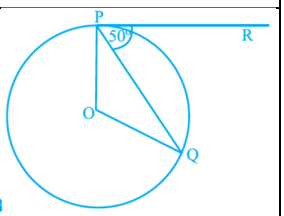
Maths 10th (Circles) Paper

Total Time: 1 Hour **Total Marks:** 36

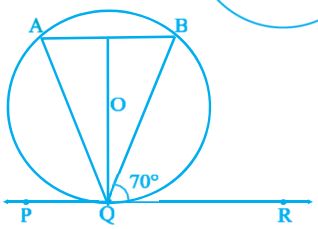
General Instructions:
1. All questions are **compulsory**.
2. There is no choice in any of the questions.
3. Question numbers **1** to **2** in Section A are one-mark questions.
4. Question numbers **3** to **10** in Section A are three-mark questions.
5. Question numbers **11** to **12** in Section A are five-mark questions.

Question 1. If O is the centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then ∠POQ is equal to



(A) 100° (B) 80°
(C) 90° (D) 75°

Question 2. If PQR is the tangent to a circle at Q whose center is O, AB is a chord parallel to PR and ∠BQR = 70°, then ∠AQB is equal to



(A) 20° (B) 40°
(C) 35° (D) 45°

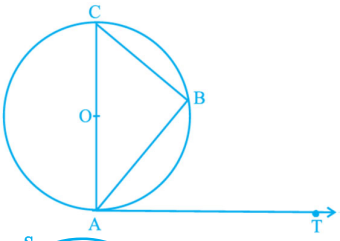
Question 3. Two tangents PQ and PR are drawn from an external point to a circle with center O. Prove that QORP is a cyclic quadrilateral.

Question 4. Prove that the tangents drawn at the ends of a chord of a circle make equal angles with the chord.

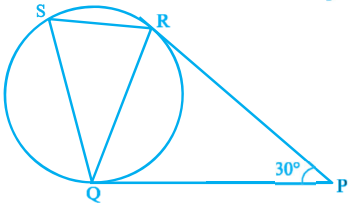
Question 5. If a hexagon ABCDEF circumscribe a circle, prove that AB + CD + EF = BC + DE + FA.

Question 6. Let *s* denote the semi-perimeter of a triangle ABC in which BC = *a*, CA = *b*, AB = *c*. If a circle touches the sides BC, CA, AB at D, E, F, respectively, prove that BD = *s* – *b*.

Question 7. If AB is a chord of a circle with center O, AOC is a diameter and AT is the tangent at A as shown in figure. Prove that ∠BAT = ∠ACB.



Question 8. Tangents PQ and PR are drawn to a circle such that ∠RPQ = 30°. A chord RS is drawn parallel to the tangent PQ. Find the ∠RQS.



Question 9. A chord PQ of a circle is parallel to the tangent drawn at a point R of the circle. Prove that R bisects the arc PRQ.

Question 10. Prove that a diameter AB of a circle bisects all those chords which are parallel to the tangent at the point A.

Question 11. A is a point at a distance 13 cm from the center O of a circle of radius 5 cm. AP and AQ are the tangents to the circle at P and Q. If a tangent BC is drawn at a point R lying on the minor arc PQ to intersect AP at B and AQ at C, find the perimeter of the ΔABC.

Question 12. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively. Find the sides AB and AC.