Nayak's Tutorials

Way to Excellence

Year: 2024-2025

X (SSC)

Practice Paper -3
**Mathematics– Paper II**

Marks: 40
Duration: 2 Hrs.

Instructions :

(1) All questions / activities are compulsory.

(2) Use of calculators is not allowed.

(3) The numbers to the right of the question indicate full marks.

(4) In case of MCQs, only the first attempt will be evaluated and will be given credit

5) For every MCQ, the correct alternative (A), (B), (C) or (D) of answers with subsequent number is written as an answer.

Q1A)Multiple Choice Questions **4**

1 If P $\frac{a}{3}, 4$ is the mid-point of the line segment joining the points Q (-6, 5) and R (-2, 3), then the value of a is

   a. -4   b. -6   c. 12   d. -12

2 When see at a higher level, from the horizontal line, angle formed is ....

   a. angle of elevation   b. angle of depression   c. 0   d. straight angle

3 If ΔXYZ ~ ΔPQR then $\frac{XY}{PQ} = \frac{YZ}{QR}$ = ?

   (a) $\frac{XZ}{PR}$ (b) $\frac{XY}{PQ}$

   (c) $\frac{XZ}{QR}$ (d) $\frac{YZ}{PQ}$

4 In the figure alongside, m(arc AED) = 95°, m (arc BFC) = 85° Find m(arc AB) if seg AB $\cong$ seg DC.
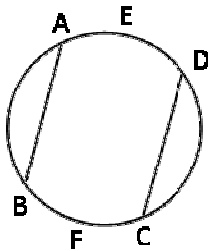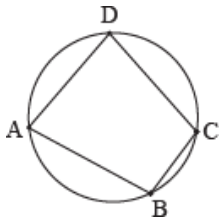

   a. 95°   b. 90°   c. 85°   d. 105°

Q1B)Answer the following. **4**

1 In the figure quadrilateral ABCD is a cyclic, if ∠DAB = 75° then find measure of ∠DCB.

2 Identify, with reason, if the following is Pythagorean triplet. 5, 12, 13

3 In adjoining figure, AP ⊥ BC, AD || BC, then find A(□ABC) : A(□ BCD).
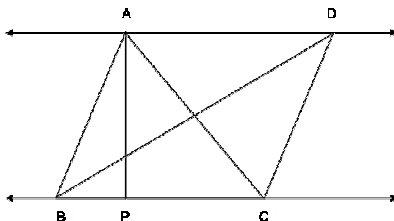
4 Radius of a circle is 10 cm. Area of a sector is 100 cm². Find the area of its corresponding major sector. (π = 3.14).

Q2A)Attempt the following (Activity)(Any Two) 4

1

Draw a circle with center O and radius 3 cm

↓

Take any point P on the circle

↓

Draw ray OP

↓

Draw perpendicular to ray OP from point P

2 In $\angle MNP = 90°$, seg NQ $\perp$ seg MP, MQ = 9, QP = 4, find NQ.
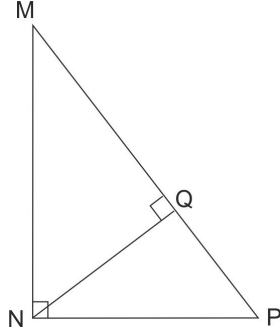
In△MNP,

$\angle MNP = 90°$ ...(Given)

seg NQ $\perp$ hypotenuse MP ...(Given)

∴ By property of geometric mean

$NQ^2 = MQ \times$ _____

∴ $NQ^2 =$ _____

∴ $NQ^2 =$ _____

∴ $NQ =$ _____ ...(Taking square roots on both the sides)

3 Find the distance between each of the following pairs of points.

$W = \frac{-7}{2}, 4,$ X = (11, 4)

Let W (3.5, 4) $\equiv (x_1, y_1)$ and

X (11, 4) $\equiv (x_2, y_2)$

By_____formula,

$$WX = \sqrt{x_2 - x_1{}^2 + (y_2 - y_1)^2}$$

$$= _____$$

$$= \sqrt{(11 + 3.5)^2 + 0^2}$$

$$= _____$$

∴ $WX = _____$

∴ The distance between the points W and X is _____

Q2B)Answer the following (Any Four) 8

1 In △ABC and △PQR, $\angle ABC \cong \angle PQR$, seg BD and seg QS are angle bisector If $\frac{l(AD)}{□(PS)} = \frac{l(DC)}{□(SR)}$. Prove that :

$\angle ABC \sim$ PQR.

2 In a quadrilateral, ABCD $\angle B = \angle D = 90°$. Prove that : $2AC^2 - BC^2 = AB^2 + AD^2 + DC^2$

**3** In figure, m(arc NS) = 125°, m(arc EF) = 37°, find the measure $\angle NMS$.
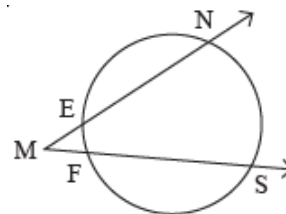
4 For a person standing at a distance 80m from a church the angle of the elevation of its top is measure 45º. Find the height of the church.

