

Code No: RT22016

R13

SET - 1

II B. Tech II Semester Supplementary Examinations, November-2017
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

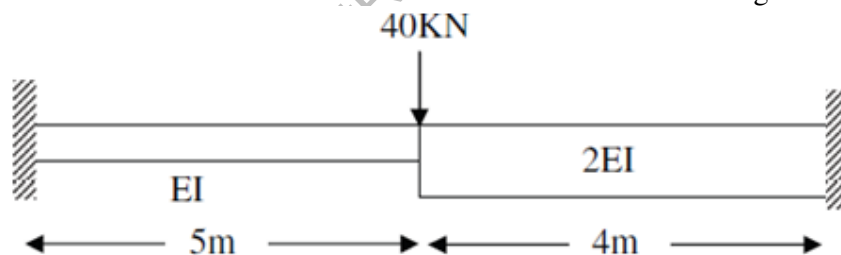
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

PART -A

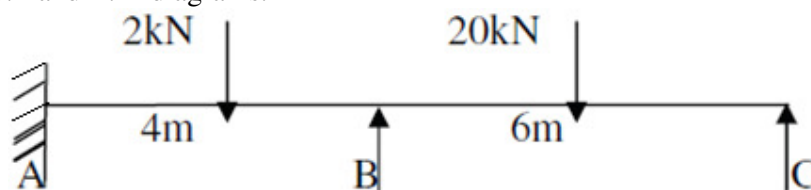
1. a) Derive the compatibility equation for the propped cantilever.
b) What are the advantages of fixed beam?
c) How clapeyron's theorem of three moments can be applied to the overhanging beams?
d) Explain slope deflection method considering a continuous beam with three supports and with uniformly distributed load W/m .
e) Write the expression of strain energy due to axial load?
f) What is the condition for absolute maximum bending moment due to moving UDL longer than the span?

PART -B

2. A cantilever of length 'L' carries a concentrated load 'W' at its mid-span. If the free end is supported by a prop, find the reaction at the prop and also draw the S.F. and B.M. diagrams.
3. Find fixed end moments for the fixed beam shown in below figure.



4. Analyze the continuous beam shown in below Figure. Use three-moment equation. Draw S.F and B.M diagrams.

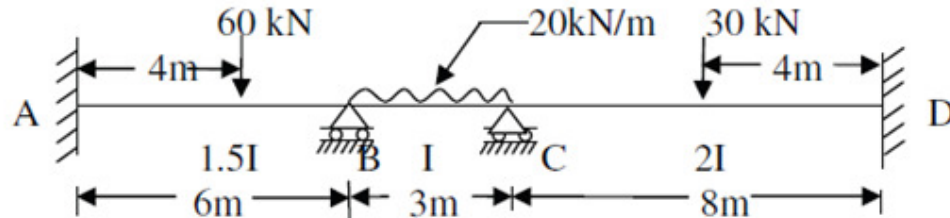


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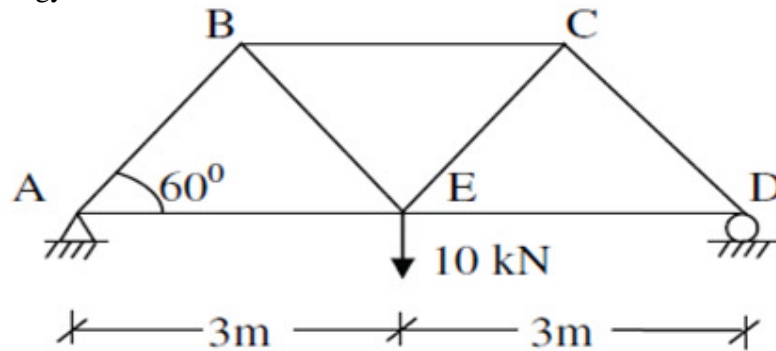
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5. Analyze the continuous beam shown in below Figure. by Slope-Deflection method and draw bending moment diagram.



6. Determine the vertical deflection of Joint 'C' for the truss shown in below Figure. Take $A=500 \times 10^{-6} \text{ m}^2$, $E=200 \times 10^6 \text{ kN/m}^2$ are constant for all members. Use strain energy method.



7. A uniformly distributed load of 25kN/m and 20m long crosses a girder of span 12m. Calculate the Maximum Shear force and Bending Moment at 0m, 3m, 6m, 9m from the left end support and construct Diagrams