TUTORIAL – ADDITIONAL PROBLEMS

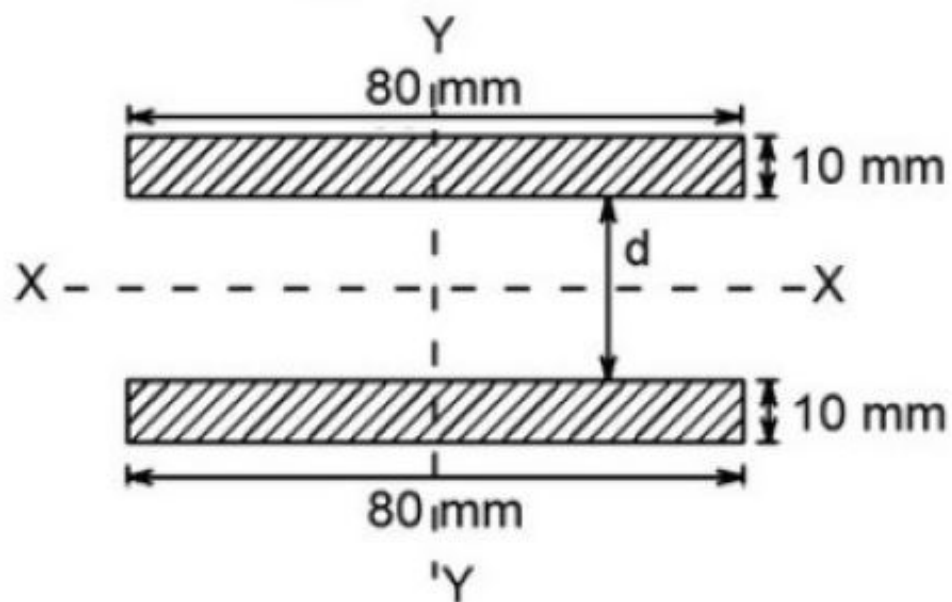# 1. Determine the centroid of shaded area w.r.t given reference axis AB.
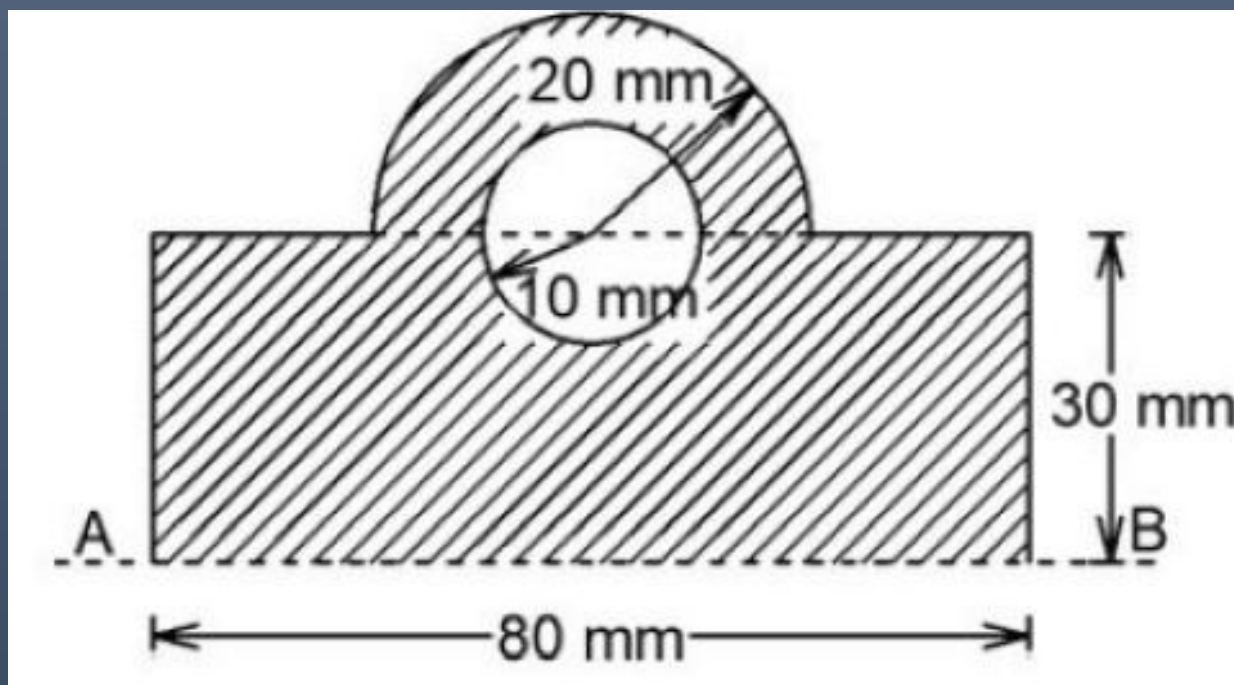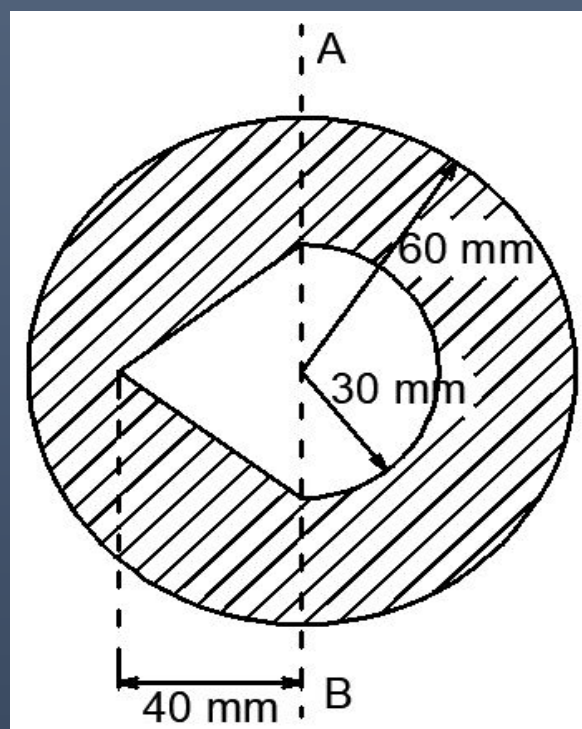

