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(Affiliated to CBSE up to +2 Level)

Class : 10th

Subject: Mathematics

Date: 12.11.2020

EXERCISE 10.2

Q.1. Choose the correct option:

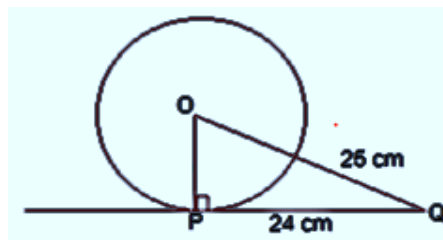
From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the centre is 25 cm. The radius of the circle is

(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:

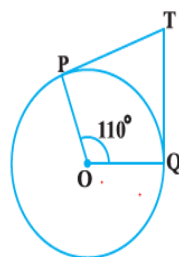
In figure, if TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then $\angle PQT$ is equal to

(A) 60°

(B) 70°

(C) 80°

(D) 90°



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

such that $\angle POQ = 110^\circ$

∴ $OP \perp PT$ and $OQ \perp QT$

$\Rightarrow \angle OPT = 90^\circ$ and $\angle OQT = 90^\circ$

Now, in the quadrilateral TPOQ, we get

∴ $\angle PTQ + 90^\circ + 110^\circ + 90^\circ = 360^\circ$

$\Rightarrow \angle PTQ + 290^\circ = 360^\circ$

$\Rightarrow \angle PTQ = 360^\circ - 290^\circ = 70^\circ$

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 $\angle POA$ is equal to

(A) 50°

(B) 60°

(C) 70°

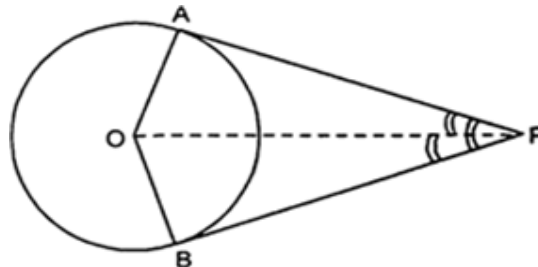
(D) 80°

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

∴ $OA \perp AP$ and $OB \perp BP$

$\Rightarrow \angle OAP = \angle OBP = 90^\circ$

Now, in quadrilateral PAOB, we have:



$\angle APB + \angle PAO + \angle AOB + \angle PBO = 360^\circ$

$\Rightarrow 80^\circ + 90^\circ + \angle AOB + 90^\circ = 360^\circ$

$\Rightarrow 260^\circ + \angle AOB = 360^\circ$

$\Rightarrow \angle AOB = 360^\circ - 260^\circ$

$\Rightarrow \angle AOB = 100^\circ$

In rt $\triangle OAP$ and rt $\triangle OBP$, we have

$OP = OP$

$\angle OAP = \angle OBP$

$OA = OB$

∴ $\triangle OAP \cong \triangle OBP$

∴ Their corresponding parts are equal

$\Rightarrow \angle POA = \angle POB$

Thus, the option (A) is correct.