

BOARD QUESTION PAPER : JULY 2016

GEOMETRY

Time: 2 Hours

Max. Marks: 40

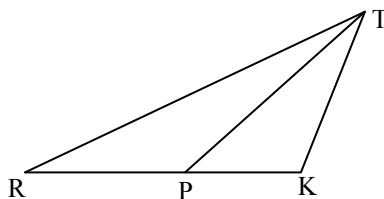
Note:

- i. Solve *All* questions. Draw diagrams wherever necessary.
- ii. Use of calculator is not allowed.
- iii. Figures to the right indicate full marks.
- iv. Marks of constructions should be distinct. They should not be rubbed off.
- v. Diagram is essential for writing the proof of the theorem.

1. Solve any five sub-questions:

[5]

- i. In the following figure, $RP : PK = 3 : 2$, find the value of $A(\Delta TRP) : A(\Delta TPK)$.

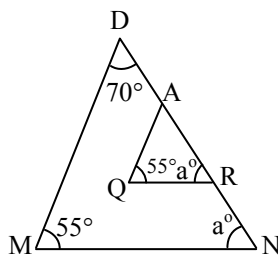


- ii. If two circles with diameters 8 cm and 6 cm respectively touch externally, find the distance between their centres.
- iii. Find the Slope of the line having inclination 45° .
- iv. Using Euler's formulè, find V , if $E = 30$ and $F = 12$.
- v. Find the length of diagonal of the square whose side is 8 cm.
- vi. For the angle in standard position if the initial arm rotates 305° in anticlockwise direction, then state the quadrant in which the terminal arm lies.

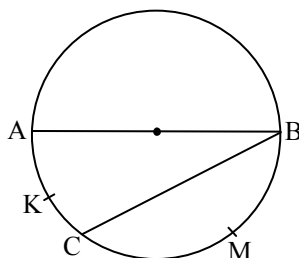
2. Solve any four sub-questions:

[8]

- i. Draw seg AB of length 9.7 cm. Take a point P on it such that $A-P-B$. $AP = 3.5$ cm. Construct a line $MN \perp$ seg AB through point P.
- ii. Find the trigonometric sine ratio of an angle in standard position whose terminal arm passes through the point (3, 4).
- iii. In the following figure, state whether the triangles are similar. Give reason.



- iv. In the following figure, seg AB is a diameter of the circle, $m(\text{arc AKC}) = 40^\circ$. Find the value of $m(\text{arc BMC})$.

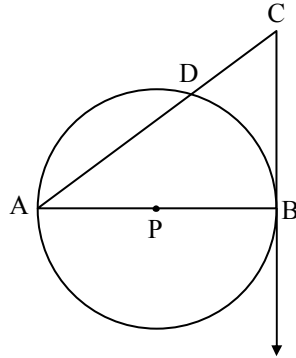


- v. Write the equation of a line passing through the point P(0, 6) and having slope $\frac{6}{7}$.
- vi. Find the area of sector whose central angle and radius are 60° and 21 cm respectively. $\left(\pi = \frac{22}{7}\right)$

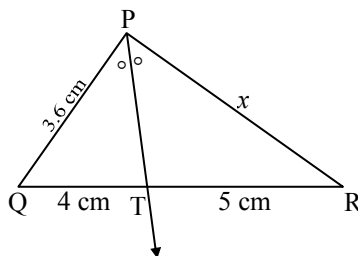
3. Solve any three sub-questions:

[9]

- i. In the following figure, seg AB is the diameter of the circle with centre P. Line CB be the tangent and line AC intersects a circle in point D. Prove that:
 $AC \times AD = 4 (\text{radius})^2$



- ii. In the following figure, ray PT is the bisector of $\angle QPR$. Find the value of x and perimeter of ΔPQR .



- iii. The length, breadth and height of a cuboid are in the ratio 5 : 4 : 2. If the total surface area is 1216 cm^2 , find the dimensions of the solid.
- iv. Construct the incircle of ΔRST in which $RS = 6 \text{ cm}$, $ST = 7 \text{ cm}$, $RT = 6.5 \text{ cm}$.
- v. Show that : $\sqrt{\frac{1 - \cos A}{1 + \cos A}} = \operatorname{cosec} A - \cot A$.

4. Solve any two sub-questions:

[8]

- i. Prove that “the opposite angles of cyclic quadrilateral are supplementary”.
- ii. A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60° . When he moves 40 m away from the bank, he finds the angle of elevation to be 30° . Find the height of the tree and width of the river. $(\sqrt{3} = 1.73)$
- iii. A roller of diameter 0.9 m and the length 1.8 m is used to press the ground. Find the area of the ground pressed by it in 500 revolutions. $(\pi = 3.14)$

5. Solve any two sub-questions:

[10]

- i. Prove that, if a line parallel to a side of a triangle intersect the other sides in two distinct points, then the line divides those sides in proportion.
- ii. Show that $\square ABCD$ is a parallelogram if $A = (4, 8)$, $B = (5, 5)$, $C = (2, 4)$, $D = (1, 7)$.
- iii. $\Delta AMT \sim \Delta AHE$, construct ΔAMT such that $MA = 6.3 \text{ cm}$, $\angle MAT = 120^\circ$, $AT = 4.9 \text{ cm}$ and $\frac{MA}{HA} = \frac{7}{5}$, then construct ΔAHE .