Mathematics II - Geometry

**Time : 2 hrs**   **Std. X**   **Marks : 40**

Q.1. Solve any five from the following subquestions.   **5**

i) □BAC is an inscribed angle in the circle with centre O. If m□BAC = 65º then find the m (arc BXC).

ii) If the side of a cube is 5 cm then find the total surface area of that cube.

iii) Find the value of sin (–60º).

iv) Find the y-intercept of the equation y = 2x – 5.

v) If the radius of the cylinder is 7cm and height is 2 cm then find the volume of the cylinder.

vi) For the angle in standard position if the initial arm rotates 110º in anticlockwise direction then state in which quadrant terminal arm lies ?
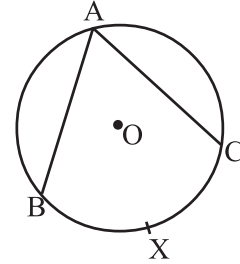
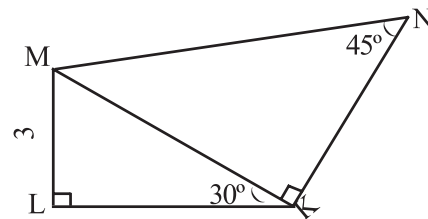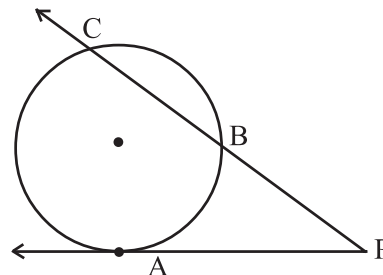**Q.2 Solve any four from the following subquestions.**   **8**

i) Ray PT is the bisector of □QPR of ΔPQR. PQ = 5.6 cm, QT = 4cm, TR = 5 cm then find the length of PR.
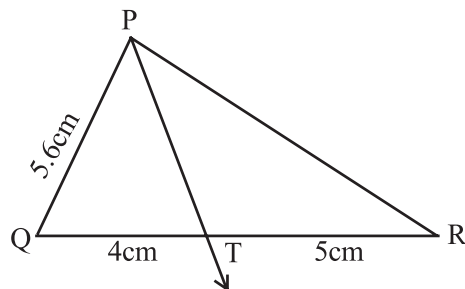
ii) In the adjoining figure □MKL = 30º, □MNK = 45º if ML = 3 then find MK and MN.

iii) As shown in the adjoining figure line AP is a tangent and line CP is a secant to the circle.
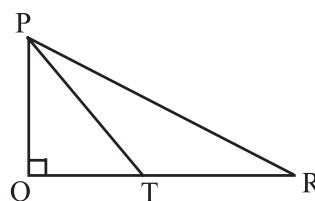
If AP = 15 and BP = 10 then find BC.

iv) Draw a ΔABC, where AB = 4.5 cm. BC = 7.5 cm. and AC = 6cm. and draw circumcircle of ΔABC.

v) Eliminate θ, if $x = a\sec θ$, y = $b\tan θ$.

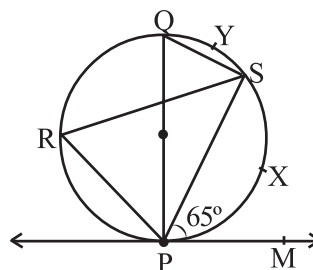vi) If $\sin θ = \dfrac{5}{13}$ where θ is an acute angle then find the value of cosθ and cot θ.

Q.3 Solve any three of following subquestions.   **9**

i) In ΔPQR, □PQR = 90°. T is mid point of QR. show that $3PQ^2 = 4PT^2 - PR^2$.

ii) In the figure, PQ is a diameter, line PM is a tangent at P.
□SPM = 65°. Find □PQS, □PSQ, m (arc PXS) and m(arcPRS).

iii) Draw a circle with radius 3.5 cm and centre O. Take a point P at a distance 8 cm from the centre. Draw tangents to the circle through the point P. Measure the lengths of the tangent segments.

iv) Write the equation of a line passing through the points A(–3, 5) and B(4, –7)

v) The circumference of the base of a right circular cone is 22 cm and its height is equal to the diameter of the base. Find its volume.

Q.4. Solve any two of the following subquestions.   **8**

i) Prove that the opposite angles of cyclic quadrilateral are supplementary.

ii) A(3, 7), B(5,11) C(–2, 8) are the vertices of ΔABC. Find the equation of median AD and find the equation of a line parallel to AD and passing through the point C.

iii) The angle of elevation of a cloud from a point 60 m above the lake is 30° and the angle of depression of the reflection of cloud in the lake is 60°. Find the height of the cloud.

Q.5. Solve any two of the following subquestions.   10

i)   Prove that the ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

ii) $\triangle ABC \sim \triangle LMN$. In $\triangle ABC$, AB = 5.1 cm. $\angle B = 55^\circ$, $\angle C = 65^\circ$ and $\dfrac{AC}{LN} = \dfrac{3}{5}$ then construct $\triangle LMN$.

iii) Water is filled in a right cylindrical tank with base radius 14 cm, such that water level is 3 cm below the top. When an iron ball is dropped in the tank, 3003cm^3 of water flows out. Find the radius of the ball.