

[5253]- 504

T.E. (Civil) (Semester - I)

STRUCTURAL ANALYSIS - II

(2015 Pattern)

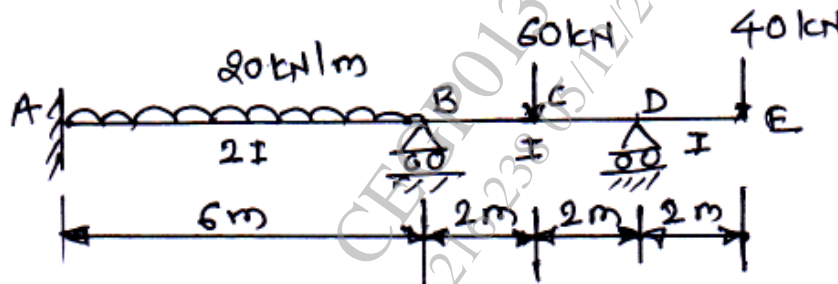
Time : 2 ½ Hours]

[Max. Marks :70

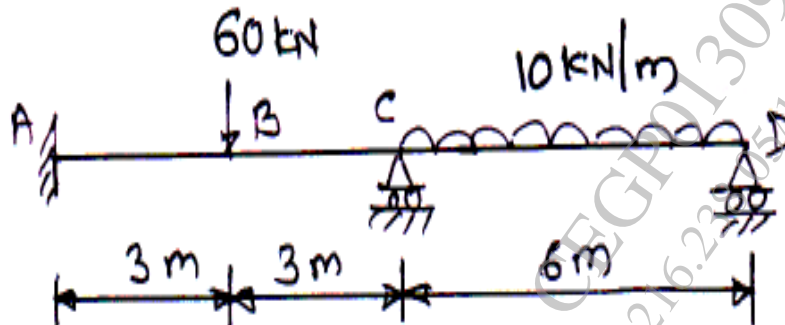
Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8
- 2) Figures to the right indicate full marks.
- 3) Use of non-programmable calculator is allowed.
- 4) Assume suitable data if necessary.

Q1) a) Analyze the beam by slope deflection method. Draw B.M.D. [10]



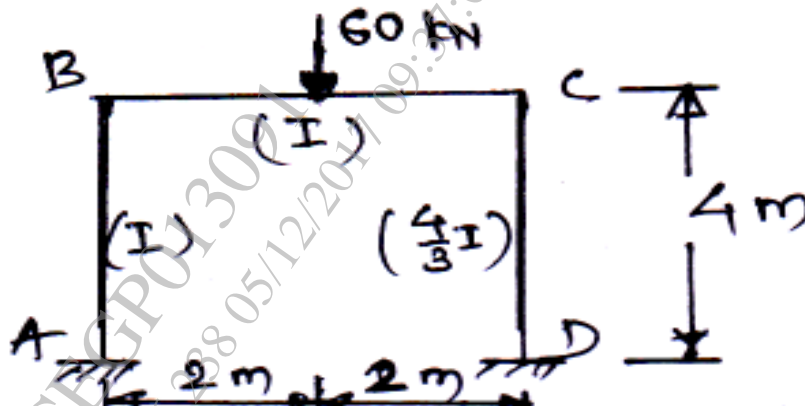
b) Analyze the beam by flexibility method. [10]



OR

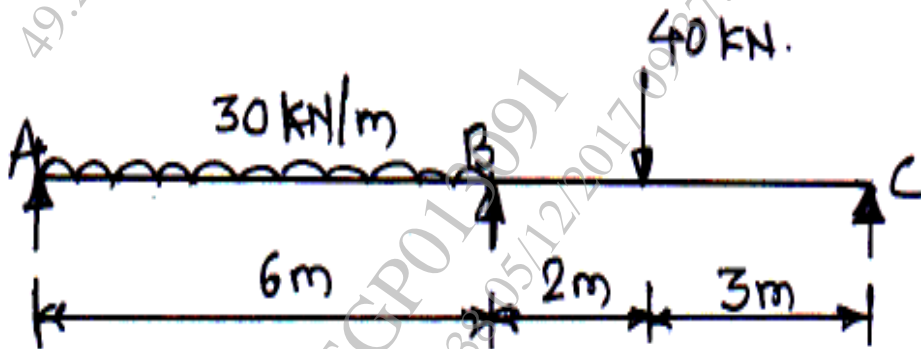
Q2) a) Analyze the frame by slope deflection method.

