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| <b>Q.P. SET CODE</b> |
| <b>C</b>             |

# MT - y

Seat No. 

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2017 \_\_ \_\_ 1100 - MT - y - MATHEMATICS (71) GEOMETRY - SET - C (E)

**Time : 2 Hours**

**(Pages 4)**

**Max. Marks : 40**

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**Note :**

- (i) All questions are compulsory.
- (ii) Use of calculator is not allowed.

**Q.1. Solve ANY FIVE of the following :**

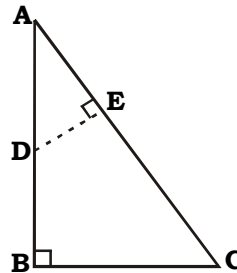
**5**

- (i) If the sides of a triangle are 6 cm, 8 cm and 10 cm respectively, determine whether the triangle is right angled triangle or not.
- (ii) If two circles with radii 5 cm and 3 cm respectively touch internally, find the distance between their centres.
- (iii) If the angle  $\theta = -60^\circ$ , find the value of  $\sin \theta$ .
- (iv) What is the y-intercept of line  $2x - 3y = 4$  ?
- (v) Using Euler's formula, find V, if  $E = 30$  and  $F = 12$ .
- (vi) Find the length of diagonal of the square whose side is 8 cm.

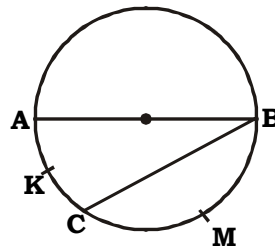
**Q.2. Solve ANY FOUR of the following :**

8

- (i)  $\triangle ABC$  is a right angled at B.  
 D is any point on AB.  
 $DE \perp AC$ . If  $AD = 6$  cm,  
 $AB = 12$  cm,  
 $AC = 18$  cm, find AE.



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

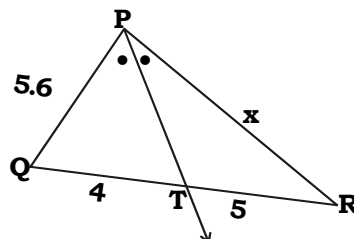


- (iii) An arc of length  $4\pi$  cm subtends an angle of measure  $40^\circ$  at the centre. Find the radius and the area of the sector formed by this arc.
- (iv) Find the sin ratio of „ in standard position whose terminal arm passes through  $(1, -1)$ .
- (v) The volume of a cube is  $1000 \text{ cm}^3$ . Find its total surface area.
- (vi) Construct UPQR such that  $PQ = 5.7$  cm,  $\hat{P} = \hat{Q} = 50^\circ$ .

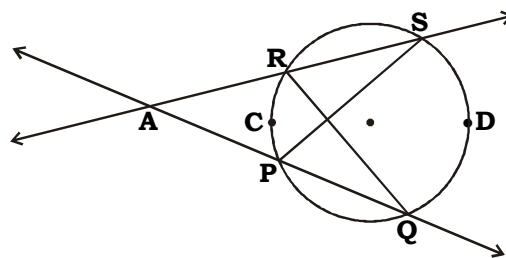
**Q.3. Solve ANY THREE of the following :**

9

- (i) Ray PT is the angle bisector of  $\angle QPR$ .  
 Find the value of  $x$  and  
 the perimeter of  $\triangle PQR$ .



- (ii) Secants containing chords RS and PQ of a circle intersect each other in point A in the exterior of a circle, as shown in figure. If  $m(\text{arc PCR}) = 26^\circ$  and  $m(\text{arc QDS}) = 48^\circ$  then find  
 (a)  $\angle AQR$  (b)  $\angle SPQ$  (c)  $\angle RAQ$



- (iii) Construct the circumcircle of  $\triangle KLM$  in which  $KM = 7$  cm,  $\angle K = 60^\circ$ ,  $\angle M = 55^\circ$ .
- (iv) If  $\sec \alpha = \frac{2}{\sqrt{3}}$ , then find the value of  $\frac{1 - \operatorname{cosec} \alpha}{1 + \operatorname{cosec} \alpha}$ , where  $\alpha$  is in IV quadrant.
- (v) Find  $x$  if the slope of line joining  $(x, -2)$  and  $(8, -11)$  is  $\frac{-3}{4}$ .

**Q.4. Solve ANY TWO of the following :**

**8**

- (i) 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 the width of the river. ( $\sqrt{3} = 1.73$ )
- (ii) Prove : The opposite angles of a cyclic quadrilateral are supplementary.
- (iii) In triangle ABC the co-ordinates of vertices A, B and C are  $(4, 7)$ ,  $(-2, 3)$  and  $(0, 1)$  respectively. Find the equation of medians passing through vertices A, B and C.

**Q.5. Solve ANY TWO of the following :**

**10**

- (i) Prove : If a line parallel to a side of a triangle intersects other sides in two distinct points, then the line divides those sides in proportion.
- (ii)  $\Delta LTR \sim \Delta HYD$ , In  $\Delta HYD$ ,  $HY = 7.2$  cm,  $YD = 6$  cm,  $\angle Y = 40^\circ$  and  $\frac{LR}{HD} = \frac{5}{6}$ , construct  $\Delta LTR$ .
- (iii) Water flows at the rate of 10 m per minute through a cylindrical pipe having its diameter is 20 mm. How much time will it take to fill a conical vessel of base diameter 40 cm and depth 24 cm ?

*Best Of Luck* 🍀