

Mid-West University
Examinations Management Office
End Semester Examinations 2081

Bachelor level/ B.E. Civil/ 3rd Semester

Time: 3 hours

Subject: Strength of Materials (CE431/CE204)

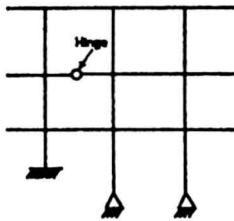
Full Marks: 50

Pass Marks: 25

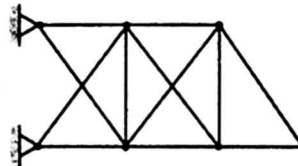
- Attempt all the questions
- Figures in the margin indicate full marks.
- Assume suitable values, with a stipulation, if necessary.
- Candidates are required to answer the questions in their own words as far as possible.

1. What is structural indeterminacy? Determine the total static indeterminacy of the given frame. [2+2]

i.

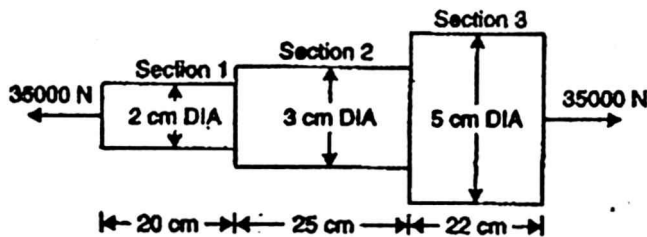


ii.

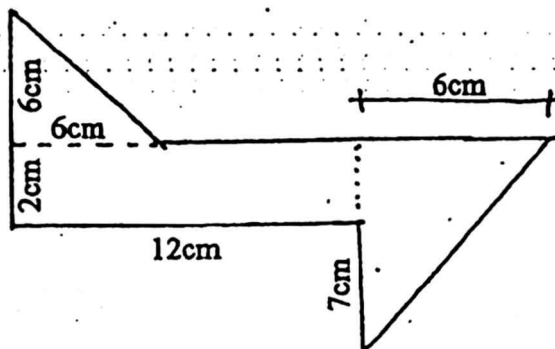


2. Define the relation between modulus of elasticity, modulus of rigidity, bulk modulus, and Poisson's ratio. [4]

3. Determine stress on each section and the total extension of the bar. Take $E = 2.2 \times 10^5 \text{ N/mm}^2$. [4]



4. Determine the orientation of principal axes and the principal moment of inertia about centroidal axes of the composite section shown in the figure. [6]



5. Determine the direction and magnitude of each of the principal stresses and the magnitude of the greater shear stress. [6]

