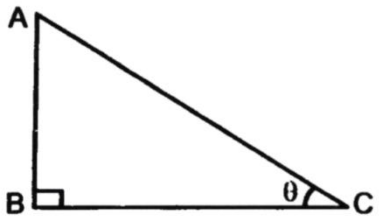
Mathematics - II
Practice Paper - I

Time : 2 Hours **Max. Marks : 40**

Q. 1 (A) : Solve the following questions. (Any Four) **[4 Marks]**

1. In ΔABC, $\angle ABC = 90°$ and $\angle ACB = \theta$ Then find the trigonometric ratios of $\sin\theta$ and $\cos\theta$.



2. If ratio of area of two triangles with same height is 2:3. If base of small triangle **is** 6 cm, then find the base of bigger triangle.
3. If $P \equiv (x_1, y_1)$ and $Q \equiv (x_2, y_2)$ are in a same plane, then d (P, Q) = ... Complete the formula.
4. Angles made by the line with the positive direction of x-axis are given. Find **the** slopes of following lines.

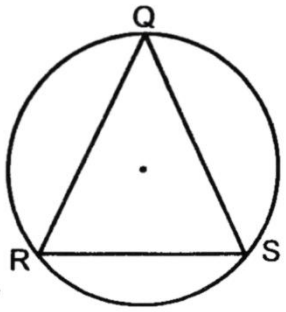
   (i) 45° (ii) 60° (iii) 90°
5. If the radius of a sector of a circle is 3.5 cm and length of arc is 2.2 cm. Then **find** area of a sector of a circle.
6. 7 cm, 24 cm, 25 cm are the three sides of a triangle. Is it right angle triangle **?** (Give reason also)

(B) Solve the following questions. (Any Two) **[4 Marks]**

1. In fig., ΔQRS is equilateral triangle, then show that

   (i) arc RS ≅ arc QS ≅ arc QR

   (ii) arc QRS = 240°.



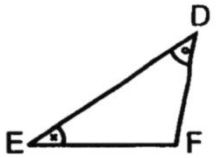
2. If $\sin\theta = \frac{7}{25}$ then find the value of $\cos\theta$ and $\tan\theta$.
3. If the distance between points L(x, 7) and M (1, 15) is 10 then find value of x.

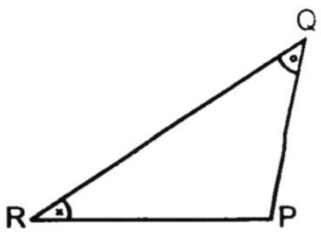
Q. 2 (A) : Choose the correct alternative. **[4 Marks]**

1. In ΔDEF and ΔPQR, If $\angle D \cong \angle Q$, $\angle R \cong \angle E$, then find the true statement **from** the following.

   (A) $\frac{EF}{PR} = \frac{DF}{PQ}$ (B) $\frac{DE}{PQ} = \frac{EF}{RP}$

   (C) $\frac{DE}{QR} = \frac{DF}{PQ}$ (D) $\frac{EF}{RP} = \frac{DE}{QR}$





2. If two circles are touching externally, how many common tangents can be drawn to them ?

   (A) one (B) two (C) three (D) four

3. When we see in the direction parallel to horizon then ..... angle will form.

   (A) angle of elevation (B) right angle

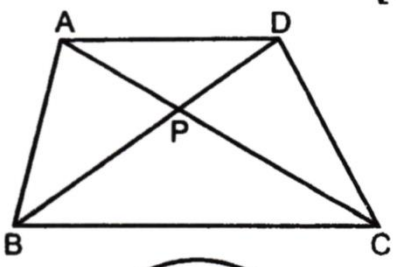
   (C) zero (D) angle of depression

4. If ratio of circumference and area of circle is 2:7 then find the circumference of circle.

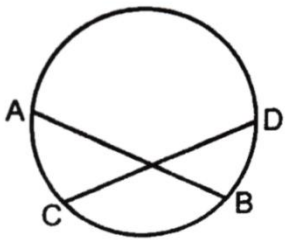
   (A) 14π (B) $\frac{7}{\pi}$ (C) 7π (D) $\frac{14}{\pi}$

(B) Solve the following questions. (Any Two) **[4 Marks]**

1. In trapezium ABCD side AD || side BC, diagonals AC and BD intersect in point P. Then show that $\frac{AP}{PD} = \frac{PC}{BP}$



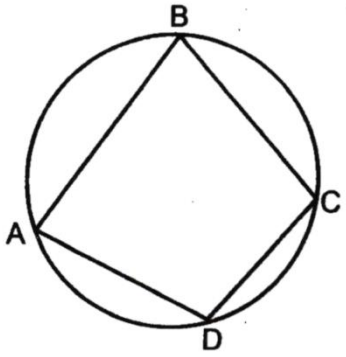
2. In fig., chord AB ≅ chord CD. Then prove that arc AC ≅ arc BD.



3. Prove that : $\sec\theta\,(1 - \sin\theta)\,(\sec\theta + \tan\theta) = 1$

Q 3 (A) : Solve following questions. (Any Two) **[4 Marks]**

1. Opposite angles of a cyclic quadrilateral are Supplementry.
   Fill in the blanks and complete the following proof.



Given : □ [ ] is cyclic.

