(English Version)

Max. Marks: 50

#### INSTRUCTIONS:

1. Answer ALL the questions in a separate answer booklet.
2. The question paper consists of four sections and 33 questions.
3. There is an internal choice in Section – IV.
4. Write answers neatly and legibly.

#### SECTION – I

Note: i) Answer ALL the questions.

ii) Each question carries  $\frac{1}{2}$  mark.

$$12 \times \frac{1}{2} = 6$$

1. Find the HCF of 32 and 54.
2. Expand  $\log \frac{p^2q^3}{r^4}$ .
3. Write the set builder form of  $\{1, 4, 9, 16, 25, \dots, 100\}$ .
4. Let  $A = \{2, 5, 6, 8\}$ ,  $B = \{5, 7, 9, 1\}$ , Find  $A \cap B$ .
5. Write the general form of a cubic polynomial in one variable  $x$ ?
6. Check whether the pair of linear equations  $2x - 3y = 5$  and  $4x - 6y = 15$  are consistent?
7. Find the discriminant of  $2x^2 - 4x + 3 = 0$ .
8. The product of two consecutive positive integers is 306. Represent the situation in the form of quadratic equation to find the integers?
9. Find the 10<sup>th</sup> term of the AP 5, 1, -3, -7,.....
10. Write the GP, if  $a = 256$ , and  $r = -\frac{1}{2}$ .
11. Find the volume of right circular cone with radius 3 cm and height 7 cm.
12. Match the following.

#### Group A

- i) L.S.A. of hemisphere
  - ii) T.S.A. of hemisphere
  - iii) T.S.A. of sphere
- A) i – a, ii – b, iii – c  
C) i – a, ii – c, iii – b

#### Group B

- a)  $4\pi r^2$
  - b)  $2\pi r^2$
  - c)  $3\pi r^2$
- B) i – b, ii – a, iii – c  
D) i – b, ii – c, iii – a

## SECTION – II

**Note: i) Answer ALL the questions.**

**ii) Each question carries ONE mark.**

**8 × 1 = 8**

13. Without actually performing the long division, state — will have a terminating decimal expansion or non-terminating repeating decimal expansion.
14. Show  $A \cup B$  in Venn diagram, where  $A = \{1, 3, 5, 7\}$  and  $B = \{2, 3, 5, 7\}$ .
15. Find the sum and product of the zeroes of the polynomial  $4x^3 + 3x^2 + 2x$ .
16. Give an example for quadratic polynomial whose sum of the zeroes is zero.
17. Cost of 2 kgs brinjal and 4 kgs tomato is Rs.120. After two days the cost of 4 kgs brinjal and 5 kgs tomato is Rs.160. Express this situation in linear equation.
18. Discuss the nature of the roots of  $2x^2 + 5x + 2 = 0$ .
19. Find the 30<sup>th</sup> term of the AP: 10, 7, 4,.....
20. If the total surface area of a cube is numerically equal to its volume. Find its lateral surface area?

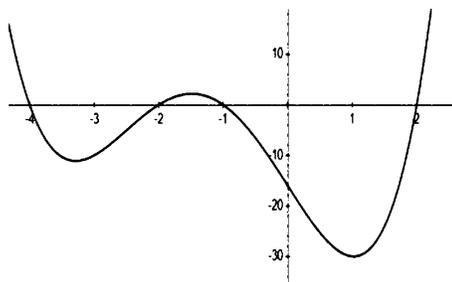
## SECTION – III

**Note: i) Answer ALL the questions.**

**ii) Each question carries TWO marks.**

**8 × 2 = 16**

21. Solve  $3^x = 5^{x-2}$ .
22.  $A = \{\text{Quadrilaterals}\}$ ,  $B = \{\text{Square, Rectangle, Trapezium, Rhombus}\}$ . State whether  $A \subset B$  or  $B \subset A$ . Justify your answer.
23. Find the zeroes of the following graph?



24. Solve the following pair of linear equations using elimination method.  
 $3x + 2y = 11$  and  $2x + 3y = 4$
25. For what value of 'k' the pair of equations  $3x + 4y + 2 = 0$  and  $9x + 12y + k = 0$  represent coincident lines?
26. Find two numbers whose sum is 27 and product is 182.
27. Which term of the GP : 2,  $2\sqrt{2}$ , 4, ..... is 128.
28. Find the volume of a sphere of radius 4.2 cm.

## SECTION – IV

**Note: i) Answer ALL the questions.**

**ii) Each question carries FOUR marks.**

**iii) There is an internal choice for each question.**

**5 × 4 = 20**

29. a) The length, breadth and height of a hall are 8 m. 25 cm., 6 m. 75 cm. and 4 m. 50 cm. respectively. Determine the longest rope which can measure the three dimensions of the hall exactly.

(OR)

- b) A motor boat whose speed is 18 km/h in still water. It takes 1 hour more to go 24 km up stream than to return downstream to the same spot. Find the speed of the stream.

30. a)  $A = \{x : x \text{ is a prime number less than } 20\}$ ,  $B = \{x : x \text{ is an odd positive integer less than } 10\}$  and  $C = \{x : x \text{ is an even positive integer less than } 15\}$  then find

i)  $(A \cup B) \cap C$

ii)  $(A - B) \cup (B - A)$

iii)  $(B - C) \cap (A - B)$

iv)  $(A \cap B) \cup C$

(OR)

- b) Divide  $p(x) = x^4 - 3x^2 + 4x + 5$  by  $q(x) = x^2 - 2$  and find the quotient and remainder.

31. a) The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save Rs.2000 per month, find their monthly income.

(OR)

- b) A rectangular park is to be designed whose breadth is 3 m less than its length. Its area is to be 4 square metres more than the area of a park that has already been made in the shape of an isosceles triangle with its base as the breadth of the rectangular park and of altitude 12 m. Find its length and breadth.

32. a) A sum of Rs.700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs.20 less than its preceding prize. Find the value of each of the prizes.

(OR)

- b) From a cylindrical wooden log of length 30 cm and base radius  $7\sqrt{2}$  cm. a biggest cuboid of square base is made. Find the volume of wood wasted.

33. a) Draw the graph of  $p(x) = x^2 - 6x + 9$  and find the zeroes of the polynomial.

(OR)

- b) Ten students of class X took part in Mathematics quiz. If the number of girls is 4 more than the number of boys. Represent this situation graphically.