

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**

PART -A

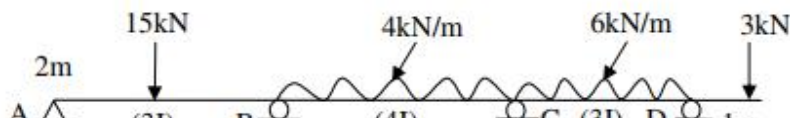
1. a) A propped cantilever is subjected to uniformly distributed load W/m . What is the indeterminate moment at the support?
- b) How fixed beams can be statically determinate?
- c) What is a continuous beam? Explain the significance of choosing the bending moment as redundant by clapeyron in place of 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.



- 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 $BC = 16m$. A uniformly 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.



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.

