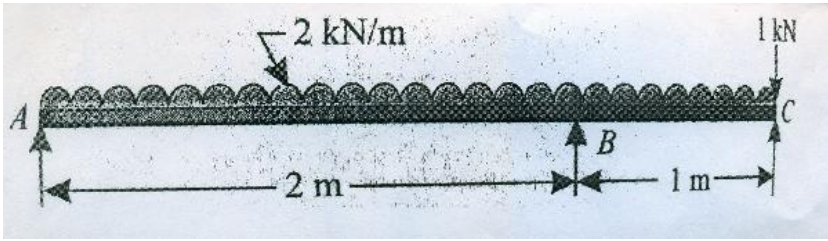
UNIT-V

9. a) A body of weight 300N is lying on a rough horizontal plane having a coefficient of friction as 0.3. Find the magnitude of the force, which can move the body, while acting at an angle of 25^0 with the horizontal 5

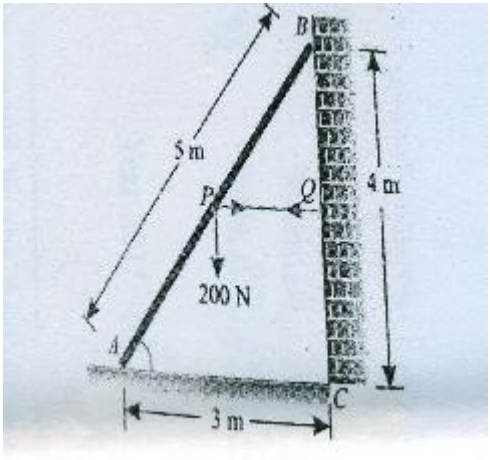
   b) Explain laws of friction in detail 5

OR

10. a) An overhanging beam ABC of span 3m is loaded as shown in Fig. Using the principle of virtual work, find the reactions at A and B 5



   b) A uniform ladder, 5m long and weighing 200N rests on a smooth floor at A and against a smooth wall at B as shown in fig. A horizontal rope PQ prevents the ladder from slipping. Using the method of virtual work, determine the tension in the rope 5



[65/I S/112]

[Nov-12]

[AURCE-105A]
B. Architecture Degree Examination

I SEMESTER

ENGINEERING MECHANICS

(Effective from the admitted batch 2012–13)

Time: 3 Hours **Max.Marks: 50**

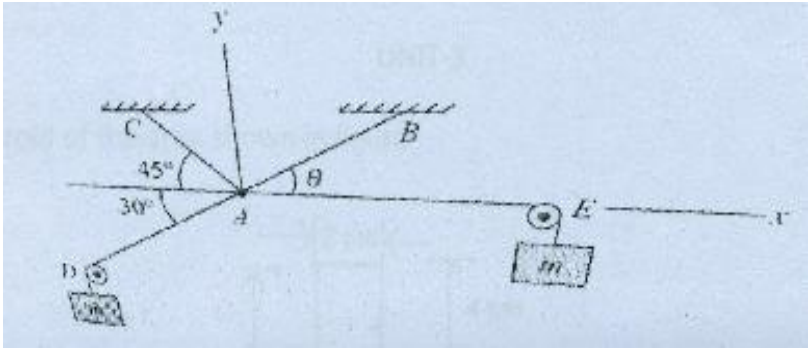
Instructions: Each Unit carries 10 marks.
Answer all units choosing one question from each unit.
All parts of the unit must be answered in one place only.
Figures in the right hand margin indicate marks allotted.

