

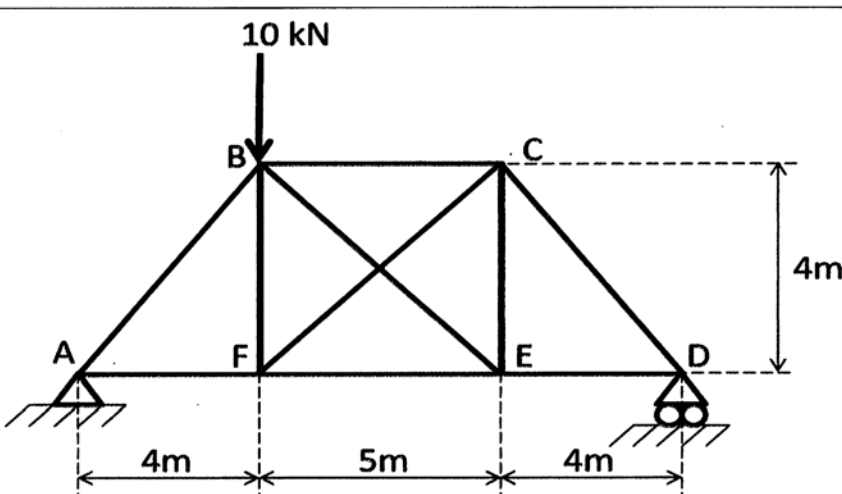
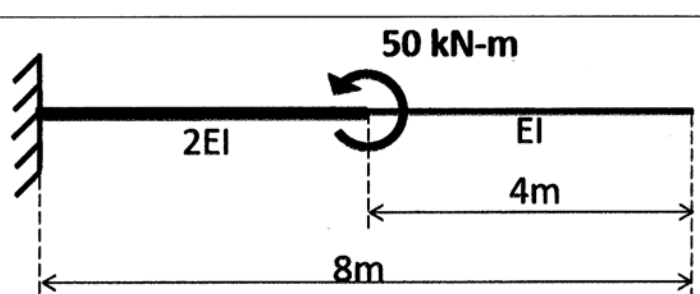
Name of the Examination: BACHELOR OF ENGINEERING (CIVIL ENGINEERING)
 Subject : STRUCTURAL MECHANICS- II

Time : Three hours

Full Marks: 100

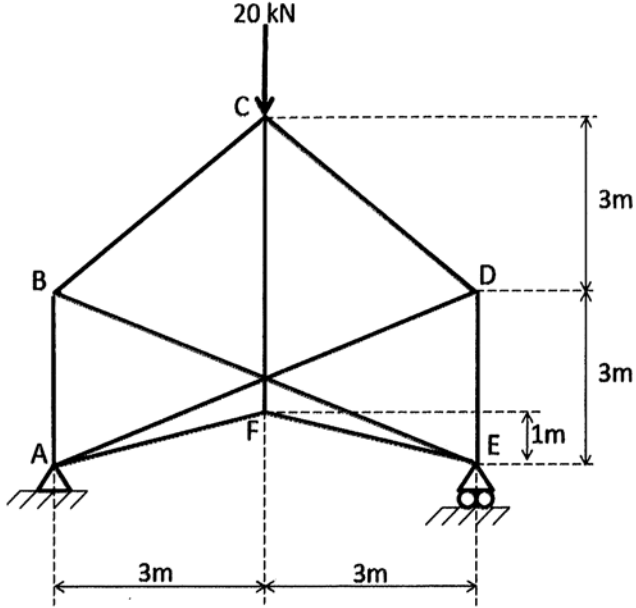
Instructions:

- I All notations represent their standard relevant meaning.
- II If you feel that any data or condition is/are missing in any question, please assume relevant inputs and mention the same.

| Sl No | Question | Marks |
|-------|--|-------|
| 1 |  <p style="text-align: center;">Figure: 1 (Not to Scale)</p> <p>Consider the truss from <u>Figure: 1</u> where the joints of the truss A,B,C,D,E & F are shown and determine all the member forces and mention the same with the figure with proper notations showing the nature of member forces. All members are having Modulus of Elasticity: 200000 N/mm². The cross sectional area of all members are 1500 mm²</p> | 20 |
| 2 |  <p style="text-align: center;">Figure: 2 (Not to Scale)</p> <p>Consider the beam shown in <u>Figure: 2</u> and find out Slope and deflection of the beam at free end using moment area method. (10 marks)</p> <p>Consider the beam shown in <u>Figure: 2</u> and find out Slope and deflection of the beam at mid-point of the beam using conjugate beam method. (10 marks)</p> | 20 |

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| <p>3</p> | <p>(a) Consider a simply supported prismatic beam of span L subjected to uniformly distributed load intensity of w per length unit. Find out deflection at mid point of the beam using strain energy applying castigiano's theorem. Consider Young's modulus=E and Moment of Inertial of the cross section along loading=I. (13 marks)</p> <p>(b) Consider the prismatic continuous beam shown in <u>Figure: 3</u> and find out reaction forces. Consider Young's modulus=E and Moment of Inertial of the cross section along loading=I (7 marks)</p> | <p>20</p> |
| | | |
| <p>Figure: 3 (Not to Scale)</p> | | |
| <p>4</p> | <p>Consider the 3 hinged parabolic arch with supports at different levels from <u>Figure: 4</u> and determine bending moment, normal thrust and radial shear at a point on the arch which is located at a distance of 5m inwards from the left support.</p> | <p>20</p> |
| <p>Figure: 4 (Not to Scale)</p> | | |

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| 5 | <div style="text-align: center;">  <p style="text-align: center;">Figure: 5 (Not to Scale)</p> <p>Consider the truss from <u>Figure: 5</u> where the joints of the truss A,B,C,D,E & F are shown and determine all the member forces and mention the same with the figure with proper notations showing the nature of member forces.</p> </div> | 20 |
|---|--|----|