



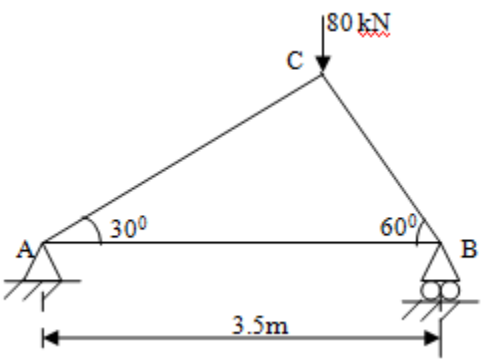
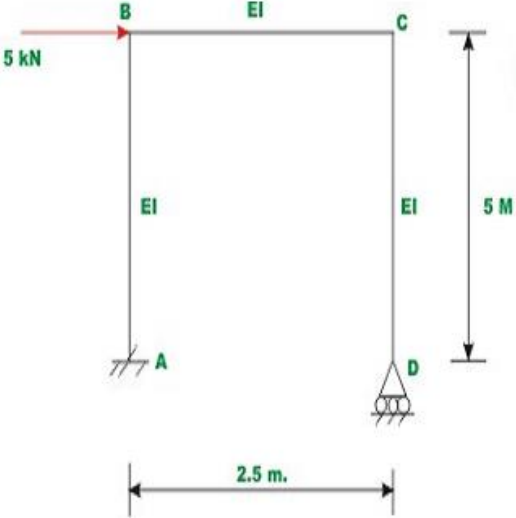
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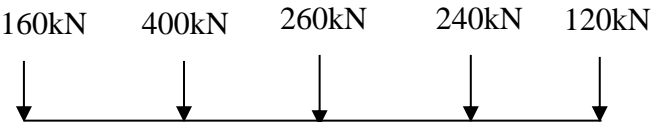
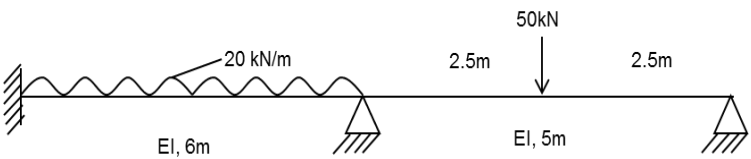
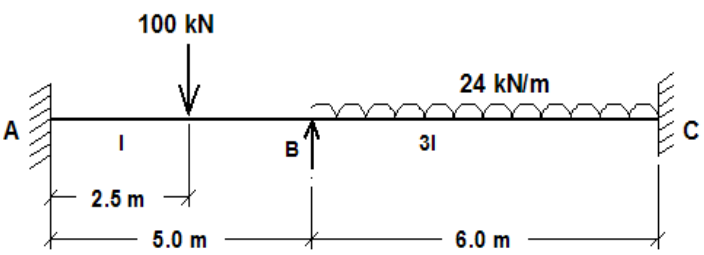
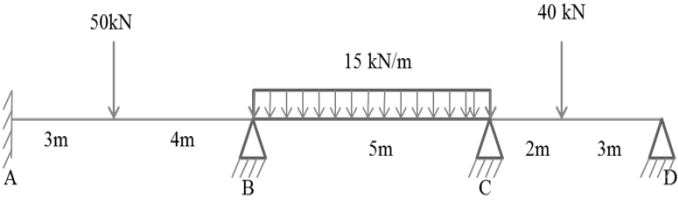
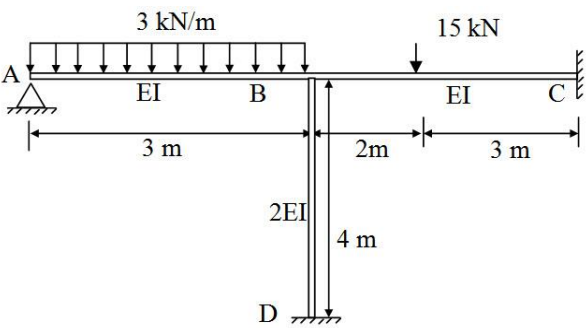
End Semester Examination – Nov/Dec – 2016