[10]



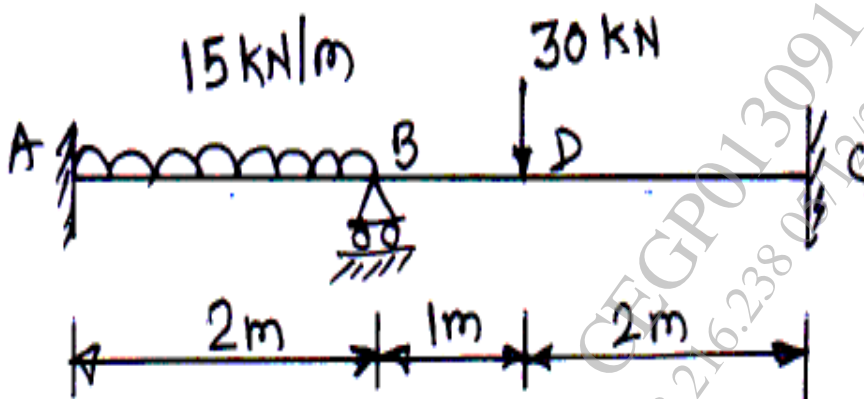
b) Analyze the continuous beam by moment distribution method.

[10]



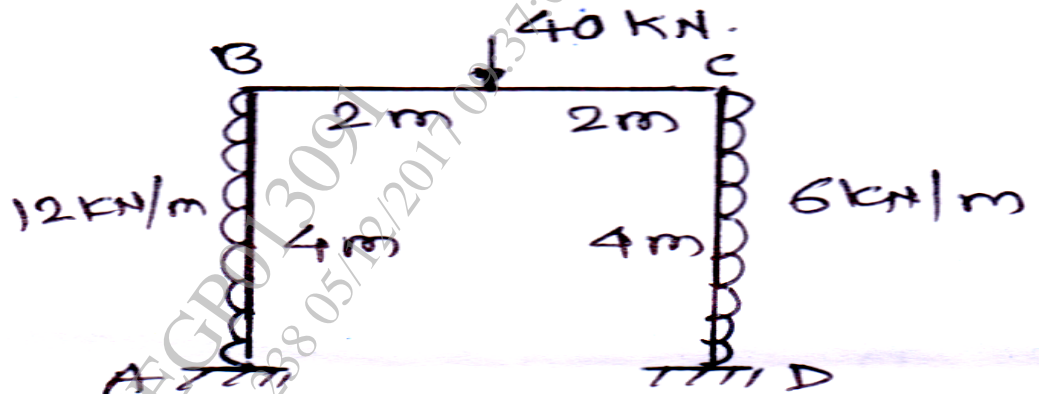
Q3) Analyze the beam by stiffness matrix method. Draw B. M. D. Take  $EI =$  constant.

[16]

