

# TENTH CLASS MODEL PAPER

## SUMMATIVE ASSESSMENT - 2

### MATHEMATICS PAPER - II

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 midpoint of line segment joining the points (3, 0) and (1, – 4).
2. The end points of line are (2, 3) and (4, 5). Find the slope of the line.
3. State SSS similarity criterion.
4. Match the following.

#### Group A

- i) The diagonal of a square is ..... times to its side
- ii) Area of an equilateral triangle is ..... sq.u.
- iii) Height of an equilateral triangle is ..... u.

- A) i-a, ii-b, iii-c  
B) i-b, ii-a, iii-c  
C) i-a, ii-c, iii-b  
D) i-b, ii-c, iii-a

#### Group B

- a)  $\frac{\sqrt{3} a}{4}$
- b)  $\sqrt{2}$
- c)  $\frac{\sqrt{3} a^2}{4}$

5. What is the name of the mathematician who introduced the word 'tangent'?
6. If  $\sec x + \tan x = p$  then find  $\sec x - \tan x$ .
7. Express  $\sin 81^\circ + \tan 81^\circ$  in terms of trigonometric ratios of angles between  $0^\circ$  and  $45^\circ$ .
8. Define Angle of depression.
9. If  $P(E) = 0.05$ , what is the probability of 'not E'?
10. A die is thrown once. What is the probability of getting a number greater than 4?
11. Define the mean for ungrouped data.
12. Find the mode of 5, 6, 9, 10, 6, 12, 3, 6, 11, 10, 4, 6, 7.

## SECTION – II

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

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

**(8 × 1 = 8)**

13. What is the distance between A(8, 3) and B(-4, 3).
14. In  $\triangle ABC$ ,  $DE \parallel BC$  and  $\frac{AD}{DB} = \frac{3}{5}$ ,  $AC = 5.6$ . Then find AE?
15. Draw a circle and two lines parallel to given line such that one is a tangent and the other a secant to the circle?
16. Find the area of sector whose radius is 7 cm, with the given angle  $90^\circ$ ?
17. Evaluate  $\frac{\sec 35^\circ}{\operatorname{cosec} 35^\circ}$ .
18. The top of a clock tower is observed at an angle of elevation  $\alpha^\circ$  and the foot of the tower is at the distance of 'd' meters from the observer. Draw the diagram for this data.
19. Find the probability of getting a head when a coin is tossed once. Also find the probability of getting a tail.
20. Find the median of 2, 3, 6, 0, 1, 4, 8, 2, 5.

## SECTION – III

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

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

**(8 × 2 = 16)**

21. Find the coordinates of the point which divides the line segment joining the points (4, -3) and (8, 5) in the ratio 3 : 1 internally.
22. A person 1.65 m tall casts 1.8 m shadow. At the same instance, a lamp-post casts a shadow of 5.4 m. Find the height of the lamp-post.
23. A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that  $OQ = 12$  cm. Find the length of PQ.
24. A chord of circle of radius 6 cm is making an angle  $60^\circ$  at the centre. Find the length of the chord.
25. A tower stands vertically on the ground. From a point which is 15 m away from the foot. If the angle of elevation of the tower is  $45^\circ$ . Then what is the height of the tower?
26. A bag contains lemon flavored candies only. Malini takes out one candy without looking into the bag. What is the probability that she takes out
  - i) an orange flavored candy?
  - ii) a lemon flavored candy?
27. One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will
  - i) be an ace,
  - ii) not be an ace.
28. Find 'x' if the median of the observations in ascending order 24, 25, 26, x + 2, x + 3, 30, 31, 34 is 27.5.

## SECTION – IV

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

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

**iii) There is an Internal Choice for each question.**

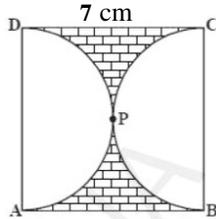
**(5 × 4 = 20)**

29. a) Show that the points A(a, 0), B(-a, 0), C(0,  $a\sqrt{3}$ ) are form an equilateral triangle.

(OR)

b) Prove that three times the square of any side of an equilateral triangle is equal to four times the square of the altitude.

30. a) Find the area of the shaded region in figure, if ABCD is a square of side 7 cm. and APD and BPC are semicircles.



(OR)

b) Two men on either side of a temple of 30 m. height observe its top at the angles of elevation  $30^\circ$  and  $60^\circ$  respectively. Find the distance between the two men.

31. a) Prove that  $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$ .

(OR)

b) A box contain 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be

- i) red ii) white iii) green iv) not green

32. a) Find the mean of the following frequency table?

CI	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No.students	6	11	7	4	4	2	1

(OR)

b) If the median of 60 observations is 28.5, find the values of x and y?

CI	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	x	20	15	y	5

33. a) Construct a triangle of sides 4 cm, 5 cm, 6 cm. Then construct a triangle similar to it whose sides are  $\frac{5}{4}$  of corresponding sides of first triangle.

(OR)

b) Construct a tangent to a circle 4 cm from a point on the concentric circle of radius 6 cm and measure its length. Also verify the measurement by actual calculation.