Muktangan English School & Jr. College, Pune - 9
Annual Examination (2024-25)
STD IX

Subject : Mathematics (Part II)   Marks - 40

Date : 26.03.2025   Time : 8.00 am to 10.00 am

Q1. A) Attempt the following by choosing the correct alternatives given and write the correct alternative alphabet [eg. i - c]. **(4)**

i)   The length of largest chord of the circle with radius 2 cm is _____.

   A) 5 cm   B) 4 cm   C) 6 cm   D) 1 cm

ii) Formula for the volume of cuboid is _____.

   A) l x b x h   B) (l + b) h   C) 2l + 2b   D) l³

iii) The point (3, 4) lie in _____ quadrant.

   A) third   B) second   C) fourth   D) first

iv) _____ of a square are perpendicular bisectors of each other.

   A) Diagonals B) Side   C) Angles   D) Vertices

B) Attempt the following sub questions : **(4)**
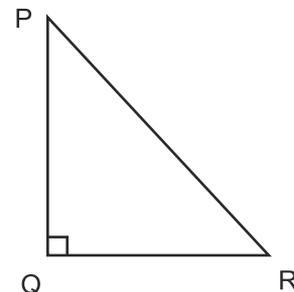
i)   Find the value of $\tan 60^0$.

ii) Find the surface area of the cube with side 3 cm.

iii) If length of a side of square is 4 cm, then find it's perimeter.

iv) State the equation of Y - axis.

Q2. A) Attempt any two of the following activities given below : **(4)**

i)   In the adjoining figure, if $\angle Q = 90^0$, then find the ratio of cosR and tanP by completing the activity given below :

→ Solution :

In $\triangle$ PQR, $\angle$ Q = 90° ——— (given)

$\therefore$ cos R = $\dfrac{\boxed{}}{\text{Hypotenuse}}$ = $\dfrac{\boxed{}}{\text{PR}}$

tan P = $\dfrac{\boxed{}}{\text{Adjacent side}}$ = $\dfrac{\boxed{}}{\text{PQ}}$

ii) Find the surface area of the sphere having radius 7 cm. (π = $\dfrac{22}{7}$) by filling in the boxes given below :

→ Solution :

Let 'r' be the radius of the sphere.

Hence r = 7 cm & π = $\dfrac{22}{7}$ ——— (given)

$\therefore$ surface area of sphere = $\boxed{}$ ——— (Formula)

= 4 X $\dfrac{22}{7}$ X $\boxed{}$

= 4 X $\dfrac{22}{7}$ X $\boxed{}$ X $\boxed{}$

= 88 X 7

= $\boxed{}$ sq. cm

$\therefore$ surface area of sphere = $\boxed{}$ sq. cm

iii) In the adjoining figure, PQ is the chord of the circle with centre 'O' and OR perpendicular to chord PQ, if l(PQ) = 4.8 m, then find l(RQ) by completing the activity given below :
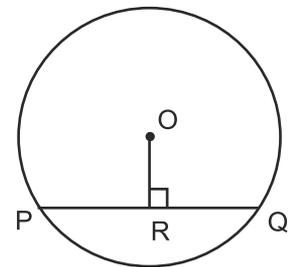
→ Solution :

For the circle with centre 'O' and PQ as the chord of circle.

OR $\perp$ PQ ——— (given)

Perpendicular drawn from the $\boxed{}$ of the circle to the chord bisects the chord.

$\therefore$ l(RQ) = $\dfrac{1}{2}$ X $\boxed{}$

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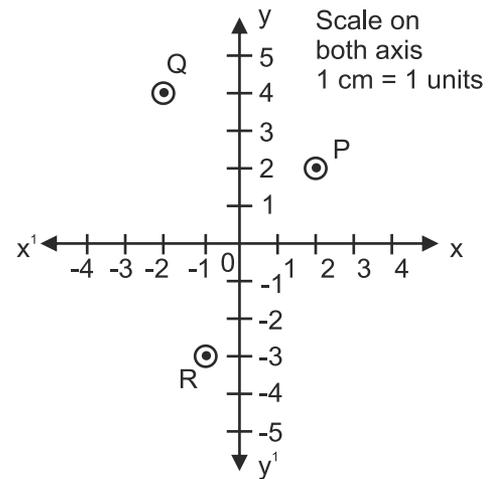
B) **Attempt any four of the following sub questions.** **(8)**

i) With the help of the adjoining figure answer the question below.

