Code No: R22016   **R10**   **SET - 1**

II B. Tech II Semester Supplementary Examinations, April/May-2017
STRUCTURAL ANALYSIS – I
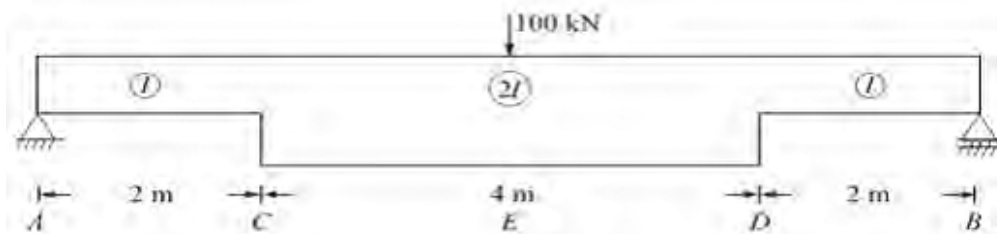(Civil Engineering)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. A propped cantilever of span 12m is fixed at one end and propped at the other end and carries a UDL of 10kN/m on its whole span. Calculate the prop reaction and draw the shear force and bending moment diagrams.

2. A fixed beam AB of span 4.5m is fixed at A and B. The beam carries a concentrated load of 22 kN at the mid span and also subjected at a UDL of 14 kN/m intensity on the left half of the span. Calculate the end moments at supports A and B and also draw the shear force and bending moment diagrams.

3. A two span continuous beam ABC is fixed at A and simply supported at B and C. The span AB=4.5m and span BC=5.5m. The span AB carries a UDL of 22 KN/m and span BC carries a central point load of 26 KN. EI is constant for the whole beam and may be taken as one unit If the support B sinks by 5mm, find the moments and reactions at all the supports and draw the bending moment diagram using Clapeyorn's theorem of three moments.

4. A two span continuous beam ABC is simply supported at ends A and C and is continuous over support B. The span AB=6m and span BC=4m. The span AB carries a UDL of 20kN/m and span BC carries a central point load of 15kN. EI is constant for the whole beam. Find the support moment at B and draw the shear force and bending moment diagrams using slope- deflection method.

5. Find the maximum deflection of the beam shown in figure. E = 2 X 10^5 N/mm^2; I = 80 X 10^6 mm^4. Use Strain Energy method.

6. A rolling load of 50 kN moves from left to right on simply supported beam of 26 m span. Find the values of maximum positive and negative shear force and bending moment at a section 16m from the left end support. Also find out the absolute maximum bending moment on the span due to this rolling load.

7. A rolling load of 85kN moves from left to right on simply supported beam of 26 m span. Draw influence lines for positive shear force, negative shear force and the bending moment at a section 16 m from the left end. Using the influence lines, find the values of maximum positive and negative shear force and bending moment at a section 16 m from the left end support.

8. Determine the forces in all the members of the redundant pin jointed truss shown in figure below. Assume cross-sectional area of each member as 1500 mm^2.