BOARD QUESTION PAPER : MARCH 2017

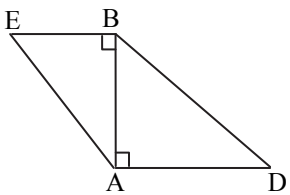
Time: 2 Hours **Max. Marks: 40**

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.

Q.P. SET CODE
A

1. Solve any five sub-questions: **[5]**

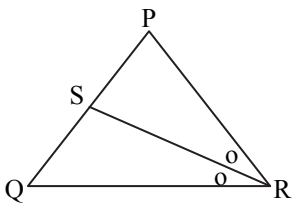
i. In the following figure, seg BE ⊥ seg AB and seg BA ⊥ seg AD. If BE = 6 and AD = 9, find $\frac{A(\Delta ABE)}{A(\Delta BAD)}$.



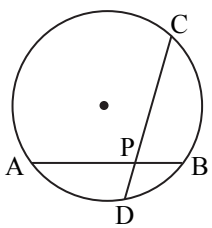
ii. If two circles with radii 8 cm and 3 cm respectively touch internally, then find the distance between their centres.
iii. Find the height of an equilateral triangle whose side is 6 units.
iv. If the angle θ = –45°, find the value of tan θ.
v. Find the slope and *y*-intercept of the line $y = 3x - 5$.
vi. Find the circumference of a circle whose radius is 7 cm.

2. Solve any four sub-questions: **[8]**

i. In ΔPQR, seg RS is the bisector of ∠PRQ, PS = 6, SQ = 8, PR = 15. Find QR.



ii. In the given figure PA = 6, PB = 4 and PC = 8. Find PD.

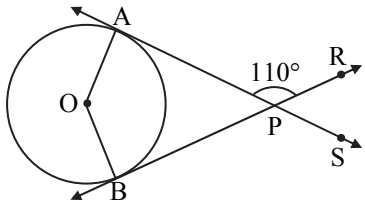


iii. Draw ∠ABC of measure 105° and bisect it.
iv. Find the sine ratio of θ in standard position whose terminal arm paases through (4, 3).
v. Find the slope of the line passing through the points A(6, –2) and B(–3, 4).
vi. The dimensions of a cuboid in cm are 30 × 18 × 10. Find its volume.

3. Solve any three sub-questions: **[9]**

i. Prove that, "If the angles of a triangle are 45°-45°-90°, then each of the perpendicular sides is $\frac{1}{\sqrt{2}}$ times the hypotenuse."

ii. Find the angle between two radii at the centre of the circle as shown in the figure. Lines PA and PB are tangents to the circle at other ends of the radii and ∠APR = 110°.



iii. Construct tangents to the circle from the point B, having radius 3.2 cm and centre 'C'. Point B is at at a distance 7.2 cm from the centre.

iv. From the top of a lighthouse, an observer looks at a ship and finds the angle of depression to be 60°. If the height of the lighthouse is 84 metres, then find how far is that ship from the ligthouse? $\left(\sqrt{3} = 1.73\right)$

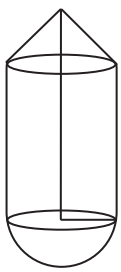
v. The volume of a cube is 1000 cm^3. Find its total surface area.

4. Solve any two sub-questions: **[8]**

i. Prove that, "The opposite angles of a cyclic quadrilateral are supplementary".

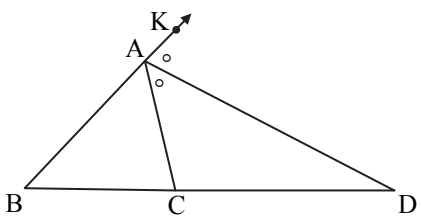
ii. Eliminate θ, if
$x = 3 \operatorname{cosec} \theta + 4 \cot \theta$,
$y = 4 \operatorname{cosec} \theta - 3 \cot \theta$.

iii. A toy is a combination of a cylinder, hemisphere and a cone, each with radius 10 cm as shown in the figure. Height of the conical part is 10 cm and total height is 60 cm. Find the total surface area of the toy. $\left(\pi = 3.14, \sqrt{2} = 1.41\right)$



5. Solve any two sub-questions: **[10]**

i. In the given figure, AD is the bisector of the exterior ∠A of ΔABC. Seg AD intersects the side BC produced in D. Prove that: $\frac{BD}{CD} = \frac{AB}{AC}$.



ii. Construct the circumcircle and incircle of an equilateral ΔXYZ with side 6.5 cm and centre O. Find the ratio of the radii of incircle and circumcircle.

iii. A(5, 4), B(–3, –2) and C(1, –8) are the vertices of a triangle ABC. Find the equation of median AD and line parallel to AB passing through point C.