I SEMESTER EXAMINATION 2017-2018

SUBJECT: MATHS II(GEOMETRY)

STD: X **MAX MARKS: 40**

DATE: 03/10/17 **TIME: 2 Hrs**

Note:

1. Solve all questions. Draw diagrams wherever necessary.
2. Figures to the right indicate full marks.
3. Diagrams are essential for the proof of the theorem.

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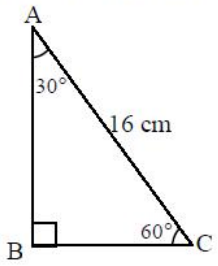
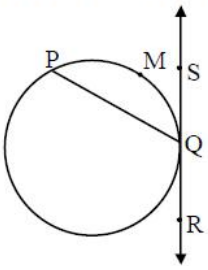
1. Solve any FIVE sub questions: (5)

i. $\Delta DEF \sim \Delta MNK$. If DE = 2, MN = 5, then find the value of $\frac{A(\Delta DEF)}{A(\Delta MNK)}$.

ii. In the following figure, in ΔABC, $\angle B = 90°$, $\angle C = 60°$, $\angle A = 30°$, AC = 16 cm. Find BC.



iii. In the following figure, m(arc PMQ) = 110°, find $\angle PQS$.



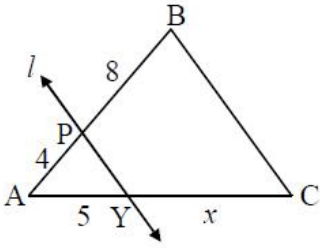
iv. If the è = -45^0 , find the value of tan è.

v. The terminal arm is in II (second quadrant), what is the possible measure of an angle.

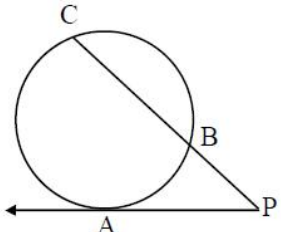
vi. If the sides of a triangle are 6cm, 8cm and 10 cm respectively, determine whether the triangle is right angled or not.

2. Solve any FOUR sub questions: (8)

i. In the given figure, line l || side BC, AP = 4, PB = 8, AY = 5 and YC = x. Find x.

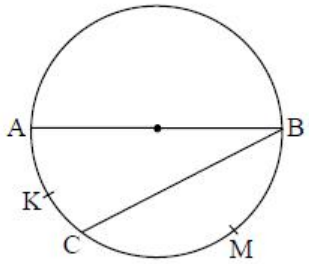


ii. In the following figure, a tangent segment PA touching a circle in A and a secant PBC are shown. If AP = 12, BP = 9, find BC.



iii. Draw a tangent at any point 'M' on the circle of radius 3.3 cm and centre 'O'

iv. In the following figure, seg AB is a diameter of the circle, m(arc AKC) = 40°. Find the value of m(arc BMC).



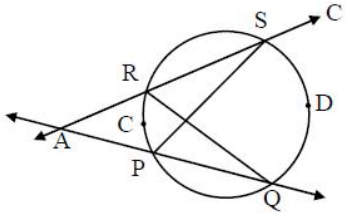
v. A vertical stick 12 m long casts a shadow 8m long on the ground. At the same time a tower casts the shadow of length 40m on the ground. Determine the height of the tower.

vi. If $\sin è = \frac{3}{2}$, where è is an acute angle, then find the value of cos è

3. Solve any THREE sub questions : (9)

i. Adjacent sides of a parallelogram are 11 cm and 17 cm. If the length of one of its diagonal is 26 cm, find the length of the other.

ii. In the following figure, secants containing chords RS and PQ of a circle intersects each other in point A in the exterior of a circle. If m(arc PCR) = 26°, m(arc QDS) = 48°, then find:
a. m ∠ PQR b. m ∠ SPQ c. m ∠ RAQ



iii. Draw the circumcircle of Δ PMT in which PM = 5.6 cm, ∠ P = 60°, ∠ M = 70°.

iv. Prove that

$$\sqrt{\frac{1+\cos A}{1-\cos A}} = \text{cosec } A + \cot A.$$

v. Eliminate è, if

$x = 3 \operatorname{cosec} \theta + 4 \cot \theta$,

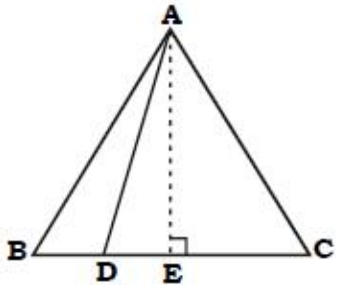
$y = 4 \operatorname{cosec} \theta - 3 \cot \theta$.

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. In the figure, ÄABC, AB = AC and D is any point on BC.
Prove that $AB^2 - AD^2 = BD \cdot CD$

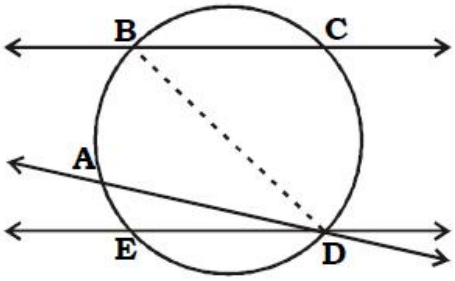


5. Solve any TWO sub questions:- (10)

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. Δ AMT ~ Δ AHE. In Δ AMT, MA = 6.3 cm, ∠ MAT = 120°, AT = 4.9 cm, $\frac{MA}{HA} = \frac{7}{5}$.
Construct Δ AHE.

iii. In the given circle with centre O and BC || ED, m(arc BC) = 94^0, m(arc ED) = 86^0, ADE = 8^0.



Find a) m(arc AE)
b) m(arc DC)
c) m (arc EB)
Also find ñ ñ ñ