Ans: 18.7mm

2. The shaded area shown in the figure is symmetrical about X-X and Y-Y axes marked. Determine the distance 'd', such that, for the total shaded area shown, $I_{XX}=I_{YY}$.
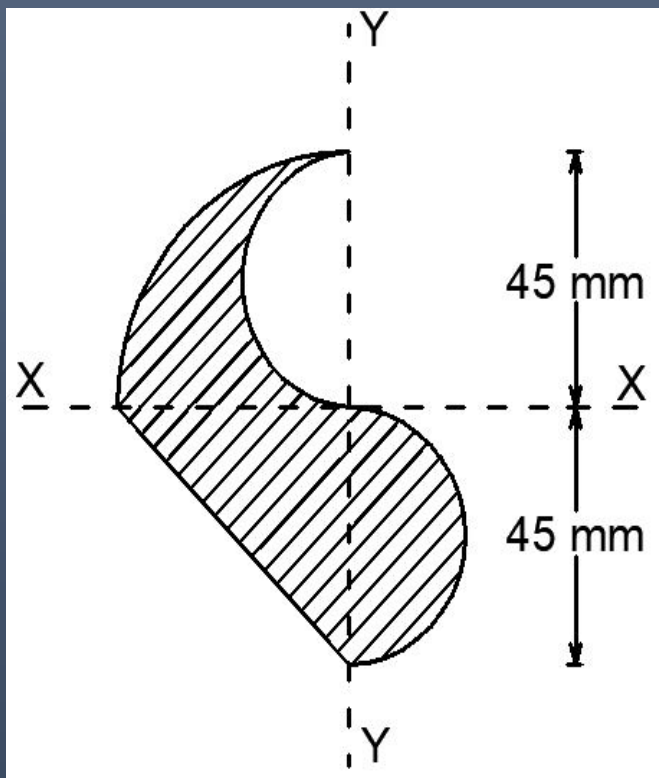

