B.E. Civil Engineering Seven Semester

CE702 - Structural Analysis-III

P. Pages : 2 **GUG/W/18/1733**

Time : Four Hours * 1 3 6 2 * Max. Marks : 80

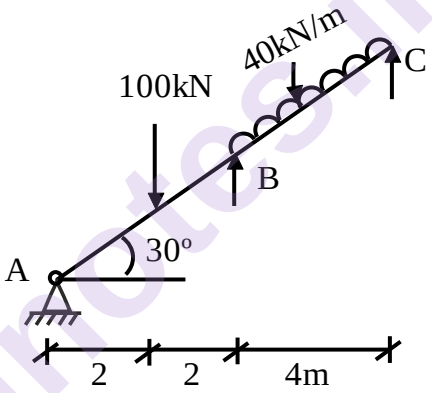
Notes : 1. All questions are compulsory.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.

1. Derive the member stiffness matrix for 2 noded beam element with 3DOF per node. **13**

OR

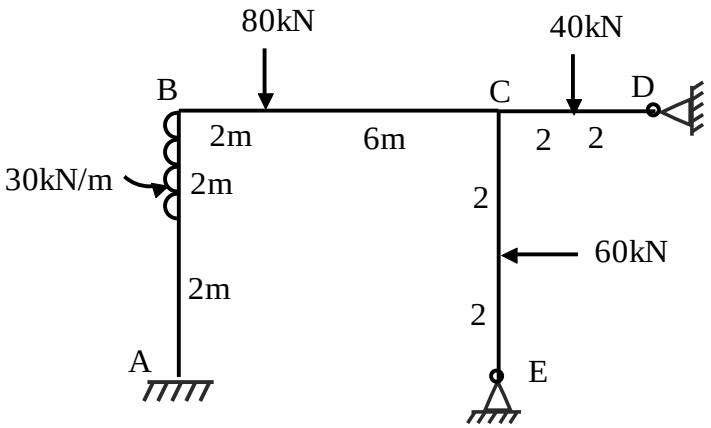
2. Derive the rotation transformation matrix for beam element. **13**

3. Find SFD & BMD for the beam shown below EI uniform. **13**



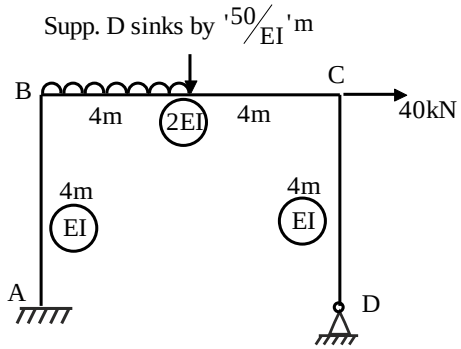
OR

4. Find global stiffness matrix for the following frame. **13**



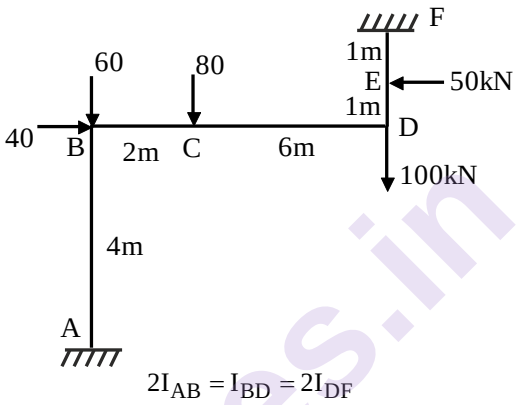
$2I_{AB} = I_{BC} = 2I_{CE} = I_{CD}$

5. Analyse the frame shown below using direct stiffness method. **13**

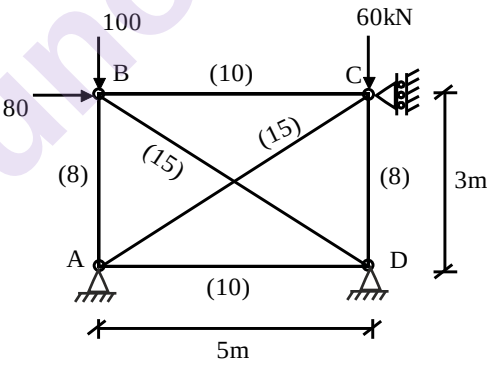


OR

6. Find global load vector for frame shown below considering axial deformation. **13**



7. Analyse the frame shown below using direct stiffness method. Fig. in bracket indicates area in cm^2. **13**



OR

8. a) Explain free & forced vibrations. **7**

b) Explain linearly elastic & linearly inelastic system with suitable example. **7**

9. a) Explain the Pascals triangle & its use in FEM. **7**

b) Explain the interpolation function & its use in FEM with suitable example. **7**

OR

10. a) Write about the use of FEM as most efficient tool in structural analysis. **7**

b) Explain the Rayleigh Ritz method to solve the problem of two noded bar element. **7**

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