Code : **14CE2010**
Sub. Name : **Structural Analysis**

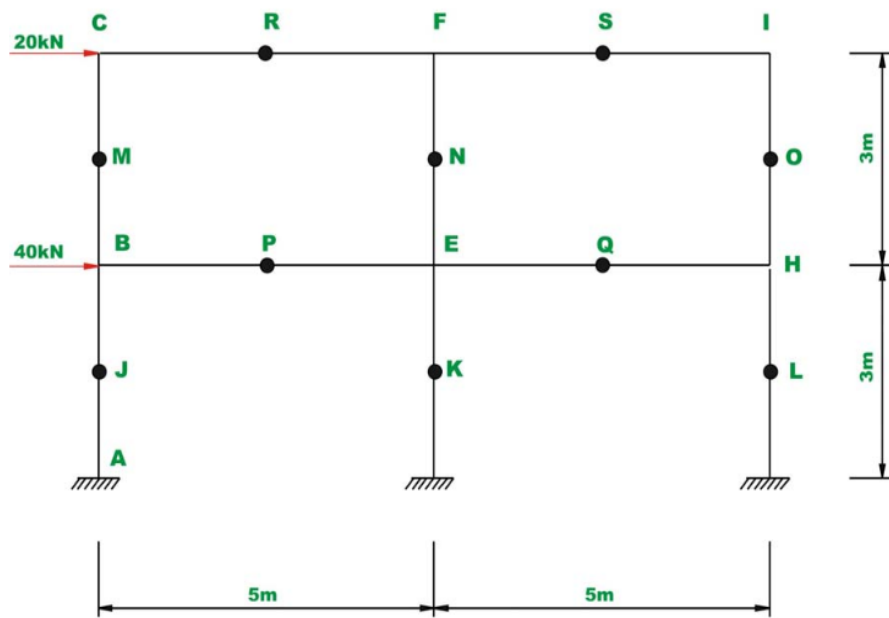
Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

| Q. No. | Sub Div. | Questions | Marks |
|--------|----------|---|-------|
| 1. | a. | <p>Using the principle of virtual work, determine the vertical deflection of joint C of the pin jointed truss shown in figure, $E = 200 \times 10^6 \text{ KN/m}^2$ and cross sectional area of each bar = $10 \times 10^{-3} \text{ m}^2$.</p>  | 20 |
| (OR) | | | |
| 2. | a. | <p>Find the horizontal deflection at joint B in the frame ABCD shown in fig by using Unit Load method. EI is constant throughout.</p>  | 20 |
| 3. | a. | <p>Draw the Influence Line Diagram and Bending Moment for a section at 5m from the left hand support of a simply supported beam 20 m long. Calculate the maximum bending moment and shear force at the section, due to a uniformly distributed rolling load of length 8m and intensity 10kN/m run.</p> | 20 |

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|----|----|--|----|
| | | | |
| | | (OR) | |
| 4. | a. | <p>A train of 5 wheel loads crosses a simply supported beam of span 22.5m. Using influence lines calculate the maximum positive and negative shear force at mid span and absolute maximum bending moment anywhere in the span. Spacing between the loads is 2.5 m</p>  | 20 |
| 5. | a. | <p>Analyze the continuous beam ABC shown in figure by slope deflection method. The support B (middle) sinks by 15mm. Take $E = 200 \times 10^5 \text{ kN/m}^2$ and $I = 120 \times 10^{-6} \text{ m}^4$</p>  | 20 |
| | | (OR) | |
| 6. | a. | <p>Analyze the continuous beam ABC, shown in the figure and draw the BM diagram using Slope Deflection Method.</p>  | 20 |
| 7. | a. | <p>Analyze the continuous beam ABCD having flexural rigidity EI shown in figure by Moment distribution method. Draw BMD</p>  | 20 |
| | | (OR) | |
| 8. | a. | <p>Analyze the frame using moment distribution method. Draw BMD</p>  | |
| | | Compulsory: | |
| 9. | a. | Analyze the frame shown in Fig. and evaluate approximately the column end moments, beam | |

end moments and reactions. Using portal frame method



ALL THE BEST