Ans: 35.82mm

3. Calculate the centroid of shaded area shown in figure with respect to given reference axis AB.
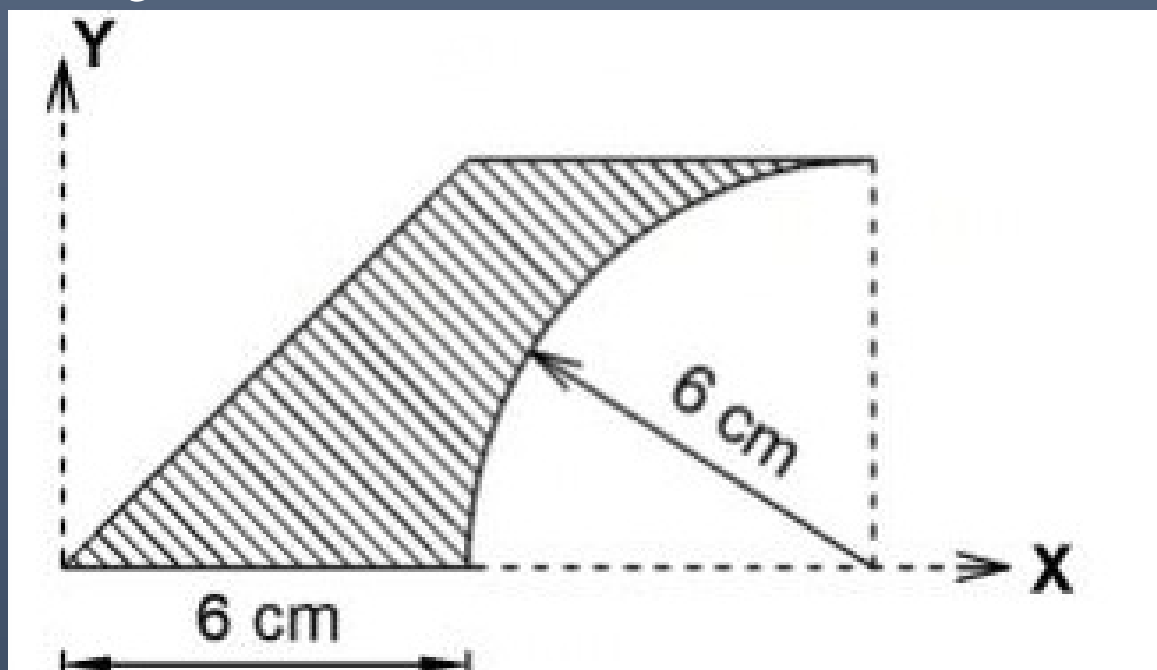

Ans: -0.23mm

4. Locate the centroid of shaded area with respect to the axes shown in the figure.(5 marks)
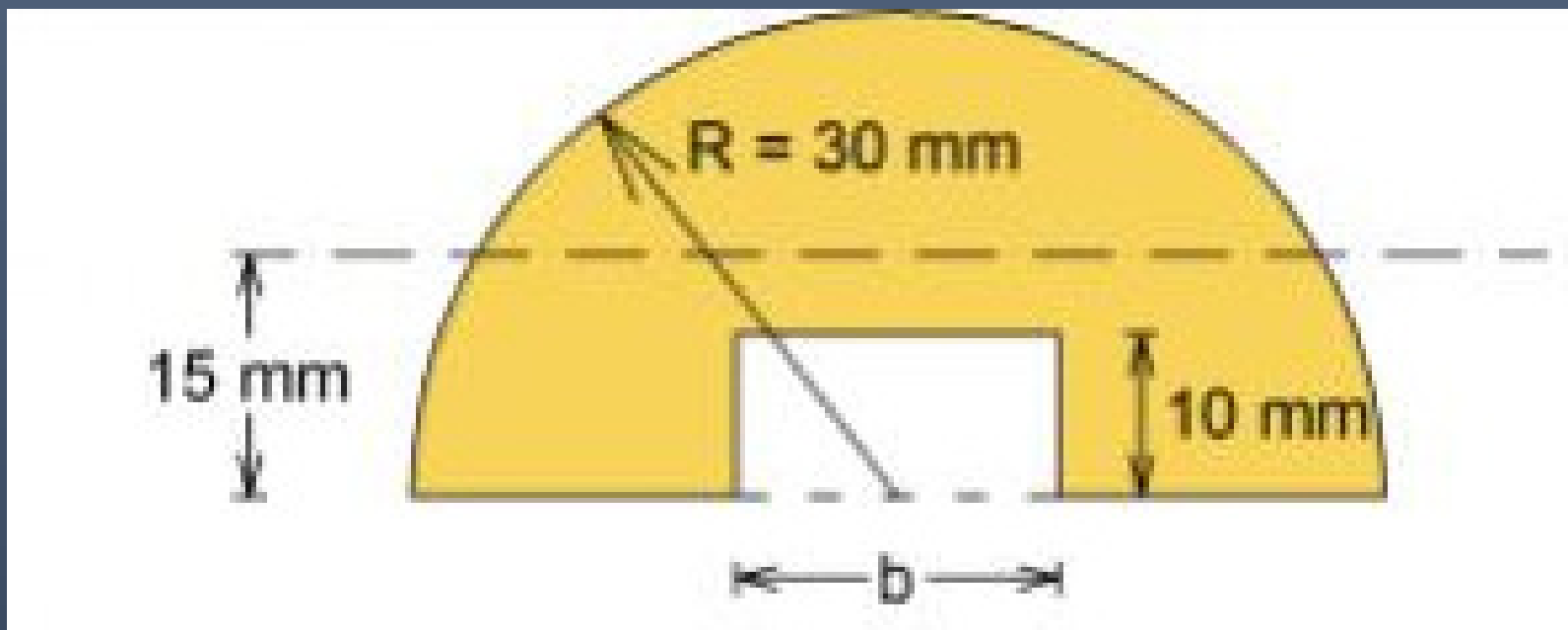