5 In the figure, if O is the centre of the circle, PQ is a chord. ∠POQ = 90°, area of shaded region is 114 cm² find the radius of the circle. (π = 3.14)
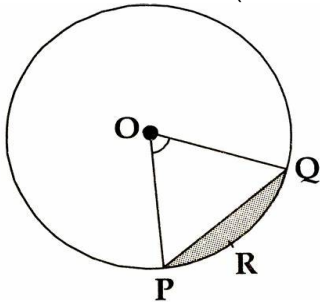

Q3A)Attempt the following (Activity)(Any One)   **3**

1 ABC is an isosceles triangle with AB = AC = 12 cm and BC = 8 cm. Find the altitude on BC and hence, calculate its area.
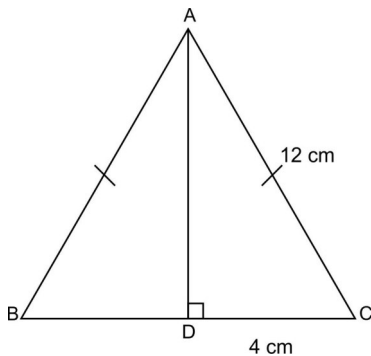
∴   BD = DC
BD = _____ = 4cm
In right angled triangle ABD
By Pythagoras theorem
_____ = AB²
$AD^2 + (4)^2 = (12)^2$
$AD^2 + 16 = 144$
$AD^2 = 128$
$AD = \sqrt{128}$
$AD = \sqrt{64 \times 2}$
AD = _____
Area of □ABC = _____
$= \frac{1}{2} \times DC \times AD$
= _____
$= \frac{1}{2} \times 4 \times 8 \sqrt{2}$ cm²
= _____

2 In the circles with centres A and B touch each other at E. Line l is a common tangent which touches the circles at C and D respectively. Find the length of seg CD if the radii of the circles are 4 cm, 6 cm.
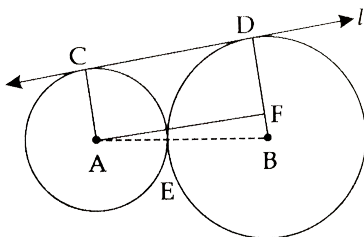
Construction: Draw seg AF ⊥ seg BD

∴ □ AFDC is a rectangle.

A - E - B ... [_____]

∴ _____ = AB ... [A - E - B]

4 + 6 = AB

$\boxed{AB = 10cm}$

Now, in ΔAFB, ∠AFB = 90°...... [Construction]

AB² = _____ .... [Pythagoras Theorem]

∴ 10² = AF² + 2² BF = _____

AF² = 96

∴ AF = _____

But, CD = AF

∴ CD = _____

Q3B) Solve the following (Any Two) **6**

1 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.

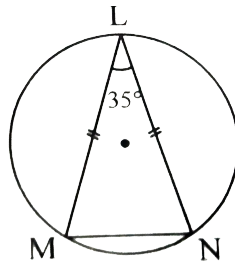**2** Determine whether the given points are collinear.

A (0,2), B (1,-0.5), C (2,-3)

3 Prove the following.

$\dfrac{\sin A + \cos A}{\sin A - \cos A} + \dfrac{\sin A - \cos A}{\sin A + \cos A} = \dfrac{2}{\sin^2 A - \cos^2 A}$

4 In the figure, chord LM ≅ chord LN, ∠L = 35° find
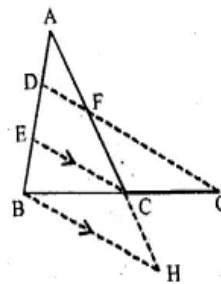
(i) m (arc MN)

(ii) m (arc LN)

Q4) Answer the following (Non textual)(Any Two) **8**

1 A(3, 5), B(- 3, - 2), C(5, - 4) are the vertices of □ABC. AD is the median of □ABC. Find the equation of median AD.

2 In the given figure, 2AD = BD, E is mid-point of BD and F is mid-point of AC and EC ∥ BH. Prove that : i) DF ∥ BH

ii) AH = 3 AF.

3 Δ AMT ~ ΔAHE. In Δ AMT, MA = 6.3 cm, ∠A = 120°, AT = 4.9 cm and $\dfrac{MA}{HA} = \dfrac{7}{5}$ then draw □AHE.

Q5) Answer the following (Any One) **3**

1 A regular hexagon is inscribed in a circle of radius 14 cm. Find the area of the region between the circle and the hexagon. $\pi = \dfrac{22}{7}, \sqrt{3} = 1.732$

2 In the figure, AB is the diameter of the circle with centre P. Line CB is a tangent to the circle at the point B. AC intersects the circle in the point D. Prove that AC × AD = 4 (radius)².