

Mid-West University  
Examinations Management Office  
End Semester Examinations 2081

Bachelor level/ B.E. Hydropower/ 5<sup>th</sup> Semester

Time: 3 hours

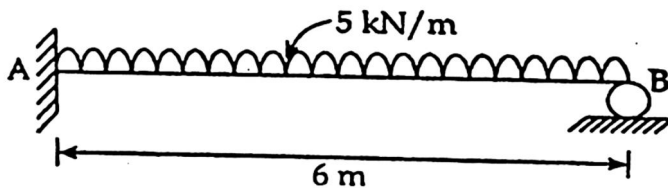
Subject: Theory of Structure II (HE301/HE451)

Full Marks: 50

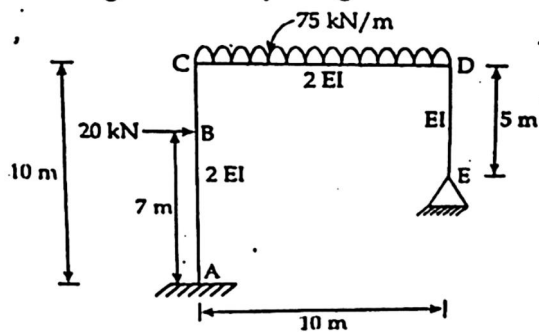
Pass Marks: 25

- 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.

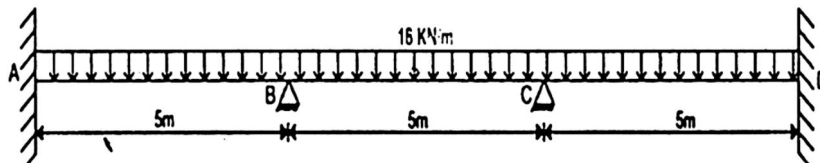
1. Define indeterminacy of structure. How determinate structure are different from indeterminate structure? [1+2]
2. Using Castigliano's theorem, determine the moment at fixed support A of the propped cantilever beam loaded as shown in figure below.  $E = 232 \text{ kN/mm}^2$ ,  $I = 112.5 \times 10^6 \text{ mm}^4$ . [5]



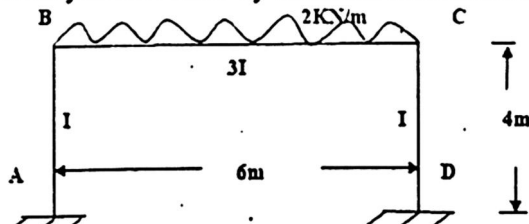
3. Determine the reactions at support E and A and draw bending Moment diagram of the frame shown in the figure below by using Force Method. [8]



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



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



6. Draw the influence line diagram for Reactions at A in the continuous beam, after calculating ordinates at 2m intervals. Assume flexural rigidity and Moment of Inertia are constant throughout. [6]

