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

II B. Tech II Semester Supplementary Examinations, November - 2019
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) A propped cantilever is subjected to uniformly distributed load W/m. What is the indeterminate moment at the support?

   b) How fixed beams can be statically determinate?

   c) What is a continuous beam? Explain the significance of choosing the bending moment as redundant by clapeyron in place of support reactions?

   d) Explain slope deflection method considering a continuous beam with three supports and with uniformly distributed load W/m.

   e) Define strain energy and complimentary strain energy.

   f) Define the influence line. Draw a I.L.D.

PART -B

2. a) Analyse the propped cantilever beam loaded as shown in the Figure 1.Draw the S.F.D and B.M.D. Assume EI constant throughout.
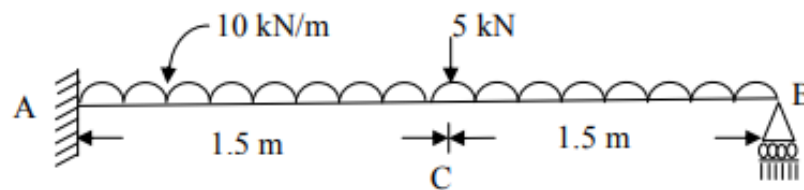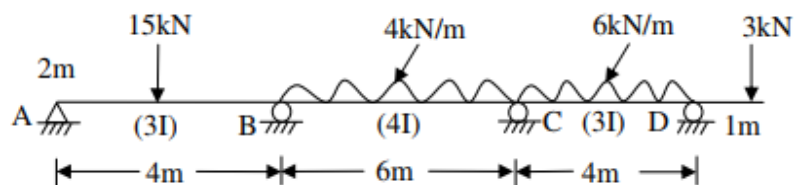

Figure 1

   b) Differentiate between cantilever and propped cantilever.

3.   Derive the equation for a fixed beam with ends at different levels.

4.   A continuous beam ABC is simply supported at A and C and continuous over support B with AB = 10m and BC = 16m.Auniformly distributed load of 21kN/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.   Analyse the beam ABCD shown in figure by Slope-Deflection method and draw bending moment diagram.

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6. a) Derive the strain energy equation due to axial loading

    b) Analyze a continuous beam simply supported at A,B and C .The span AB is 6M and BC is 8M. The span AB is carrying an udl of 30kN/m and span BC carries a load of 40kN at a distance of 3M from B. Use Strain energy method. Draw the B.M.D.

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.

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