To Prove : $\angle B + \angle D =$ [ ]

[ ] $+ \angle C = 180°$

Proof : arc ABC is intercepted by the inscribed angle $\angle ADC$.

$\therefore \quad \angle ADC = \frac{1}{2}$ [ ] .... (I)

Similarly [ ] is and inscribed angle. It intercepts arc ADC.

$\therefore$ [ ] $= \frac{1}{2}$ m (arc ADC) .... (II)

$\therefore$ $\angle ADC + \square = \frac{1}{2}\square + \frac{1}{2}$ m (arc ADC) ... from (I) and (II)

$= \frac{1}{2}\square$ + m (arc ADC)

$= \frac{1}{2} \times 360°$ [arc ABC and arc ADC ... constitute a complete circle]

$= \square$

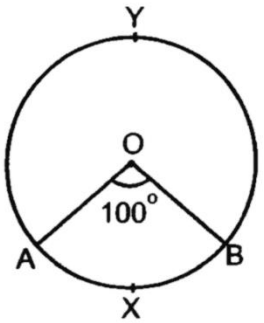
Similarly, we can prove

$\angle A + \angle C = \square$

(2) If point (x, y) is at same distance from point (7, 1) and (3, 5), then show that $y = x - 2$.

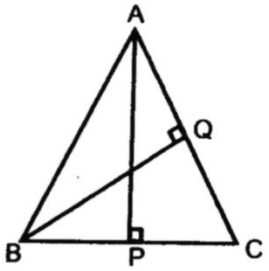
(3) Complete the table with help of figure alongside.

Type of arc	Name of arc	Measure of arc
minor arc	arc AXB	.....
.....	arc AYB	.....



(B) Solve the following questions. (Any Two) **[4 Marks]**

1. Draw a circle of radius 4.1 cm. Take any point at a distance 7.3 cm from circle and draw tangent to the circle from that point.
2. In ΔABC, $AP \perp BC$, $BQ \perp AC$.
   If B–P–C, A–Q–C then show that $\Delta CPA \sim \Delta CQB$. If AP = 7, BQ = 8, BC = 12 then AC = ?

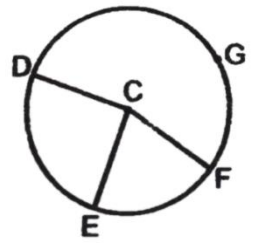


3. If height of an equilateral triangle is $\sqrt{3}$ cm then find the side and perimetere of triangle.

Q. 4 : Solve the following questions. (Any Three) **[9 Marks]**

1. A model of ship is made in a ratio 1 : 200.
   (i) If length of model is 4 cm then find the length of ship.
   (ii) If area of deck is 1,60,000 sq.cm. then find the area of deck of model of the ship.

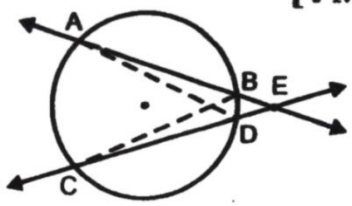
2. In figure, points G, D, E, F are concyclic points of a circle with centre C.
   $\angle ECF = 70°$, m (arc DGF) = 200°
   Find m (arc DE) and m (arc DEF)



3. Show that points P (2, –2), Q (7, 3), R (11, –1) and S (6, –6) are vertices of a parallelogram.
4. The dimensions of a cuboid are 44 cm, 21 cm, 12 cm. It is melted and a cone of height 24 cm is made. Find the radius of its base.

Q. 5 : Solve the following questions : (Any One) **[4 Marks]**

1. **Given :** Secants containing chords AB and CD of a circle intersect outside the circle in point E.
   To prove : $AE \times EB = CE \times ED$.
   Construction : Draw seg AD and seg BC.
   Fill in the blanks and complete the proof.



Proof : In ΔADE and CBE,

$\angle AED \cong$ ☐ ... (common angle)

$\angle DAE \cong \angle BCE$ ... (☐)

$\therefore \quad \Delta ADE \sim$ ☐ ... (☐)

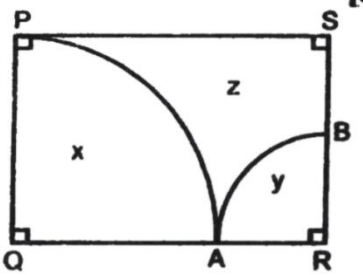
$\therefore \quad \frac{(AE)}{\square} = \frac{\square}{\square}$ ... (corresponding sides of similar triangles)

$\therefore \quad \square = CE \times ED$

2. If A (–3, –4), B (–5, 0), C (3, 0) are the vertices of ΔABC, then find the co-ordinate points of centroid of ΔABC.

Q. 6 : Solve the following questions. (Any One) **[3 Marks]**

1. In figure, □PQRS is a rectangle. If PQ = 14 cm, QR = 21 cm, find the areas of the parts x, y and z.



2. A ladder on the platform of a fire brigade van can be elevated at an angle of 70° to the maximum. The length of the ladder can be extended upto 20 m. If the platform is 2 m above the ground, find the maximum height from the ground upto which the ladder can reach. (sin 70° ≅ 0.94)

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