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**END SEMESTER EXAMINATIONS, MAY 2012**  
**CE 371 STRUCTURAL ANALYSIS I**  
**V Semester BE Civil Engineering (R-2004)**

Time : 3 Hours

Max.Marks : 100

**PART-A** (10 x 2 = 20 marks)

1. Differentiate statically determinate and indeterminate structures.
2. State any two advantages of Williot diagram.
3. What is meant by Degree of Indeterminacy?
4. What is meant by global coordinates?
5. Define stiffness.
6. How do you consider the support settlement in slope deflection analysis?
7. What is meant by carry over factor?
8. Draw simple sketches for frames with sway.
9. What is meant by global stiffness matrix?
10. What is a load vector?

**PART-B** (5 x 16 = 80 marks)

Figures for the questions are given in a separate page

11. Determine the vertical displacement of joint A of the steel truss shown in fig Q.11.  $E=2 \times 10^5 \text{ N/mm}^2$ . The cross sectional area of each bar  $=150 \times 10^{-6} \text{ m}^2$
- 12.a. Analyse the frame shown in fig Q12a. by flexibility method . EI is constant.  

(or)
- 12.b. Analyse the continuous beam shown in fig Q 12b. by flexibility method and draw bending moment diagram.
- 13.a. Analyse the continuous beam shown in fig Q13a. by slope deflection method. The values of E and I are uniform throughout. Draw bending moment diagram.

(or)

13.b. A portal frame is shown in fig Q13b. Analyse the frame by slope deflection method.

14.a. Analyse the continuous beam shown in fig Q14a by moment distribution method. Find the support reactions and bending moment.. Draw bending moment diagram.

(or)

14.b. A portal frame is shown in fig Q14b. Analyse the beam using moment distribution method and Draw bending moment diagram.

15.a. A portal frame is shown in fig Q15a. The values of E and I are uniform throughout .Using matrix stiffness method, analyse the structure.

(or)

15.b. Analyse the continuous beam shown in fig Q15.b by matrix stiffness method. Draw bending moment diagram.

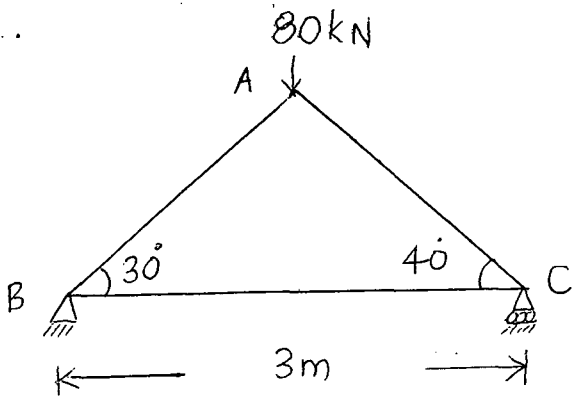


Fig Q 11

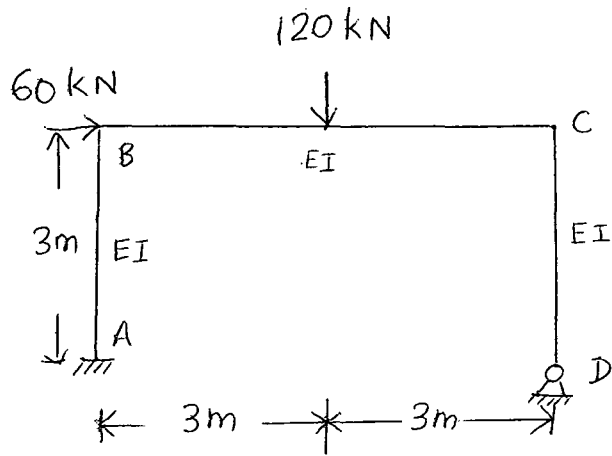


Fig Q 12a

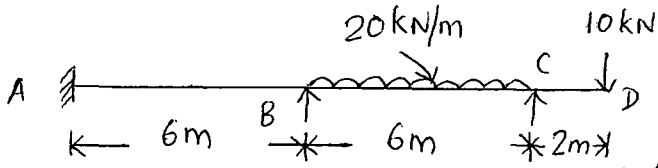


Fig Q 12b

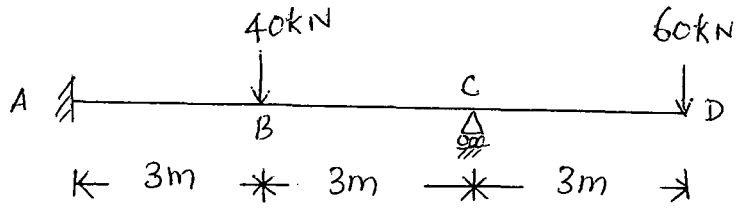


Fig Q 13a

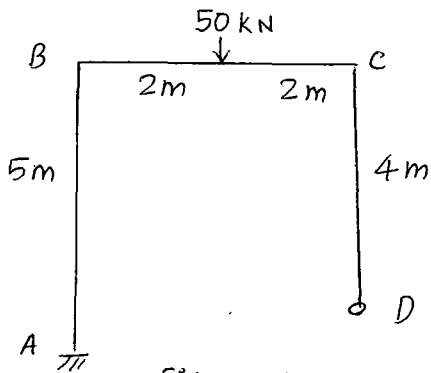


Fig Q 13b

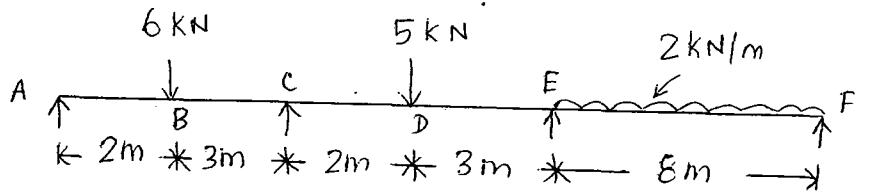


Fig Q 14a

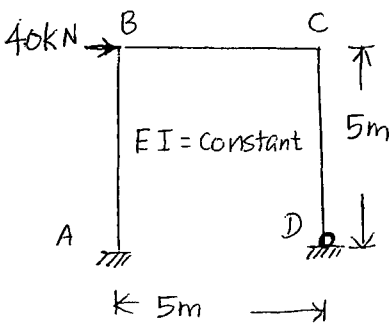


Fig Q 14b

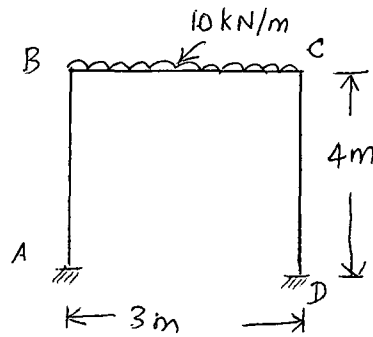


Fig Q 15a

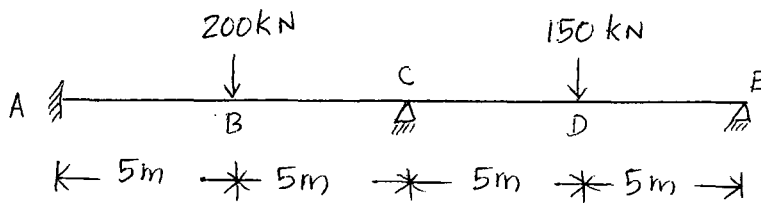


Fig Q 15b