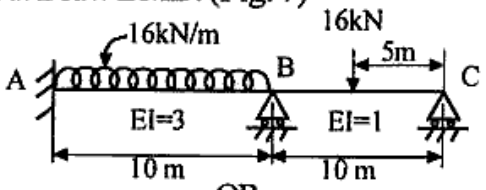
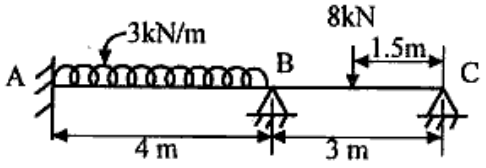
d) Analyze the continuous beam by using matrix flexibility method. Draw BMD. (Fig. 7)



(Fig. 7)

OR

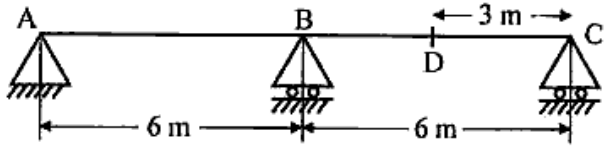
Analyze the continuous beam by using matrix stiffness method (Displacement Method). The moments of inertia is constant throughout. Draw BMD. (Fig. 8)



(Fig. 8)

Unit - V

5. a) Write a brief note on influence lines. Where and how influence lines are used?
   b) State the Muller-Breslau principle and where is it used?
   c) How the influence lines can be drawn qualitatively for indeterminate structures? Explain.
   d) Draw the influence line for the shear at D, the mid-point of span BC of a continuous beam. Compare the influence line ordinates at 1.5 m interval. (Fig. 9)



(Fig. 9)

OR

i) What is a beam column? How does the structural behavior of a beam column differ from a column?
ii) Write the governing differential equation for an axial loaded beam column. How can it be solved in terms of constants of integration?

******

Roll No .....

CE-601

B.E. VI Semester

Examination, June 2016

Theory of Structures - II

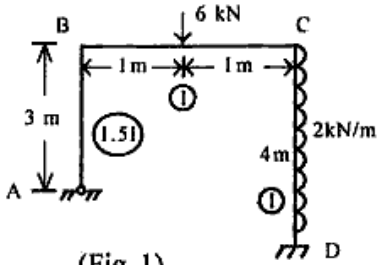
Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

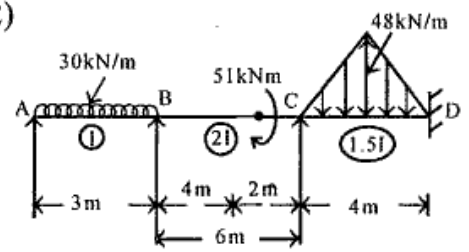
1. a) Differentiate between static indeterminacy and kinematic indeterminacy. How kinematic indeterminacy of a structure is estimated?
   b) "Indeterminate structures are always better than determinate structures". Comment on the statement.
   c) Write the ratio of sway moments at column head for different end conditions and different section of columns in a portal frame.
   d) Analyze the portal frame using by moment distribution method. Draw BMD. (Fig. 1)



(Fig. 1)

OR

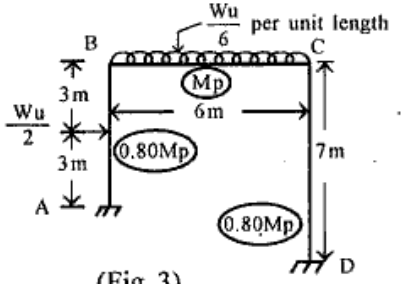
Analyze the beam using by Kani's method. Draw BMD. (Fig. 2)



(Fig. 2)

Unit - II

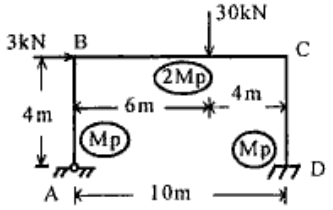
2. a) Compare elastic and plastic analysis of structures, stating clearly the assumptions made for each analysis.
   b) State lower bound theorem and upper bound theorem. Write the fundamental conditions for plastic theory.
   c) Define :
      i) Plastic hinge ii) Plastic modulus of section
      iii) Shape factor iv) Load factor
   d) Determine the value of W at collapse for the portal frame. (Fig. 3)



(Fig. 3)

OR

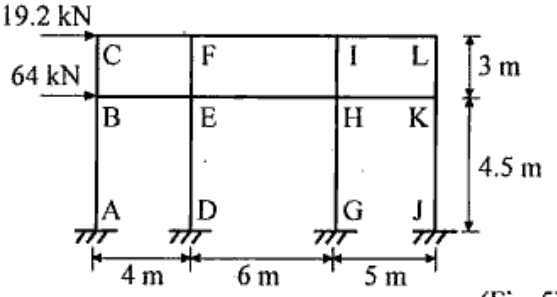
Calculate the plastic moment capacity for portal frame shown in figure 4.



(Fig. 4)

Unit - III

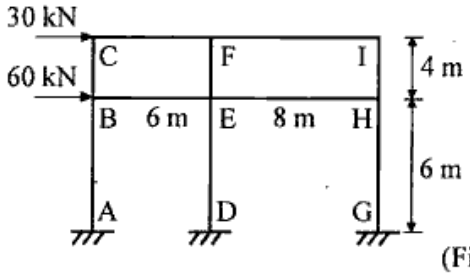
3. a) Why do we perform approximate analysis? Explain clearly.
   b) Explain the method of calculation of wind load for a multistoried building as per IS:875.
   c) What are the assumptions made in cantilever and portal method of analysis of building frames?
   d) Analyze the building frame subjected to horizontal forces using by portal method. Sketch BMD. (Fig. 5)



(Fig. 5)

OR

Analyze the building frame subjected to horizontal forces using by cantilever method. (Fig. 6)



(Fig. 6)

Unit - IV

4. a) Show that flexibility coefficient is inverse of stiffness coefficients.
   b) Compare the flexibility and stiffness methods of matrix of structural analysis.
   c) Develop the displacement and force transformation matrices for a truss member.