

**III B. Tech I Semester Regular Examinations, February-2022**  
**STRUCTURAL ANALYSIS**

(Civil Engineering)

Time: 3 hours

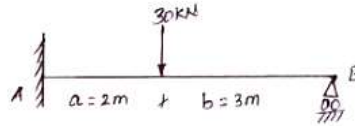
Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**  
 All Questions Carry Equal Marks

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**UNIT-I**

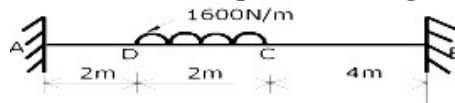
1. a) Estimate the reaction components as is shown in figure for a Propped cantilever beam. [8M]



- b) A propped cantilever beam AB of span L is subjected to a moment M at the propped end B. Determine the moment at fixed end A. [7M]

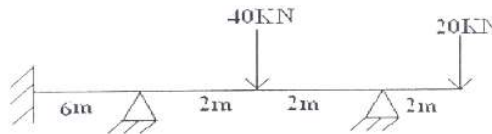
**(OR)**

2. a) Calculate the fixed end moments for the fixed beam carrying uniformly distributed load  $w/m$ . [7M]  
 b) Find the fixed end moments and plot bending moment diagram. [8M]



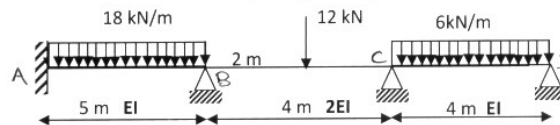
**UNIT-II**

3. Analyze the continuous beam loaded as shown in figure by using the moment distribution method. Draw SFD and BMD. [15M]



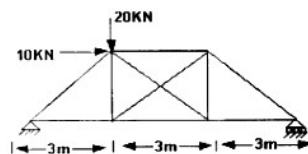
**(OR)**

4. Analyze the continuous beam loaded as shown in figure by using the moment distribution method. Draw SFD and BMD. [15M]



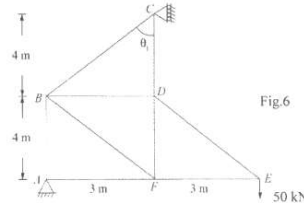
**UNIT-III**

5. Analyze the given truss by method of section. [15M]



(OR)

6. Analyze the truss as shown in figure by using tension coefficient [15M] method.



**UNIT-IV**

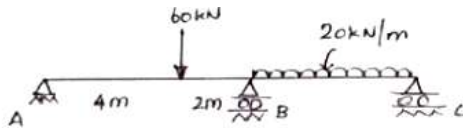
7. A system of four loads 80, 160, 160 and 120 kN crosses a simply supported beam of span 25 m with the 120 kN load leading. The loads are equally spaced at 1 m. Determine the values of the following using influence lines:  
 a) Absolute Maximum bending moment and shear force.  
 b) Maximum bending moment at 10m from the left support.

(OR)

8. Two point loads of 100 kN and 200 kN spaced 3 m apart cross a girder of span 12 m from left to right with the 100 kN leading.  
 a) Draw the ILD for shear force and bending moment and find the values of maximum bending moment.  
 b) Find the maximum shear force and bending moment at a section 4 m from the left support.  
 c) Find the absolute maximum bending moment and shear Force.

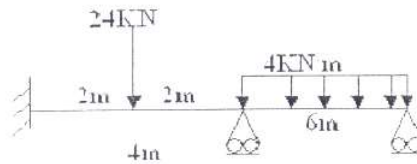
**UNIT-V**

9. Analyze the continuous beam shown in figure by stiffness matrix [15M] method.



(OR)

10. Analyze the continuous beam shown in figure by flexibility matrix [15M] method.



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