Code No: R1622015 **R16** SET - 1

II B. Tech II Semester Regular Examinations, November - 2018
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 **FOUR** Questions from **Part-B**

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PART –A

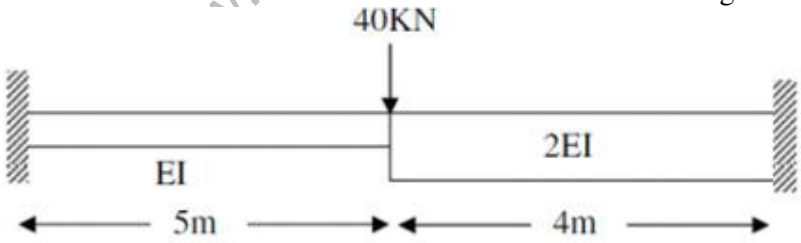
1. a) What is the degree of indeterminacy of a propped cantilever?
   b) How fixed beams can be statically determinate?
   c) Define a continuous beam.
   d) What are the sign conventions used in slope deflection equations and write the equations.
   e) Define strain energy and complimentary strain energy.
   f) Draw the influence diagram for a shear force at any section of a simply supported beam?

PART -B

2. a) A cantilever of length4m carries a uniformly distributed load of 1kN/m length over the whole length .The free end of the cantilever is supported on a prop. If E = 2 x 10^5 N/ mm^2 and I = 10^8 mm^4 , then (i) find the prop reaction (ii) deflection at the centre of cantilever

   b) A cantilever of 6m length carries an U.D.L of 12 kN/m over the full 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. A continuous beam ABC is simply supported at A and C and continuous over support B with AB = 5m and BC = 6m.Auniformly distributed load of 12kN/m is acting over the beam. The moment of inertia is I throughout the span. Analyse the continuous beam and draw S.F.D and B.M.D.

5. A Continuous beam is fixed at A and is supported over rollers at B and C. AB=BC=12M.The beam carries a uniformly distributed load of 30kN/m over AB and a point load of 240kN at a distance of 4M from B on span BC.B has an settlement of 30mm.E= 2 x105 N/mm2 ,I= 2 x 109 mm4 .Analyse the beam by slope deflection method.
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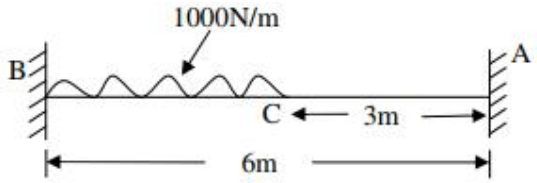
6. Determine the Reaction at A and the moment at B use strain Energy method



7. Draw the Influence line diagram for reactions of a simply supported beam of 12 m span. Also draw the influence line diagrams for Shear force and bending moments at quarter span and mid-span sections