Ans: -11.67, 3.757mm

5. Locate the centroid with respect to the given axes shown in the figure for the shaded region.

Ans: x = 5cm , y = 2.8cm

6. In a semi-circular lamina a rectangular cut is made as shown in the figure. Determine the dimension 'b' of the rectangle, such that centroid of lamina is at a height of 15 mm from the base.

Ans : b = 32.06mm

TUTORIAL – 7
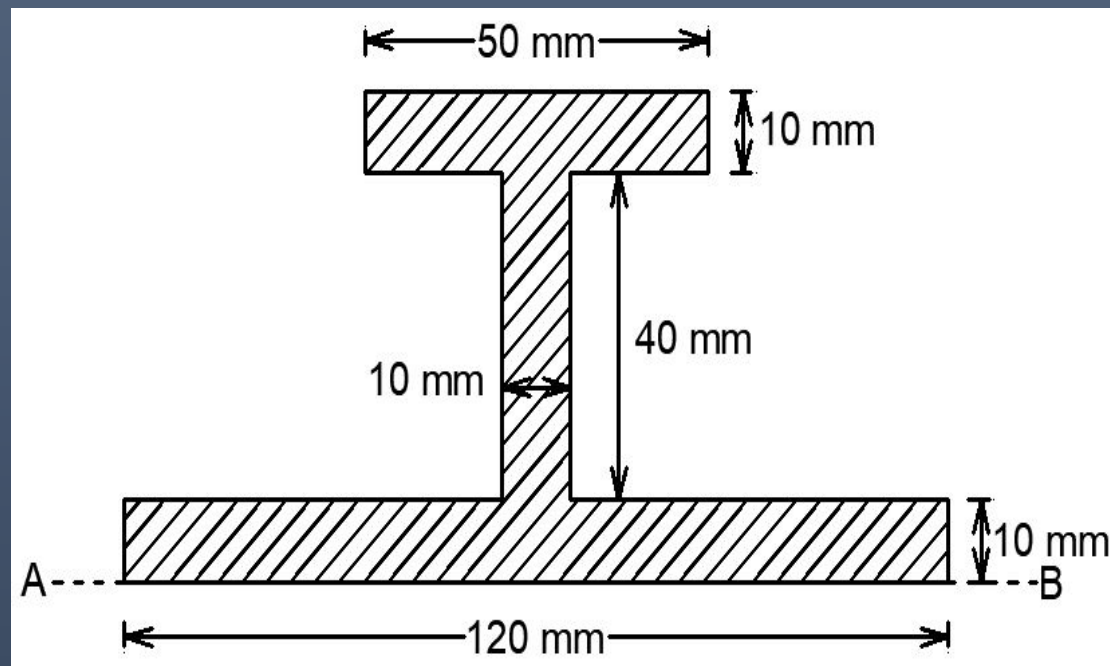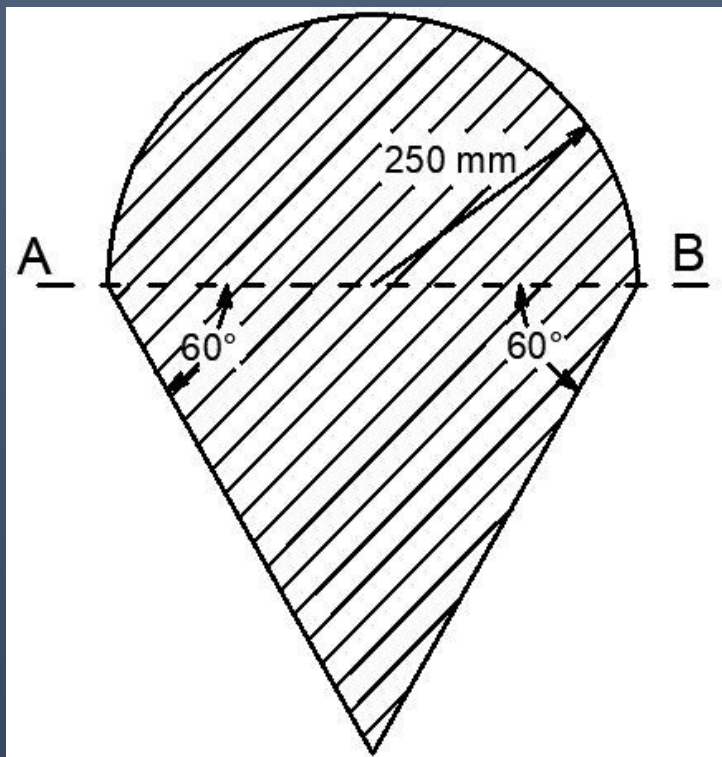# (Additional problems)

