Mid-West University

Examinations Management Office

Semester End Examinations 2081

Bachelor level/ B.E. Civil/ 5th Semester — Full Marks: 50

Time: 3 hours — Pass Marks: 25

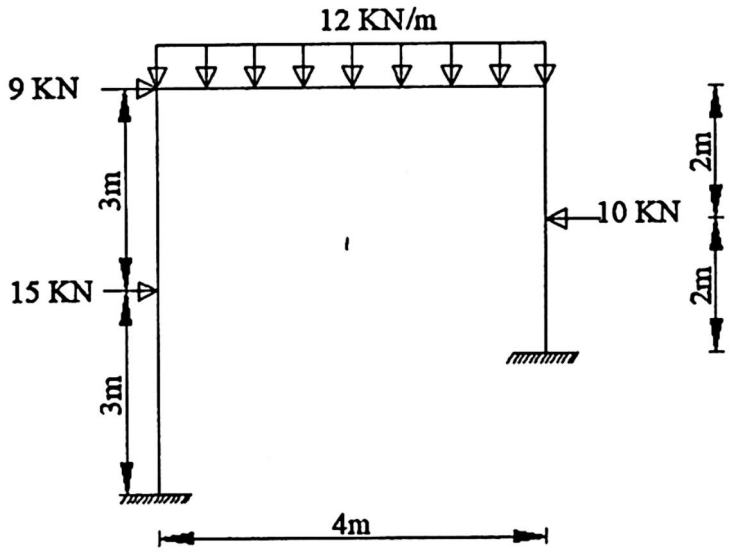
Subject: Theory of Structures II (CE451/CE314)

- *Attempt all the questions*
- *Figures in the margin indicate full marks.*
- *Assume suitable values, with a stipulation, if necessary.*
- *Allow NBC 105:2020*
- *Candidates are required to answer the questions in their own words as far as possible.*

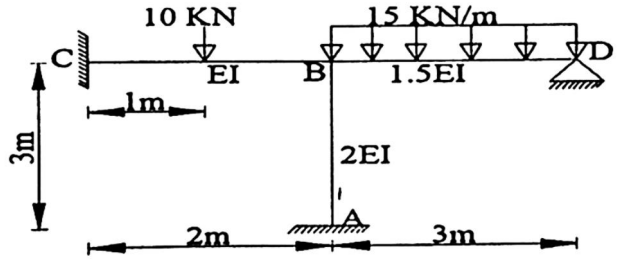
1. Describe the Degree of static indeterminacy and kinematic indeterminacy of a structural system with suitable expression and example **[2+2]**

2. State and prove Maxwell's Reciprocal theorem and its physical meaning. **[5]**

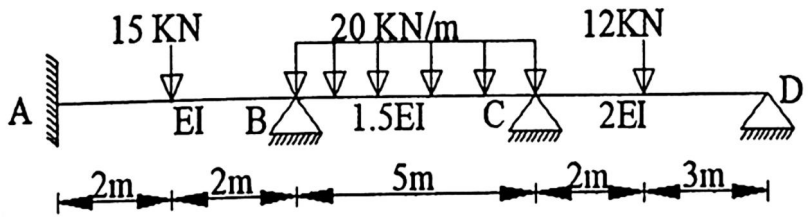
3. What do you mean by the flexibility matrix method? Find the reaction component using the force method and draw a bending moment diagram of the given frame **[2+8]**



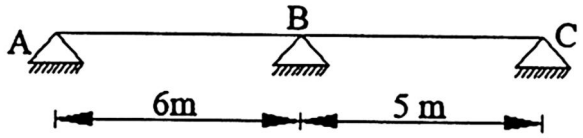
4. Analyze the given frame using the slope deflection method and draw a bending moment diagram **[5]**



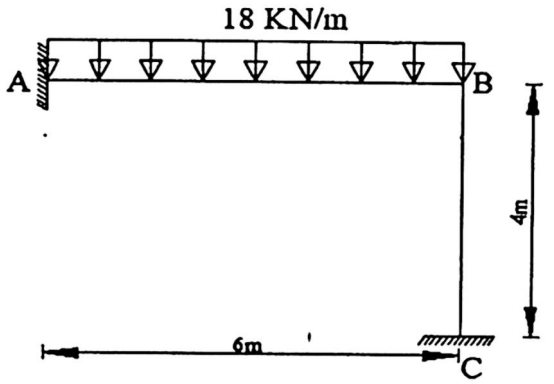
5. Analyze the given beam using the moment distribution method. **[6]**



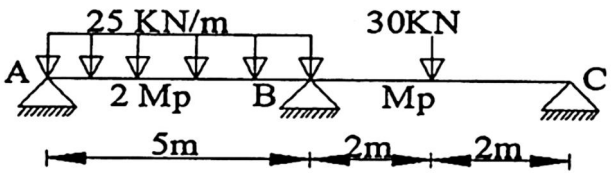
6. Define Mueller Breslau principle. Compute the ordinate of ILD for reaction R_A for the beam shown in the figure and draw ILD. At 2 m interval for portion AB and 1 m interval for portion BC. Take EI= Constant [5]



7. Using the stiffness matrix method analyze the give frame. Take EI= Constant [10]



8. Calculate the plastic moment capacity required for the continuous beam with working loads shown in figure below [5]



The End