**Grade: X WORKSHEET-CIRCLES AND AREAS RELATED TO CIRCLES**

**Date: 22/11/2018**

**Answer the following:**

**1. 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 PQ.**

**2. From a point P which is at a distance of 13 cm from the centre O of the circle of radius 5 cm, the pair of tangents PQ and PR to the circle is drawn. Find the area of the quadrilateral PQOR .**

**3. Prove that in two concentric circles, the chord of the larger circle, which touches the smaller circle, is bisected at the point of contact.**

**4. Two tangents TP and TQ are drawn to a circle with centre O from the external point T. Prove that .**

**5. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80. Then find .**

**6. Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.**

**7. Prove that parallelogram circumscribing a circle is a rhombus.**

**8. Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.**

**9. In figure, AT is a tangent to the circle with centre O such that**

**OT = 4cm and . Then AT is equal to**

 **(a) 4 cm (b) 2 cm (c)  (d) **

**10. A point P is 13 cm from the centre of the circle. The length of the tangent drawn from P to the circle is 12 cm. Find the radius of the circle.**

**11. If two tangents inclined at an angle  are drawn to a circle of radius 3 cm , then find the length of each tangent .**

**12. Find the length of the tangent drawn from a point whose distance from the centre of a circle is 25 cm. Given that the radius of the circle is 7cm.**

**13. A circle is touching the side BC of a triangle ABC at P and touching AB and AC produced at Q and R respectively. Prove that **

**14. In a right angle , a circle is drawn with AB as diameter intersecting the hypotenuse AC at P. Prove that the tangent to the circle at PQ bisects BC.**

**15. The area of a circular playground is 22176 square m. Find the cost of fencing this ground at the rate of Rs. 50 per m.**

**16.** A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the corresponding : (i) minor segment (ii) major sector. (Use π = 3.14)

**17.** In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find: (i) the length of the arc (ii) area of the sector formed by the arc (iii) area of the segment formed by the corresponding chord

**18.** A car has two wipers which do not overlap. Each wiper has a blade of length 25 cm sweeping through an angle of 115°. Find the total area cleaned at each sweep of the blades.

**19.** From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in Fig. 12.23. Find the area of the remaining portion of the square. 

**20.** Find the area of the shaded region in Fig. 12.22, where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre. 