1. Determine the second moment of area for the hatched portion shown in figure with respect to given reference axis AB. (3 marks)
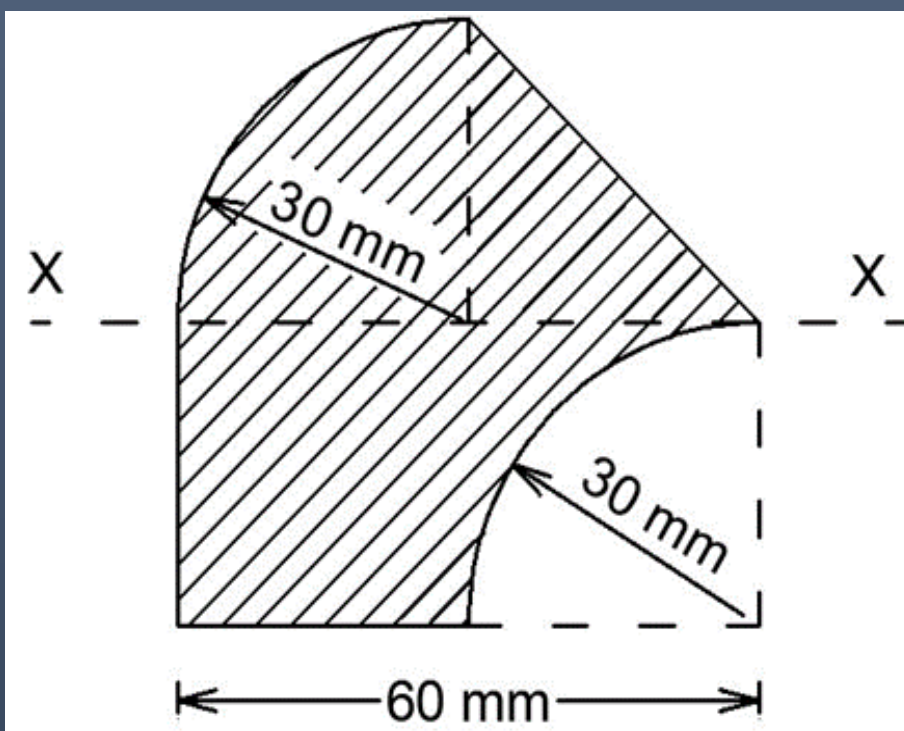
2. Determine moment of inertia of the shaded area shown in figure with respect to the given reference axis AB.5 marks)
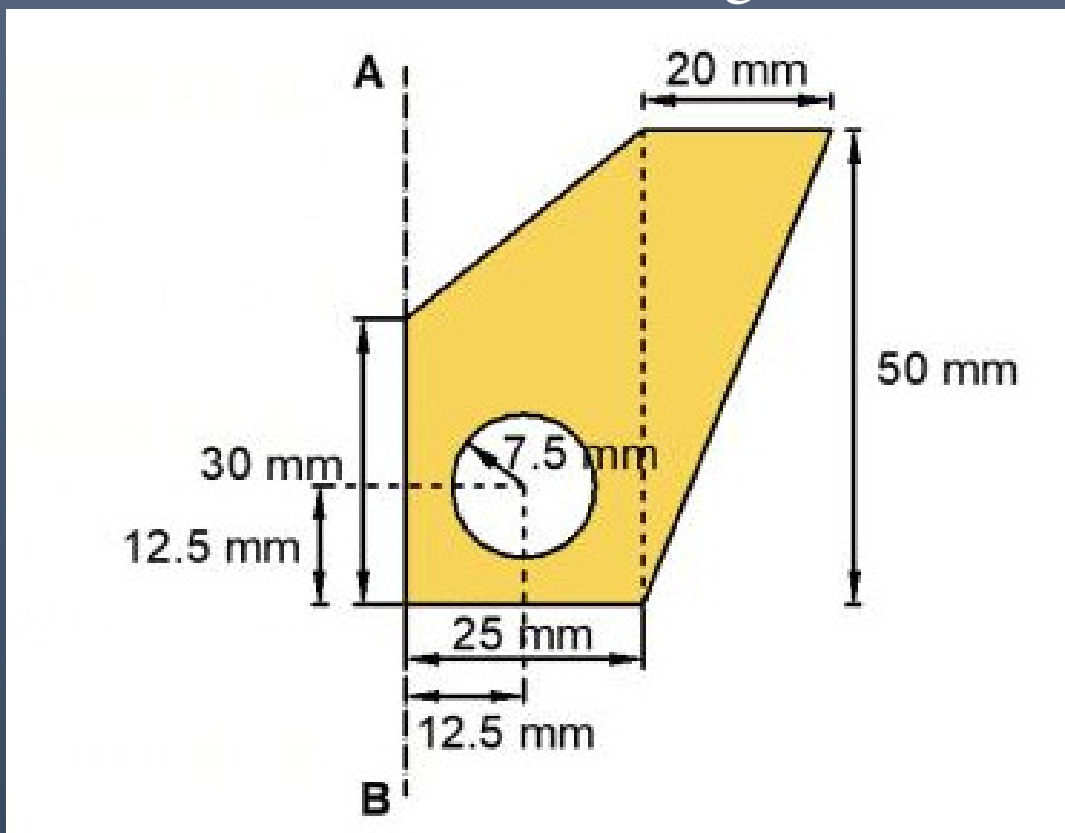