    a) Write the co-ordinates of points Q and R.

    b) State the points which have x and y co-ordinate equal.

ii) Curved surface area of cylinder is 1980 sq.cm and the radius of it's base is 15cm. Find the height of the cylinder ($\pi = \dfrac{22}{7}$)

iii) Find the value of : $\cos 30^0 + \sin 60^0$

iv) Write the equation of the line parallel to Y- axis at a distance of 7 units from its left.

v) In a rhombus PQRS if l(PQ) = 5.5 cm and $\angle$ QPS = 85^0, then find l(PQ) and $\angle$ SRQ stating reason.

Q3. A) **Attempt any one of the following subquestions.** **(3)**

i) In the adjoining figure, points X, Y, Z are the midpoints of side AB, side BC and side AC respectively.
If l(AB) = 6 cm, l(AC) = 8 cm, and l(BC) = 12 cm, then find l(XY), l(YZ) and l(XZ) by completing the activity give below:
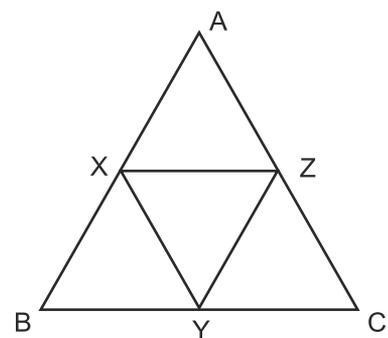
    ⟶ Solution :

Points X,Y,Z are the midpoints of Side AB, Side BC and Side AC of $\triangle$ ABC.

$\therefore$ l(XZ) = $\dfrac{1}{2}$ X $\boxed{}$ ———— (By Mid point theorem)

$\therefore$ l(XZ) = $\dfrac{1}{2}$ X $\boxed{}$ = 6 cm

$l(YZ) = \dfrac{1}{2} \times \boxed{}$ ——————— (By Mid point theorem)

$\therefore l(YZ) = \dfrac{1}{2} \times \boxed{} = 3\text{ cm}$

$l(XY) = \dfrac{1}{2} \times \boxed{}$ ——————— (By Mid point theorem)

$\therefore l(XY) = \dfrac{1}{2} \times \boxed{} = 4\text{ cm}$

ii) Complete the activity given below :

a) $\sin 40^0 = \cos(90 - \boxed{})^0 = \cos \boxed{}$

b) $\tan 60^0 \times \tan(90 - \boxed{})^0 = 1$

$\therefore \tan 60^0 \times \tan \boxed{} = 1$

c) $\cos 50^0 = \sin(\boxed{} - 50)^0 = \sin \boxed{}$

B) Attempt any two of the following subquestions. **(6)**

i) Find the curved surface area of cone, if the radius of base of cone is 12 cm and height is 16 cm. ($\pi = 3.14$)

ii) Construct $\triangle XYZ$ such that $l(XY) = 6.7$ cm, $l(YZ) = 5.8$ cm, $l(XZ) = 6.9$ cm and hence consturct its incircle.

iii) In $\triangle PQR$, $\angle Q = 90^0$, and $\angle R = \theta$, if $l(PQ) = 5$, $l(QR) = 12$, then find $l(PR)$, $\sin\theta$ and $\cos\theta$.

iv) Prove : Diagonals of a parallelogram bisect each other.

Q4. Attempt any two of the following subquestions. **(8)**

i) Construct $\triangle ABC$ where $l(BC) = 7$cm, $\angle B = 40^0$ and $AC - AB = 3$ cm

ii) Plot the following points on the same graph paper A(3,0), B(3,3), C(0,3).

Join point A and B also points B and C and hence state the figure so formed. Stating reason.

iii) Radius of a cirlce is 34 cm and the distance of the chord from the centre is 30cm, then find the length of the chord.

Q5. Attempt any one of the following subquestions. **(3)**

i) Find the value of $\dfrac{\sin 70^0}{\cos 20^0}$

ii) Ratio of the two adjacent sides of a parallelogram is 3:4 and its perimeter is 112 cm. Find the length of each side of the parallelogram.

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