

COMMON SECOND REVISION MODEL QUESTION-2022

STD: X

MATHEMATICS

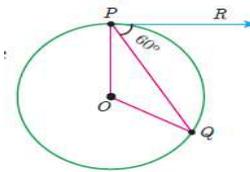
TIME:3HRS

MARKS:100

I. CHOOSE THE BEST ANSWER:

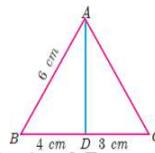
14x1= 14

1. If in  $\Delta ABC$ ,  $DE \parallel BC$ ,  $AB = 3.6\text{cm}$ ,  $AC=2.4\text{cm}$  and  $AD=2.1\text{cm}$  then the length of  $AE$  is  
 (A) 1.4 cm (B) 1.8 cm (C) 1.2 cm (D) 1.05 cm
2. The two poles of heights 6m and 11m stand vertically on a plane ground. If the distance between their feet is 12m What is the distance between their tops ?  
 (A) 14m (B) 13m (C) 15m (D) 12.8m
3. A Tangent is perpendicular to the radius at then  
 (A)Centre (B) Chord (C) Infinity (D) point of contact
4. How many tangents can be drawn to the circle from an exterior point?  
 (A) One (B) Two (C) Infinite (D) Zero
5. In figure ,if  $PR$  is tangent to the circle at  $P$  and  $O$  is the centre of the circle, then  $\Delta POQ$  is  
 (A)  $120^\circ$  (B)  $100^\circ$   
 (C)  $110^\circ$  (D)  $90^\circ$



6. The area of triangle formed by the points  $(-5,0)$ ,  $(0,-5)$  and  $(5,0)$  is  
 (A) 0 sq.units (B) 25 Sq .units (C) 5 sq.units (D) none of these
7. The point of intersection of  $3x - y = 4$  and  $x + y = 8$  is  
 (A)  $(5, 3)$  (B)  $(2,4)$  (C)  $(3,5)$  (D)  $(4,4)$
8. The slope of the line which is perpendicular to a line joining the points  $(0,0)$  and  $(-8,8)$  is  
 (A) -1 (B) 1 (C) 13 (D) -8
9. A Straight line has equation  $8y= 4x + 21$ , Which of the following is true?  
 (A) The slope is 0.5 and the y intercept is 2.6  
 (B) The slope is 5 and the y intercept is 1.6  
 (C) The slope is 0.5 and the y intercept is 1.6  
 (D) The slope is 5 and y intercept is 2.6
10. When proving that a quadrilateral is a trapezium ,it is necessary to show  
 (A) Two sides are parallel  
 (B) Two parallel and two nonparallel sides  
 (C) Opposite side are parallel  
 (D) All sides are of equal length
11. When proving that a quadrilateral is a parallelogram by using slopes you must find .  
 (A) The slopes of two sides (B) The slopes of two pair of opposite sides  
 (C) The lengths of all sides (D) Both the lengths and slopes of two sides
12. If the ratio of the height of a tower and the length of its shadow is  $3 : 1$ , then the angle of elevation of the sun has measure (A)  $45^\circ$  (B)  $30^\circ$  (C)  $90^\circ$  (D)  $60^\circ$
13. A tower is  $60^\circ\text{m}$  height. its shadow is  $x$  metres shorter when the sun s "altitude is  $45^\circ$  then when it has been  $30^\circ$ , then  $x$  is equal to (A) 41.92 m (B) 43.92 m (C) 43m (D) 45.6m
14. The slope of a vertical line is ----- (A) 0 (B) un defined (C) 1 (D) -1

V.THIRUMARICHAMY M.SC,M.ED

**II. Answer the following questions: Q.No.28 is Compulsory****10 × 2 = 20**

15. From the figure, AD is the bisector of  $\angle A$ . If  $BD=4$  cm,  $DC=3$  cm and  $AB=6$  cm, Find AC.
16. Find the intercepts made by the line  $4x - 9y + 36 = 0$  on the coordinate axes.
17. Find the equation of a line through the given pair of points (2,3) and (-7, -1)
18. Find the equation of a straight line whose Slope is 5 and y intercept is -9
19. Show that the points (-2, 5), (6, -1) and (2,2) are collinear.
20. In two concentric circles, a chord of length 16cm of larger circle becomes tangent to the smaller circle whose radius is 6cm. Find the radius of the larger circle.
21. Find the length of the tangent drawn from a point whose distance from the centre of a circle is 5cm and radius of the circle is 3 cm. Solution Given  $OP = 5$ cm, radius  $r=3$
22. A man goes 18 m due east and then 24 m due north. Find the distance of his current position from the starting point.
23. What length of ladder is needed to reach a height of 7ft along the wall when the base of the ladder is 4 ft from the wall? Round off your answer to the next tenth place?
24. A tower stands vertically on the ground. From a point on the ground, which is 48m away from the foot of the tower, the angle of elevation of the top of the tower  $30^\circ$ . Find the height of the tower.
25. Find the angle of elevation of the top of a tower from a point on the ground, which is 30m away from the foot of a tower of height  $10\sqrt{3}$  m.
26. From the top of a rock  $50\sqrt{3}$  m high, the angle of depression of a car on the ground is observed to be  $30^\circ$ . Find the distance of the car from the rock
27. Find the intercepts made by the lines on the coordinate axes  $3x - 2y - 6 = 0$
28. A player sitting on the top of a tower of height 20m observes the angle of depression of a ball lying on the ground as  $60^\circ$ . Find the distance between the foot of the tower and the ball.  $\sqrt{3} = 1.732$

