



# SUCCESS KEY TEST SERIES

X (English)

(Unit test-2 Math-2 ( Ch-3,4 ))

Mathematics Part - II-

DATE:

TIME: 2 hrs

MARKS: 30

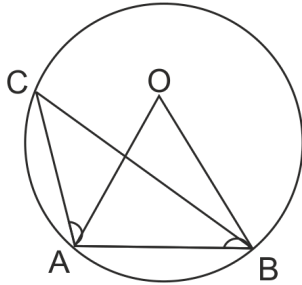
SEAT NO:

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Q.1 A) Choose the correct alternative.

(5)

1)

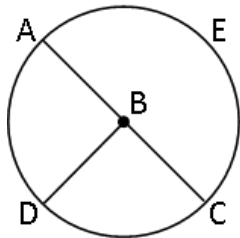


In the given figure, O is the Centre of the circle, if  $\angle AOB = 90^\circ$  and  $\angle ABC = 30^\circ$ , then  $\angle CAO$  is equal to  
 a.  $30^\circ$     b.  $45^\circ$     c.  $90^\circ$     d.  $60^\circ$

2) Seg PA and seg PB are the tangents to the circle with centre O. A and B are the points of contacts. If PA = 5cm, what is the length of PB?

- a. 10    b. 5    c. 2.5    d. - 10

3) In the figure alongside, find  $m(\text{arc AEC}) = ?$  if  $\angle ABD = 80^\circ$ ,  $m(\text{arc DC}) = 75^\circ$

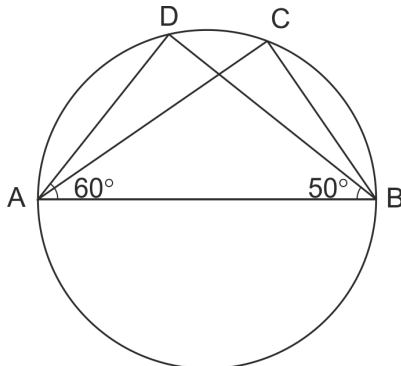


- a.  $205^\circ$     b.  $210^\circ$     c.  $230^\circ$     d.  $250^\circ$

4) How many common tangents can be drawn to two circles, touching each other externally?

- a. One    b. Two    c. Three    d. Four

5)

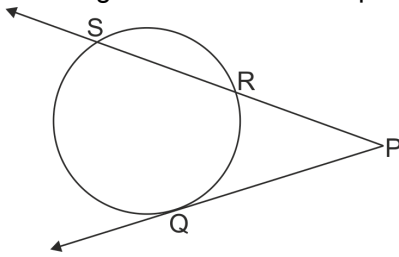


In the given figure, if  $\angle DAB = 60^\circ$  and  $\angle ABD = 50^\circ$  then  $\angle ACB$  is equal to  
 a.  $60^\circ$     b.  $50^\circ$     c.  $70^\circ$     d.  $80^\circ$

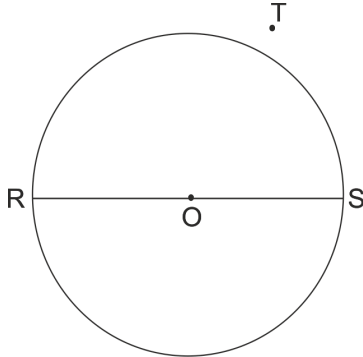
**B) Solve the following questions. (Any two)**

**(4)**

- 1) In the figure Q is the contact point. If  $PQ = 12$ ,  $PR = 8$ , then  $PS = ?$



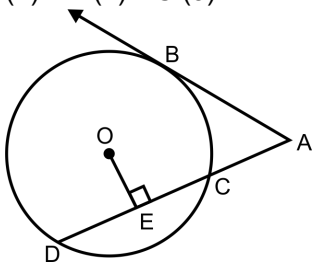
- 2) Prove that, any rectangle is a cyclic quadrilateral.
- 3) In the adjoining figure, seg RS is a diameter of a circle with centre O. Point T lies in the exterior of the circle. Prove that  $\angle RTS$  is an acute angle.



**Q.2 A) Complete the following Activities. (Any two)**

**(4)**

- 1) In figure, O is the centre of the circle and B is a point of contact. Seg  $OE \perp$  seg AD,  $AB = 12$ ,  $AC = 8$ , find (1) AD (2) DC (3) DE.



$AB^2 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$  ... {By property of tangent secant theorem}

$\underline{\hspace{2cm}}^2 = 8 \times AD$

$\therefore AD = \frac{144}{8}$

**AD = 18 units**

$AD = 18$  units,  $AC = 8$  units

$AD = AC + CD$  ... {A-C-D}

$18 = 8 + CD$

$\therefore$  **CD = 10 units**

CD is chord of the circle

$ED \cong EC$

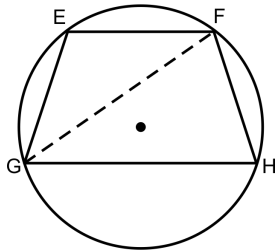
... {Perpendicular drawn from the centre to the chord bisects the chord}

$\therefore ED = EC = \frac{CD}{2} = \frac{10}{2} =$

5 units

**DE = 5 units**

2)



In chord  $EF \parallel$  chord  $GH$ . Prove that, chord  $EG \cong$  chord  $FH$ .