Ans: 4.995 X 10^6mm^4

3. Determine the second moment of area for the shaded area shown in the figure w.r.t given axis X-X.
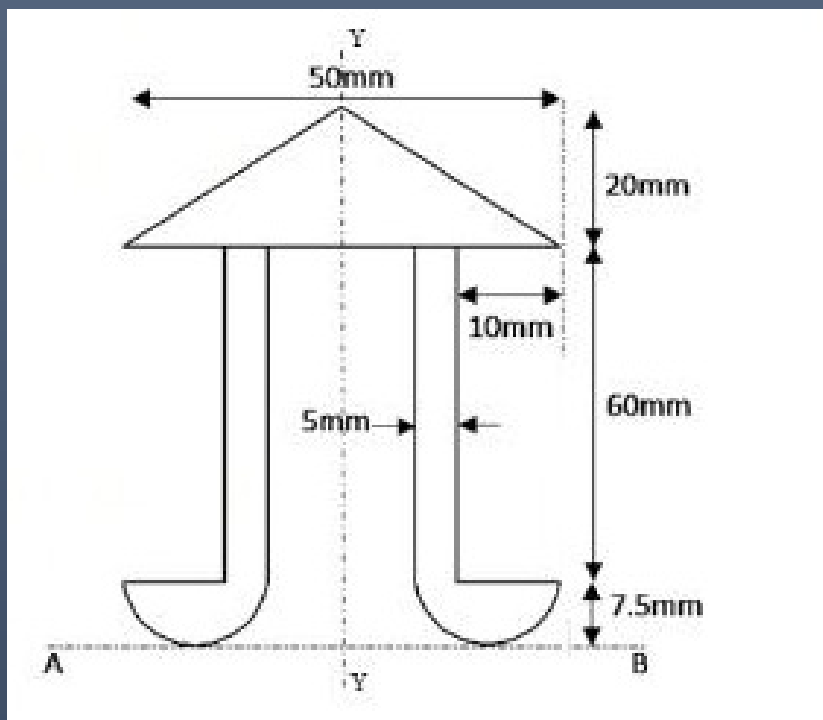.5 marks)

Ans: $5.113 \times 10^5 mm^4$

4. Determine the second moment of area with respect to given reference axis AB for the shaded region.

Ans: I_{AB} = 716778.3 mm^4

5. Determine the second moment of area for the figure shown below w.r.t given axis AB.

Ans: I_{AB} = 3.7892 X 10^6 mm^4