**II. Answer the following questions: Q.No.42 is Compulsory****10 × 5 = 50**

29. Find the equation of the median and altitude of  $\Delta ABC$  through A where the vertices are  $A(6,2)$ ,  $B(-5, -1)$  and  $C(1,9)$ .
30. Show that the points (1,-4), (2,-3) and (4,-7) form a right angled triangle and check whether they satisfied pythagoras theorem.  $A(1,-4)$ ,  $B(2,-3)$  and  $C(4,-7)$
31. A triangular shaped glass with vertices at  $A(-5, -4)$ ,  $B(1, 6)$  and  $C(7, -4)$  has to be painted. If one bucket of paint covers 6 square feet, how many buckets of paint will be required to paint the whole glass, if only one coat of paint is applied.
32. Let  $P(11,7)$ ,  $Q(13.5, 4)$  and  $R(9.5, 4)$  be the mid points of the sides AB, BC and AC respectively of  $\Delta ABC$ . Find the coordinates of the vertices A, B and C. Hence find the area of  $\Delta ABC$  and compare this with area of  $\Delta PQR$ .
33. If the points  $A(-3,9)$ ,  $B(a,b)$  and  $C(4, -5)$  are collinear and if  $a+b = 1$ , then find "a" and "b".
34. Find the Area of the quadrilateral formed by the points (8, 6), (5, 11), (-5, 12) and (-4, 3).
35. Show that the angle bisectors of a triangle are concurrent.
36. PQ is a tangent drawn from a point P to a circle with centre O and QOR is a diameter of the circle such that  $\angle POR = 120^\circ$ . Find  $\angle OPQ$ .
37. In a garden containing several trees, three particular trees P, Q, R are located in the following way,  $BP = 2$ cm,  $CQ = 3$ cm,  $RA = 10$ m,  $PC = 6$ m,  $QA = 5$ m,  $RB = 2$ m, where A, B, C are points such that P lies on BC, Q lies on AC and R lies on AB. Check whether the trees P, Q, R lie on a same straight line.
38. 5m long ladder is placed leaning towards a vertical wall such that it reaches the wall at a point 4m high. If the foot of the ladder is moved 1.6m towards the wall, then find the distance by which the top of the ladder would slide upwards on the wall.
39. State and Prove Pythagoras Theorem
40. From the top of the tower 60 m high the angles of depression of the top and bottom of a vertical lamp post are observed to be  $38^\circ$  and  $60^\circ$  respectively. Find the height of the lamp post. ( $\tan 38^\circ = 0.781$ ,  $\sqrt{3} = 1.732$ ).
41. From the top of a 12 m high building, the angle of elevation of the top of a cable tower is  $60^\circ$  and the angle of depression of its foot is  $30^\circ$ . Determine the height of the tower.

42. A building and a statue are in opposite side of a street from each other 35 m apart. From a point on the roof of building the angle of elevation of the top of statue is  $24^\circ$  and the angle of depression of base of the statue is  $34^\circ$ . Find the height of the statue ( $\tan 24^\circ = 0.4452$ ,  $\tan 34^\circ = 0.6745$ ).

**Note: Answer the following questions:**

$$2 \times 8 = 16$$

43. A) Construct a  $\triangle PQR$  in which  $PQ = 8$  cm,  $\angle R = 60^\circ$  and the median  $RG$  from  $R$  to  $PQ$  is 5.8 cm. Find the length of the altitude from  $R$  to  $PQ$ . (OR)
- (B) Construct a triangle similar to a given triangle  $PQR$  with its sides equal to  $\frac{3}{5}$  of the corresponding sides of the triangle  $PQR$  (scale factor  $\frac{3}{5} < 1$ )
44. A) Take a point which is 11 cm away from the centre of a circle of radius 4 cm and draw the two tangents to the circle from that point. (OR)
- (B) Construct a triangle similar to a given triangle  $ABC$  with its sides equal to  $\frac{6}{5}$  of the corresponding sides of the triangle  $ABC$  (scale factor  $\frac{6}{5} > 1$ ).

**V. THIRUMARICHAMY M.SC, M.ED**