

Name - \_\_\_\_\_

Start time - \_\_\_ : \_\_\_

End time - \_\_\_ : \_\_\_

**Solve the following.**

1. Bisectors of angles X, Y and Z of a triangle XYZ intersect its circumcircle at P, Q and R respectively. Prove that the angles of the triangle PQR are  $90^\circ - (\frac{1}{2})X$ ,  $90^\circ - (\frac{1}{2})Y$  and  $90^\circ - (\frac{1}{2})Z$ .
2. In any triangle XYZ, if the angle bisector of  $\angle X$  and perpendicular bisector of XY intersect, prove that they intersect on the circumcircle of the triangle XYZ.
3. Prove that the circle is drawn with any side of a rhombus as diameter passes through the point of intersection of its diagonals.
4. Two chords AB and CD of lengths 10 cm and 22 cm respectively of a circle are parallel to each other and are on opposite sides of its centre. If the distance between AB and CD is 12, find the radius of the circle
5. If circles are drawn taking two sides of a triangle as diameters, prove that the point of intersection of these circles lies on the third side.
6. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If  $\angle DBC = 70^\circ$ ,  $\angle BAC$  is  $30^\circ$ , find  $\angle BCD$ . Further, if  $AB = BC$ , find  $\angle ECD$ .