

Register Number :

Name of the Candidate :

7 1 1 2

**B.E. DEGREE EXAMINATION, 2009**

**(CIVIL AND STRUCTURAL ENGINEERING)**

**(FOURTH SEMESTER)**

**CSEC - 403. MECHANICS OF SOLIDS - II**

*(New Regulations)*

May ]

[Time : 3 Hours

Maximum : 60 Marks.

*Answer any ONE full question from each unit.*

*All questions carry equal marks.*

## UNIT - I

1. A truss is loaded as shown in figure (1). Find the forces in the member by method of joints.

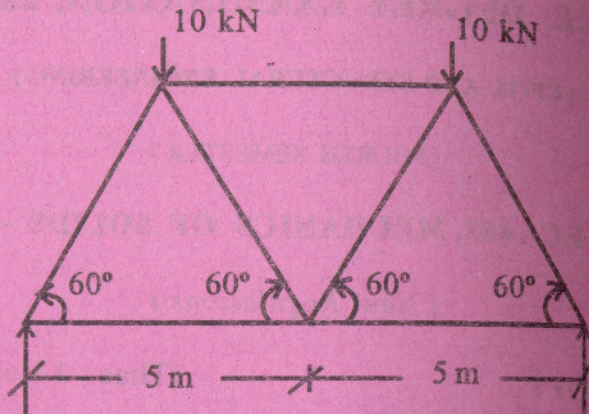


Figure - 1

(OR)

2. A pin joined frame as shown in figure (2) is hinged to a rigid wall at A and is free to slide vertically at E. The frame carries a vertical load  $W$  at B. The area of each tension member is  $a$  and of each compression member is  $2a$  and the length AE is  $L$ . Obtain an expression for the vertical displacement of C.

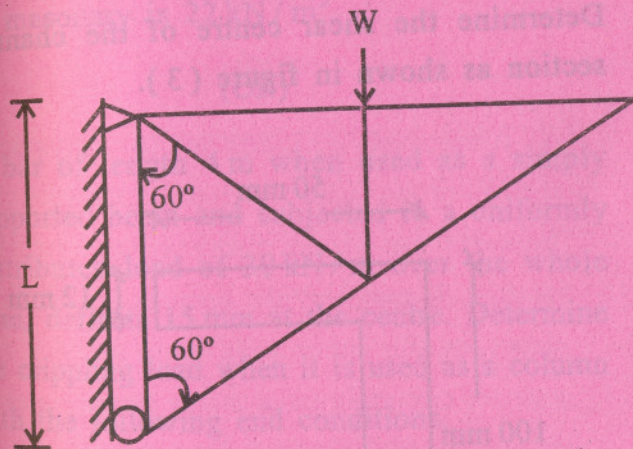


Figure - 2



## UNIT - IV

7. A cylindrical shell 3 m long which is closed at the ends has an internal diameter of 1.2 m and a wall thickness of 20 mm. Calculate the circumferential and longitudinal stress induced and also change in the diameter of the shell if it is subjected to an internal pressure of 1.5 MPa.

(OR)

8. A compound cylinder is to be made by shrinking on outer tube of 220 mm external diameter on to an inner tube of 110 mm internal diameter. If the greatest circumferential stress in the inner tube is to be  $2/3$  of the greatest circumferential stress in the outer tube, determine the common diameter.

## UNIT - V

9. Analyse the beam as shown in figure (4) and draw the SFD and BMD.

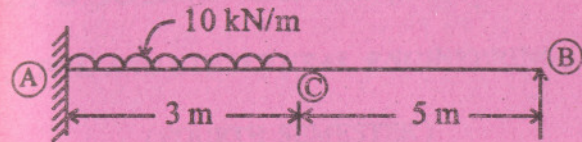


Figure - 4

(OR)

10. Calculate the support reactions and moments for the fixed beam as shown in figure (5) and draw the shear force and bending moment diagrams.

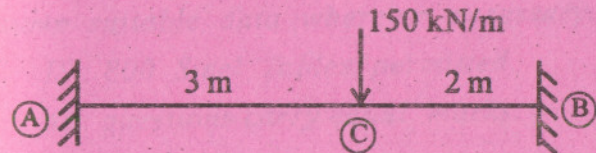


Figure - 5

