



# Guru Aanklan

**GRAND  
TEST**

**SSC EXAMINATION  
GEOMETRY (SET-A)**

**Marks : 40  
Duration : 2 Hrs.**

- Note:-** i. Solve all questions. Draw diagrams wherever necessary.  
 ii. Use of calculator is not allowed.  
 iii. Diagram is essential for writing the proof of the theorem  
 iv. Marks of Constructions should be distinct. They should not be rubbed off.

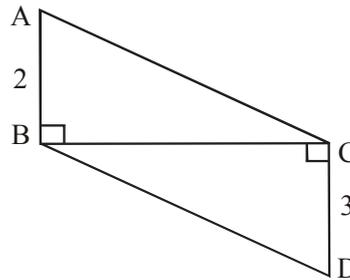
**Q. 1 Solve any five sub-questions:**

[5M]

1. In the following figure  $Seg AB \perp Seg BC$ ,  
 $Seg DC \perp Seg BC$ .

If  $AB = 2$  and  $DC = 3$ ,

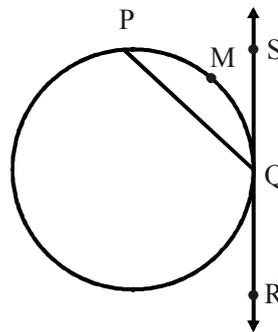
$$\text{find } \frac{A(\triangle ABC)}{A(\triangle DCB)}$$



2. Find the slope of the line having inclination  $60^\circ$   
 3. If the angle  $\theta = -60^\circ$ , find the value of  $\cos \theta$   
 4. Find the diagonal of a square whose side is 10 cm.  
 5. If the volume of a cube is  $1000 \text{ cm}^3$ , find the side of the cube.  
 6. In the following figure,

$$m(\text{arc } PMQ) = 130^\circ,$$

$$\text{find } \angle PQS.$$



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

[8M]

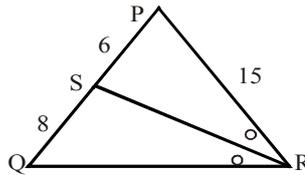
1. If  $\sin \theta = \frac{7}{25}$ , where  $\theta$  is an acute angle, find the value of  $\cos \theta$  by using identities  
 2. Draw  $\angle ABC$  of measure  $125^\circ$  and bisect it.  
 3. For the angle in standard position if the initial arm rotates  $25^\circ$  in anticlockwise direction then state the quadrant in which terminal arm lies.

4. Find the area of sector whose arc length and radius as 10 cm and 5 cm respectively.

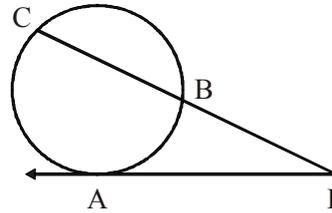
5. In the following figure, in  $\Delta PQR$ ,

seg  $RS$  is the bisector of  $\frac{3}{2}$  .

If  $PS = 6, SQ = 8, PR = 15$ , find  $QR$ .



6. In the following figure, a tangent segment  $PA$  touch the circle at  $A$  and a secant  $PBC$  intersects the circle at point  $C$  and  $B$ . If  $AP = 13$  and  $BP = 6$ , find  $BC$ .



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

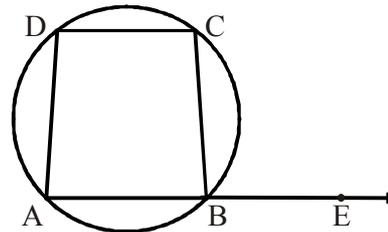
[9M]

1. In the Following figure,

$\square ABCD$  is a cyclic

quadrilateral.  $m(\text{arc } ABC) = 210^\circ$  .

Find  $\angle ABC$ ,  $\angle CDA$  and  $\angle CBE$  .



2. Draw the circumcircle of  $\Delta PMT$  in which  $PM = 5.4$  cm,  $\angle P = 60^\circ$ ,  $\angle M = 70^\circ$  .

3. In  $\Delta PQR$ ,  $\angle P = 30^\circ$ ,  $\angle Q = 60^\circ$ ,  $\angle R = 90^\circ$  and  $PQ = 8$  cm, then find  $PR$  and  $QR$ .

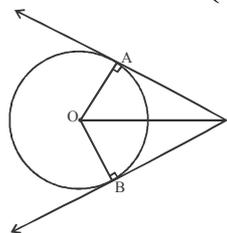
4. Show that  $\sqrt{\frac{1 + \sin x}{1 - \sin x}} = \sec x + \tan x$  .

5. Find the volume and surface area of a sphere of radius 4.2 cm.  $\left(\pi = \frac{22}{7}\right)$

**Q.4 Solve any two sub-questions:**

[8M]

1. Prove that, "the length of the two tangent segment to a circle drawn from an external point are equal."



2. Two buildings are in front of each other on either side of a road of width 10 metre. From the top of the first building which is 30 metre high the angle of elevation to the top of the second is  $45^\circ$  what is the height of the second building?

3. The length of semi circular tunnel is 2 km and diameter is 7 m. Find the expenditure for digging the tunnel at the rate of Rs. 600 per  $m^3$  . Find the expenditure for plastering the inner side of the tunnel at the rate of Rs. 50 per sq.m.

**Q.5 Solve any two sub-questions.**

[10M]

1. Prove that, in a triangle, the angle bisector divide the side opposite to the angle in the ratio of the remaining sides.

2. Write down the equation of a line whose slope is  $\frac{3}{2}$  and which passes through point P, where P divides the line segment AB joining A(-2, 6) and B(3, -4) in the ratio 2:3.

3. Draw a triangle PQR right angled at Q such that  $PQ = 3$  cm,  $QR = 4$  cm. Now construct  $\Delta AQB$  similar