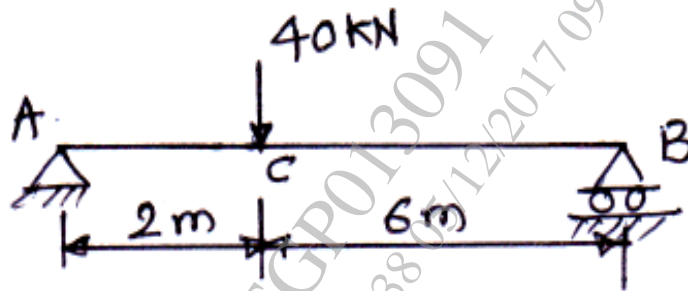


OR

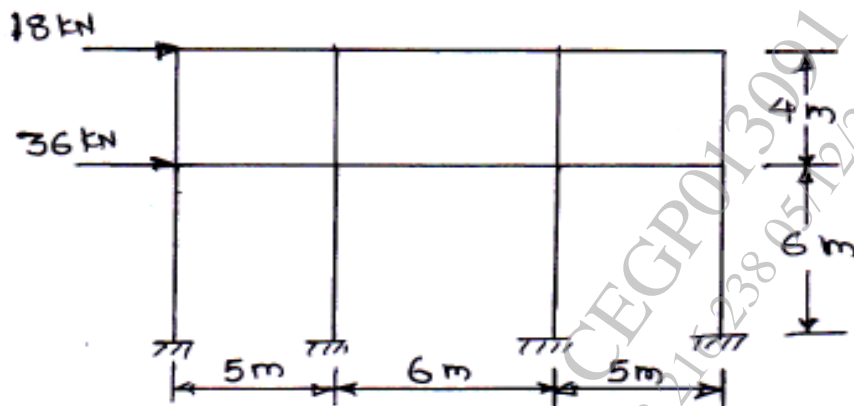
**Q4)** Analyze the frame by stiffness matrix method. Draw B. M.D. Take  $EI = \text{Constant}$  [16]



**Q5) a)** The beam is supported and loaded as shown. Determine the deflection in terms of  $EI$  under the load. Use finite difference method. Use five nodes. [6]

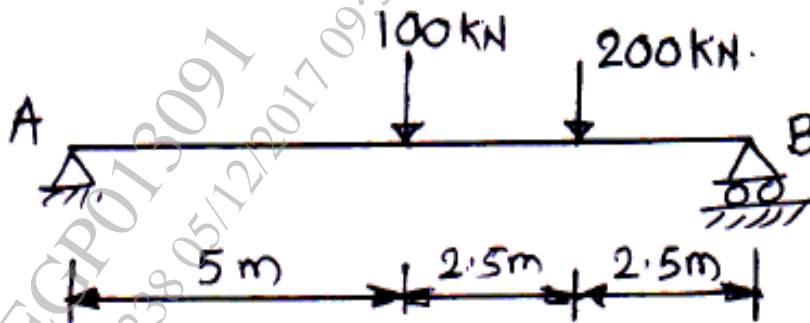


**b)** Analyze the frame by using portal method. Draw B.M.D. [12]

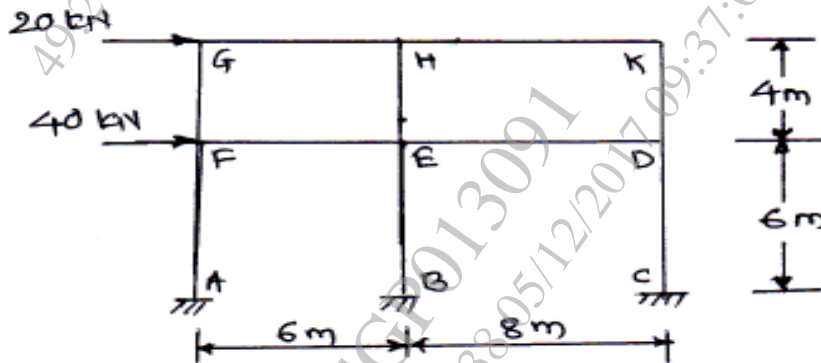


OR

- Q6) a)** The beam is loaded and supported as shown. Determine the deflection under the loads. Take  $EI = 2.4 \times 10^5 \text{ kN. m}^2$ . Use finite difference method and use five nodes. [6]



- b)** Analyze the frame by cantilever method. Draw B. M. D. [12]



- Q7) a)** Explain principle of minimum potential energy. [8]  
**b)** Explain shape function and state properties of shape function. [8]

OR

- Q8) a)** Explain the terms : [8]  
i) Nodes  
ii) Higher order elements  
iii) CST  
iv) LST  
**b)** Difference between Axisymmetric elements and Isoparametric elements. [8]

