

Mid-West University
Examinations Management Office
 Semester End Examinations 2081

Bachelor level/ B.E. Hydropower/ 5th Semester

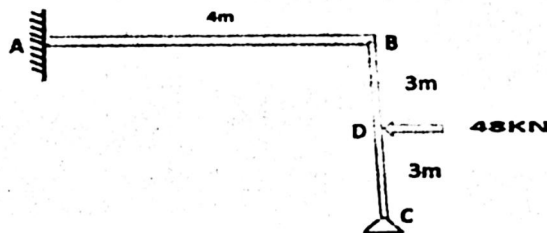
Time: 3 hours

Subject: Theory of Structures-II (HE451/HE301)

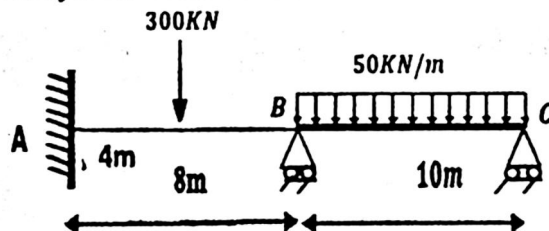
Full Marks: 50

Pass Marks: 25

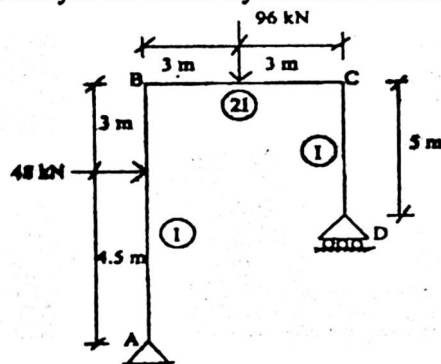
- Attempt all the questions
 - Figures in the margin indicate full marks.
 - Assume suitable values, with a stipulation, if necessary.
 - Candidates are required to answer the questions in their own words as far as possible.
1. Derive the relationship between force and stiffness in the structure. [2]
 2. State and prove Maxwell's Reciprocal Theorem and explain their uses. [5]
 3. Define Compatibility equations. Determine the reactions at support A and C and $AB=1.5I$ and $BC=2I$. Draw bending moment diagram of the frame shown in the figure below by using Force Method. [1+9]



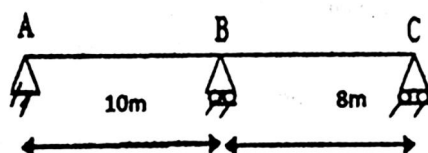
4. Analyse the continuous beam shown in below figure using Slope Deflection Method. [5]



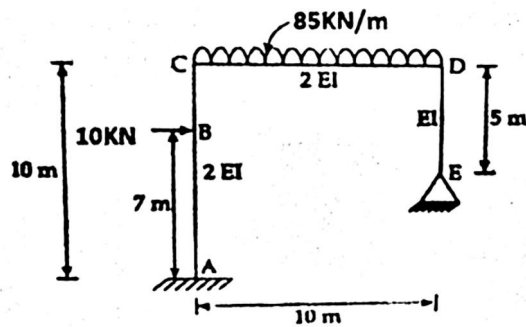
5. Analyse the frame by Moment distribution method and draw bending moment diagram. [6]



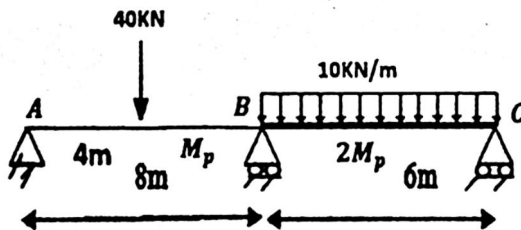
6. Draw the influence line diagram for moment at B in the continuous beam, after calculating ordinates at 1.5 m intervals. Assume flexural rigidity and Moment of Inertia are constant throughout. [6]



7. Explain the cause of structure sway. Compute the final end Moments for the following loaded frame Analyze the frame using Stiffness Matrix Method. Take EI is constant. [1+9]



8. Explain the mechanism of plastic hinges formation in structures. Calculate the plastic moment capacity required for continuous beam with working load as shown. Take load factor as 1.5. [1+5]



The End