UNIT-I

1. ABCD is a square. Forces of 10,8 and 4 units act at a A in the directions AD,AC and AB respectively. Using the analytical method, determine
   a) Resultant force in magnitude and direction
   b) Magnitude and sense of two forces along the directions AJ and AH, where J and H are the mid-points of CD and BC respectively, which together will balance the above resultant 10

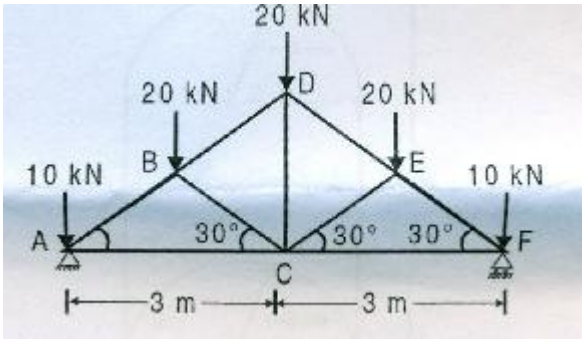
OR

2. Four pieces of string Knotted at A support two equal masses in equilibrium in a vertical plane as shown from pulleys at D and E. Determine the tensions in the strings AB and AC and angle θ between AB and AE for minimum tension in AB 10



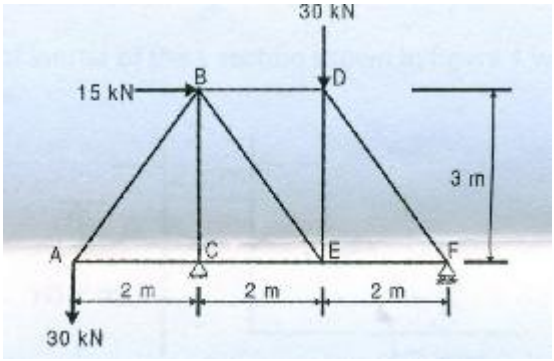
UNIT-II

3. Determine the forces in all the members of the truss as shown in the figure 10



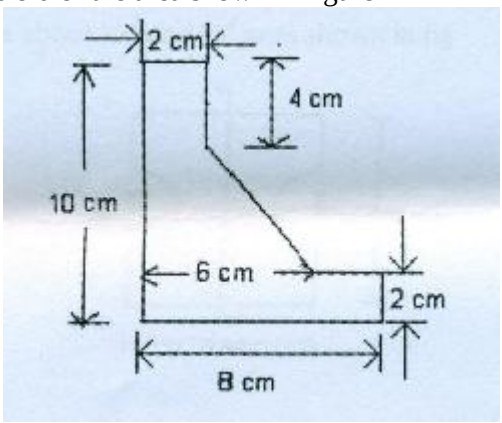
OR

4. Determine the forces in all the members of the truss as shown in the figure 10



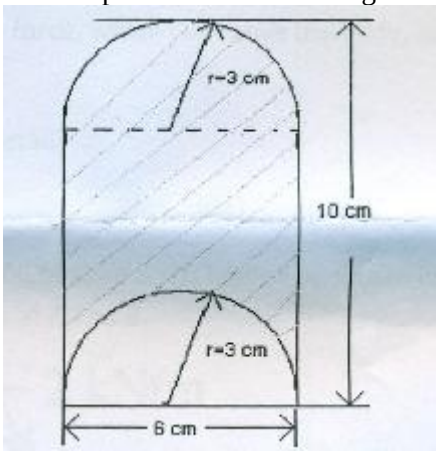
UNIT-III

5. Find the centroid of the area shown in figure 10



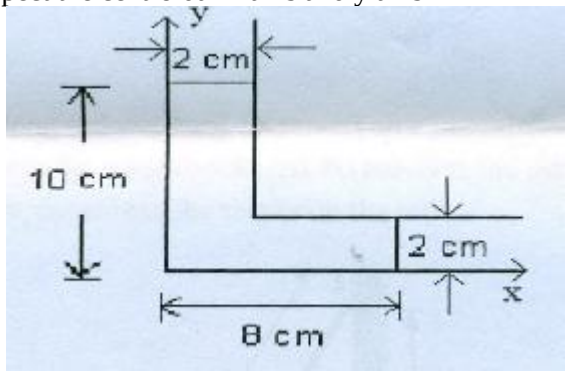
OR

6. Find the centroid of the plane area shown in figure 10



UNIT-IV

7. Calculate the moment of inertia of the L section shown in figure 4 with respect the centroidal x-axis and y axis 10



OR

8. Find he moment of inertia about XX′ and YY′ axes shown in fig 10