PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 18 : Tangents and Intersecting Chords

(Geometry : Tangents, Intersecting Chords and Alternate Segment)

Maximum Marks: 40 Time allowed: One and a half hours

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the question paper.*
3. ***The time given at the head of this Paper is the time allowed for writing the answers.***
4. *Attempt **all** questions from **Section A** and **any two** questions from **Section B**.*
5. ***All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.***
6. ***Omission of essential working will result in loss of marks.***
7. *The intended marks for questions or parts of questions are given in brackets [ ].*
8. *Figures given in the questions are rough sketches and are not drawn to scale. Give reasons for the steps where required.*

Question 1

Choose the correct answers to the questions from the given options. [8]

(Do not copy the question, write the correct answers only.)

(i) The radius of a circle is 6 cm. The length of the tangent drawn to the circle from a point 10 cm away from its centre is:

(a) 16 cm
(b) 12 cm
(c) 4 cm
(d) 8 cm

(ii) PA and PB are the tangents drawn to a circle with centre O from an external point P. If ∠APB = 70°, then ∠AOB is equal to:

(a) 70°
(b) 110°
(c) 140°
(d) 35°

(iii) Two chords AB and CD of a circle intersect at a point P inside the circle. If PA = 6 cm, PB = 4 cm and PC = 3 cm, then PD is equal to:

(a) 8 cm
(b) 4.5 cm
(c) 12 cm
(d) 2 cm

(iv) From an external point P, a tangent PT = 12 cm and a secant PBA are drawn, B being nearer to P. If PB = 8 cm, the length of the chord AB is:

(a) 4.5 cm
(b) 16 cm
(c) 10 cm
(d) 18 cm

(v) Two circles of radii 9 cm and 4 cm touch each other internally. The distance between their centres is:

(a) 5 cm
(b) 13 cm
(c) 36 cm
(d) 2.5 cm

(vi) A tangent PQ touches a circle at A and AB is a chord of the circle. If $\angle BAQ = 52°$, the angle in the alternate segment is:

(a) 128°
(b) 52°
(c) 38°
(d) 26°

(vii) **Assertion (A):** Two tangents can be drawn to a circle from a point lying inside the circle.

Reason (R): A tangent to a circle meets the circle at exactly one point.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

(viii) **Assertion (A):** If two chords AB and CD of a circle intersect at P inside the circle, then $PA \times PB = PC \times PD$.

Reason (R): The triangles PAC and PDB are similar.

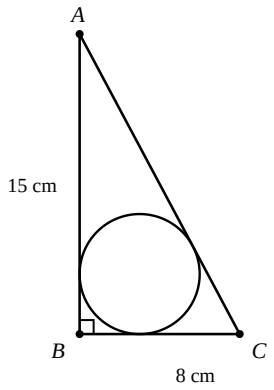
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

Question 2

(i) From an external point P, tangents PA and PB are drawn to a circle with centre O. If $\angle APB = 50°$, find (a) $\angle AOB$ (b) $\angle PAB$ (c) $\angle OAB$. [4]

(ii) (a) Chords AB and CD of a circle intersect at P inside the circle. If AP = 9 cm, PB = 4 cm and CP = 3 cm, find PD. (b) From an external point P, a tangent PT and a secant PAB are drawn, A being nearer to P. If PA = 5 cm and AB = 15 cm, find PT. [4]

(iii) In the figure, ABC is a triangle right-angled at B, with AB = 15 cm and BC = 8 cm. A circle is inscribed in the triangle, touching the sides of the triangle. Find the radius of the circle. [4]

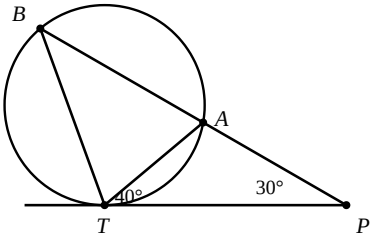


SECTION B (20 Marks)

*(Attempt **any two** questions from this Section.)*

Question 3

In the figure, PT is a tangent to the circle at T and the secant PAB meets the circle at A and B. ∠TPB = 30° and ∠PTA = 40°.



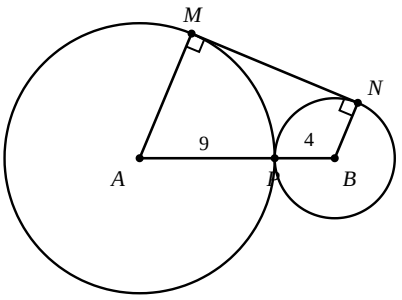
(i) Find ∠TBA, giving a reason. [3]

(ii) Find ∠TAB. [3]

(iii) Find ∠ATB and hence show that BA = BT. [4]

Question 4

In the figure, two circles with centres A and B and radii 9 cm and 4 cm touch each other externally at P. MN is a direct common tangent touching the circles at M and N. Draw BC ⊥ AM, C lying on AM.



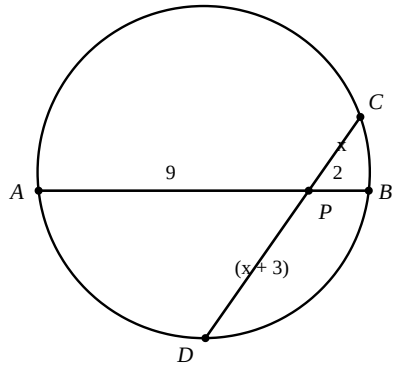
(i) Find AB and AC. [3]

(ii) Find BC and hence the length of the tangent MN. [3]

(iii) Find the area of the quadrilateral AMNB. [4]

Question 5

In the figure, the chords AB and CD of a circle intersect at P. AP = 9 cm, PB = 2 cm, CP = x cm and PD = (x + 3) cm.



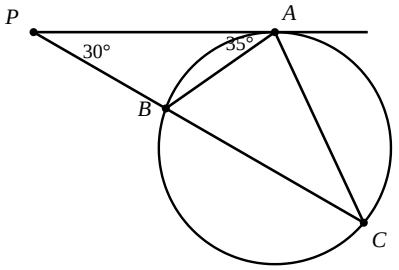
(i) Using the theorem on intersecting chords, form an equation in x. [3]

(ii) Solve the equation and find the lengths of CP, PD and CD. [3]

(iii) Name the triangle similar to ΔAPC, giving a reason. Hence find the ratio of the areas of ΔAPC and ΔDPB. [4]

Question 6

In the figure, ABC is a triangle inscribed in a circle. The tangent at A meets CB produced at P. ∠APB = 30° and ∠PAB = 35°.



(i) Find ∠ACB, giving a reason. [3]

(ii) Find ∠ABC. [3]

(iii) Find ∠BAC and ∠PAC. [4]

— End of Question Paper —