Fill in the blanks and write the proof.

Proof : Draw seg  $GF$ .

$\angle EFG = \angle FGH$  .....(I)

$\angle EFG = \dots\dots\dots$  ... inscribed angle theorem (II)

$\angle FGH = \dots\dots\dots$  ... inscribed angle theorem (III)

$\therefore m(\text{arc } EG) = \dots\dots\dots$  ... from (I), (II), (III).

$\therefore \text{chord } EG \cong \text{chord } FH$  .....

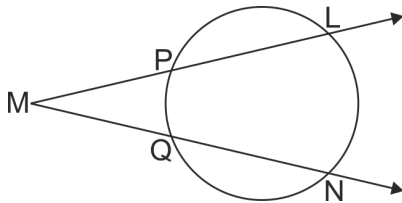
3) In the figure  $m(\text{arc } LN) = 110^\circ$ ,  $m(\text{arc } PQ) = 50^\circ$  then complete the following activity to find  $\angle LMN$ .

$\angle LMN = \frac{1}{2} [m(\text{arc } LN) - \text{[ ]}]$

$\therefore \angle LMN = \frac{1}{2} [\text{[ ]} - 50^\circ]$

$\therefore \angle LMN = \frac{1}{2} \times \text{[ ]}$

$\therefore \angle LMN = \text{[ ]}$

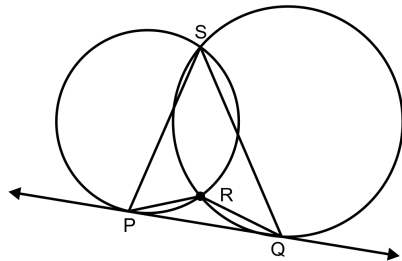


B) Solve the following questions. (Any two)

(4)

1) If two circles intersect each other at points  $S$  and  $R$ . Their common tangent  $PQ$  touches the circle at points  $P, Q$ .

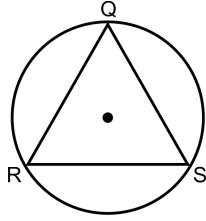
Prove that,  $\angle PRQ + \angle PSQ = 180^\circ$



2) What is the distance between two parallel tangents of a circle having radius 4.5 cm? Justify your answer.

3) In fig,  $\triangle QRS$  is an equilateral triangle. Prove that,

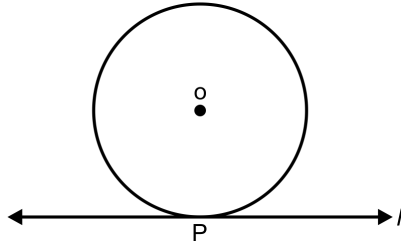
- i) arc RS  $\cong$  arc QS  $\cong$  arc QR  
 ii)  $m(\text{arc QRS}) = 240^\circ$ .



**Q.3 Solve the following questions. (Any two)**

**(6)**

- 1) Proof that: Tangent segments drawn from an external point to a circle are congruent.
- 2) Draw a circle of radius 2.6 cm. Draw a tangent to the circle from any point on the circle using centre of the circle.
- 3) Line  $l$  touches a circle with centre  $O$  at point  $P$ . If radius of the circle is 9 cm, answer the following.
  - (1) What is  $d(O, P) = ?$  Why ?
  - (2) If  $d(O, Q) = 8$  cm, where does the point  $Q$  lie ?
  - (3) If  $d(O, R) = 15$  cm, How many locations of point  $R$  are line on line  $l$  ? At what distance will each of them be from point  $P$  ?



**Q.4 Solve the following questions. (Any one)**

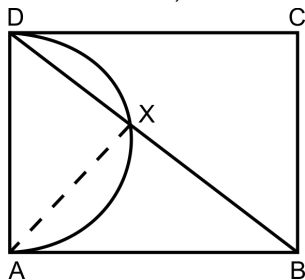
**(4)**

- 1)  $\triangle XYZ \sim \triangle DEF$ ; In  $\triangle DEF$ ;  $DE = 5.5$ ,  $\angle E = 40^\circ$ ,  $EF = 4.0$  cm and  $\frac{XY}{DE} = \frac{6}{5}$  then construct  $\triangle XYZ$ .
- 2)  $\triangle LTR \sim \triangle HYD$ . In  $\triangle HYD$ , where  $HY = 7.2$  cm,  $YD = 6$  cm,  $\angle Y = 40^\circ$  and  $\frac{LR}{HD} = \frac{5}{6}$  and construct  $\triangle LTR$  &  $\triangle HYD$ .

**Q.5 Solve the following questions. (Any one)**

**(3)**

- 1)  $\square ABCD$  is a rectangle. Taking  $AD$  as a diameter a semicircle  $AXD$  is drawn which intersects diagonal  $BD$  at  $X$ .  
 if  $AB = 12$  cm,  $AD = 9$  cm, find the values of (i)  $BD$  (ii)  $BX$ .



- 2) Prove that : If an angle has its vertex on the circle, its one side touches the circle and the other intersects the circle in one more point, then the measure of the angle is half the measure of its intercepted arc.