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(Affiliated to CBSE up to +2 Level)

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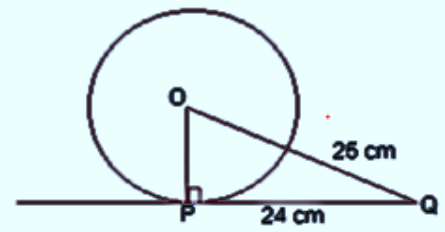
EXERCISE 10.2

Q.1. Choose the correct option:

From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the centre is 25 cm. The radius of the circle is

(A) 7 cm (B) 12 cm (C) 15 cm D) 24.5 cm



Sol. QT is a tangent to the circle at T and OT is radius

Also, OQ = 25 cm and QT = 24 cm

∴ Using Pythagoras theorem, we get

$OQ^2 = QT^2 + OT^2$

$\Rightarrow OT^2 = OQ^2 - QT^2 = 25^2 - 24^2 = (25 - 24)(25 + 24)$

$= 1 \times 49 = 49 = 7^2 \Rightarrow OT = 7$

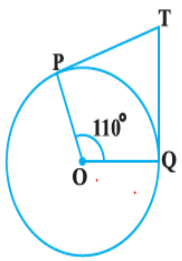
Thus, the required radius is 7 cm.

∴ The correct option is (A).

Q.2. Choose the correct option:

In figure, if TP and TQ are the two tangents to a circle with centre O so that LPOQ = 110°, then LPTQ is equal to

(A) 60° (B) 70° (C) 80° (D) 90°



Sol. ∵TQ and TP are tangents to a circle with centre O.

such that ∠POQ = 110°

∴ OP ⊥ PT and OQ ⊥ QT

⇒∠OPT = 90° and ∠OQT = 90°

Now, in the quadrilateral TPOQ, we get

∴∠PTQ + 90° + 110° + 90° = 360°

⇒∠PTQ + 290° = 360°

⇒∠PTQ = 360° – 290° = 70°

Thus, the correct option is (B).

Q.3. Choose the correct option:

If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80°, then ∠POA is equal to

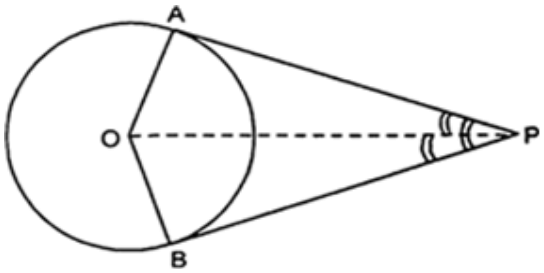
(A) 50° (B) 60° (C) 70° (D) 80°

Sol. Since, O is the centre of the circle and two tangents from P to the circle are PA and PB.

∴ OA ⊥ AP and OB ⊥ BP

⇒∠OAP = ∠OBP = 90°

Now, in quadrilateral PAOB, we have:



∠APB + ∠PAO + ∠AOB + ∠PBO = 360°

⇒ 80° + 90° + ∠AOB + 90° = 360°

⇒ 260° + ∠AOB = 360°

⇒∠AOB = 360° – 260°

⇒∠AOB = 100°

In rt ΔOAP and rt ΔOBP, we have

OP = OP

∠OAF = ∠OBP

OA = OB

∴ Δ OAP ≅ Δ OBP

∴ Their corresponding parts are equal

⇒∠POA = ∠POB

Thus, the option (A) is correct.