

# BOARD QUESTION PAPER : JULY 2016

## GEOMETRY

**Time: 2 Hours**

**Max. Marks: 40**

**Note:**

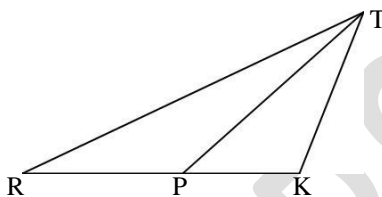
- i. Solve *All* questions. Draw diagrams wherever necessary.
- ii. Use of calculator is not allowed.
- iii. Figures to the right indicate full marks.
- iv. Marks of constructions should be distinct. They should not be rubbed off.
- v. Diagram is essential for writing the proof of the theorem.

<b>Q.P. SET CODE</b>
<b>A</b>

**1. Solve any five sub-questions:**

[5]

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

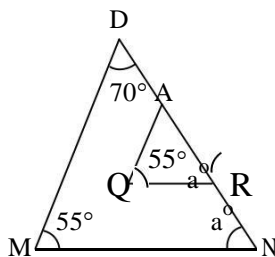


- ii. If two circles with diameters 8 cm and 6 cm respectively touch externally, find the distance between their centres.
- iii. Find the Slope of the line having inclination  $45^\circ$ .
- iv. Using Euler's formulæ, find  $V$ , if  $E = 30$  and  $F = 12$ .
- v. Find the length of diagonal of the square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

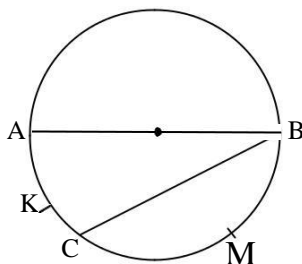
**2. Solve any four sub-questions:**

[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  $m(\text{arc BMC})$ .

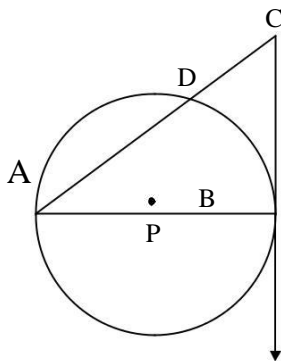


- v. Write the equation of a line passing through the point P(0, 6) and having slope  $\frac{6}{7}$ .
- vi. Find the area of sector whose central angle and radius are  $60^\circ$  and 21 cm respectively.  $\pi = \frac{22}{7}$

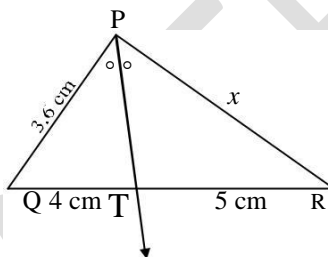
**3. Solve any three sub-questions:**

[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  $\Delta PQR$ .



- iii. The length, breadth and height of a cuboid are in the ratio  $5 : 4 : 2$ . If the total surface area is  $1216 \text{ cm}^2$ , find the dimensions of the solid.
- iv. Construct the incircle of  $\Delta RST$  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  $60^\circ$ . When he moves 40 m away from the bank, he finds the angle of elevation to be  $30^\circ$ . 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 ABCD is a parallelogram if  $A = (4, 8)$ ,  $B = (5, 5)$ ,  $C = (2, 4)$ ,  $D = (1, 7)$ .
- iii.  $\Delta AMT \sim \Delta AHE$ , construct  $\Delta AMT$  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  $\Delta AHE$ .