SHIKSHA CLASSES

Sub. : Maths | **Question Paper** | **Total Marks : 30**
Std. X (CBSE) | **10 : Circles** | **Time : 1 Hour**

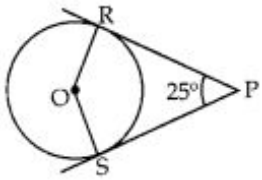
Section : A (Each 1 Mark)

Multiple choice Questions (MCQs).

Q.1 : The distance between two parallel tangents of a circle of radius 4 cm is

a) 2 cm b) 4 cm c) 6 cm d) 8 cm

Q.2 : In the given figure, if $\angle RPS = 25°$, the value of $\angle ROS$ is.



a) 135° b) 145° c) 165° d) 155°

Q.3 : The length of tangents drawn from an external point to the circle

a) are equal b) are not equal

c) sometimes are equal d) are not defined

Q.4 : A tangent is drawn from a point at a distance of 17 cm of circle C(0, r) of radius 8 cm. The length of its tangent is

a) 5 cm b) 9 cm c) 15 cm d) 23 cm

Q.5 : Tangents from an external point to a circle are

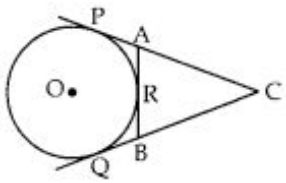
a) equal b) not equal c) parallel d) perpendicular

Q.6 : The tangents drawn at the extremities of the diameter of a circle are

a) perpendicular b) parallel

c) equal d) none of these

Q.7 : In given figure, CP and CQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If CP = 11 cm and BC = 6 cm then the length of BR is



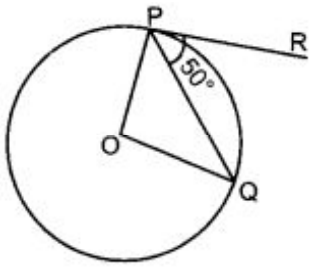
a) 6 cm b) 5 cm c) 4 cm d) 3 cm

Q.8 : From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR

is

a) 60 cm² b) 65 cm² c) 30 cm² d) 32.5 cm²

Q.9 : In the figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then $\angle POQ$ is equal to



a) 100° b) 80° c) 90° d) 75°

For question number 10 to 11 two statements are given one labeled Assertion and other labeled Reason select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

a) both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

b) Assertion and Reason both are correct but Reason is not the correct explanation of Assertion.

c) Assertion is correct but Reason is false.

d) both assertion and reason are wrong.

Q.10 : **Assertion:** AB and CD are two parallel chords of a circle whose diameter is AC. Then AB $\neq$ CD.

Reason : Perpendicular from the centre of a circle does not bisects the chord.

Q.11 : **Assertion:** Perpendicular bisectors of two chords of a circle intersect at its centre.

Reason: A line drawn through the centre of a circle to bisect a chord is perpendicular to the chord.

Section : B (Each 2 Marks)

Q.12 : A circle touches all the four sides of a quadrilateral ABCD. Prove that AB + CD = BC + DA.

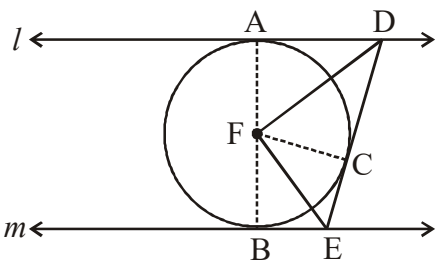
Q.13 : PA and PB are tangents from P to the circle with centre 'O'. At point M, a tangent is drawn cutting PA at K and PB at N. Prove that KN = AK + BN.

OR

If PA and PB are tangents from an outside point P. Such that PA = 10 cm and $\angle APB = 60^0$. Find he length of chord AB.

Section : C (Each 3 Marks)

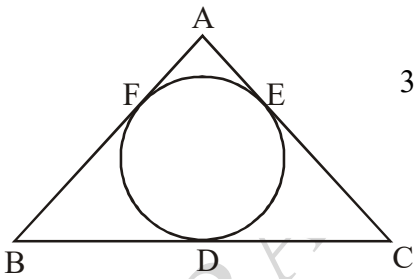
Q.14 : In figure, *l* and *m* are two parallel tangents at A and B. The tangent at C makes an intercept DE between *l* and *m*. Prove that $\angle DFE = 90^0$.



Q.15 : The radii of two concentric circles are 13 cm and 8 cm. AB is a diameter of the bigger circle. BD is a tangent to the smaller circle touching it at D. Find the length AD.

OR

In figure, the incircle of ΔABC touches the sides BC, CA and AB at D, E and F respectively.



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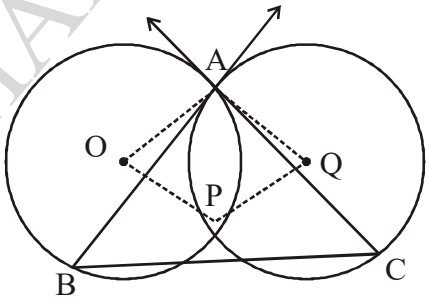
Show that $AF + BD + CE = AE + BF + CD = \frac{1}{2}$ (Perimeter of ΔABC).

Section - D(Each 5 Marks)

Q.16 : The radius of the incircle of a triangle is 4 cm and the segments into which one side is divided by the point of contact are 6 cm and 8 cm. Determine the other two sides of a the triangle.

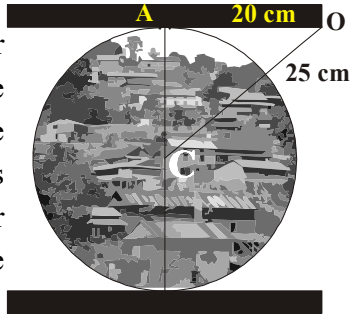
OR



Let A be one point of intersection of two intersecting circles with centres O and Q. The tangents at A to the two circles meet the circles again at B and C respectively. Let the point P be located so that AOPQ is a parallelogram. Prove that P is the circumcentre of the triangle ABC.

Section : E

Q..17 : **Case study :**



People of village want to construct a road nearest to the circular village Khamkar. The road cannot pass through the village. But the people want the road should be at the shortest distance from the centre of the village. Suppose the road start from point O which is outside the circular village and touch the boundary of the cirular village at point A such that OA = 20 cm. And also the straight distance of the point O from the centre C of the village is 25 cm.

i) Find the shortest distance of the road from the centre of the village. 1

ii) Which method should be applied to find the shortest distance? 1

iii) If a point is inside the circle, how many tangents can be drawn from that point. 2

OR

If two circles are externally and they do not touch, then find the number of common tangents.

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