

**MODEL QUESTION PAPER**  
Fifth Semester B.Tech Degree Examination  
(2013 Scheme)  
13.503: STRUCTURAL ANALYSIS –II

Time: 3Hrs

Max marks: 100

Answer **ALL** questions from part A and **Any One** question from each module in part B

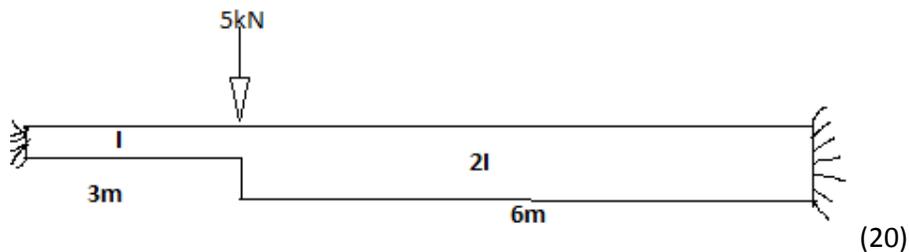
Part A

- I a) Explain internal, external and total indeterminacy with examples
- b) Derive the expression for end moments of a fixed beam due to settlement of one of the supports.
- c) What are the causes of side sway in portal frames?
- d) Analyse a propped cantilever with UDL by method of moment distribution.
- e) What is logarithmic decrement? What is its use? (5×4=20)

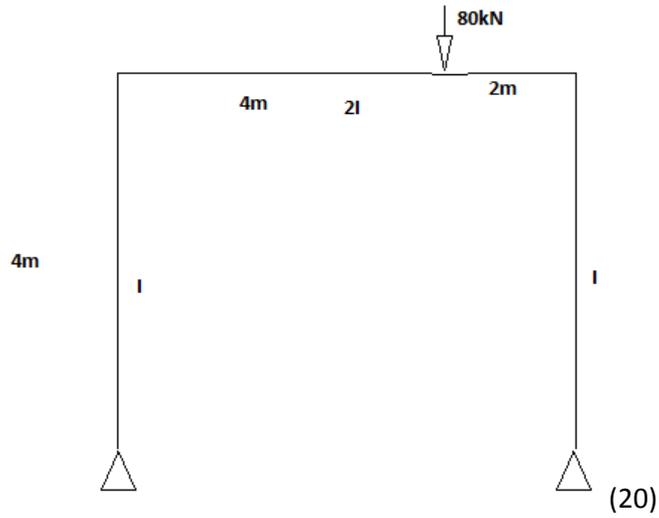
Part B

**Module I**

II Analyse the fixed beam by moment –area method. Draw the shear force diagram and bending moment diagram

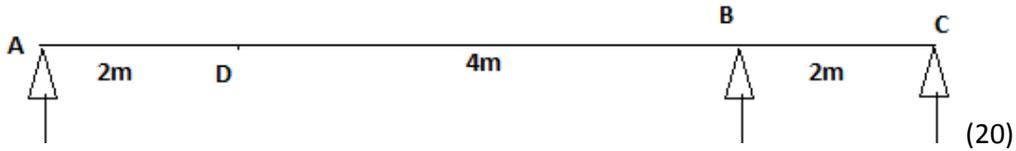


II) Analyse the frame by the method of consistent deformation and draw the BMD and SFD.

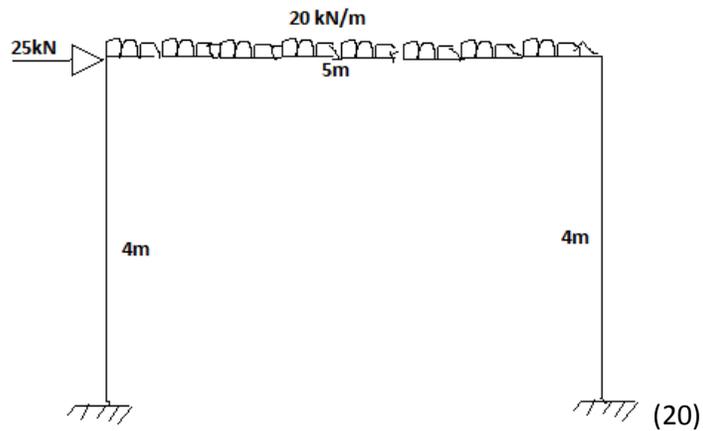


**Module II**

IV) Draw the influence line diagram for the reaction at A and bending moment at D of the continuous beam shown in figure.

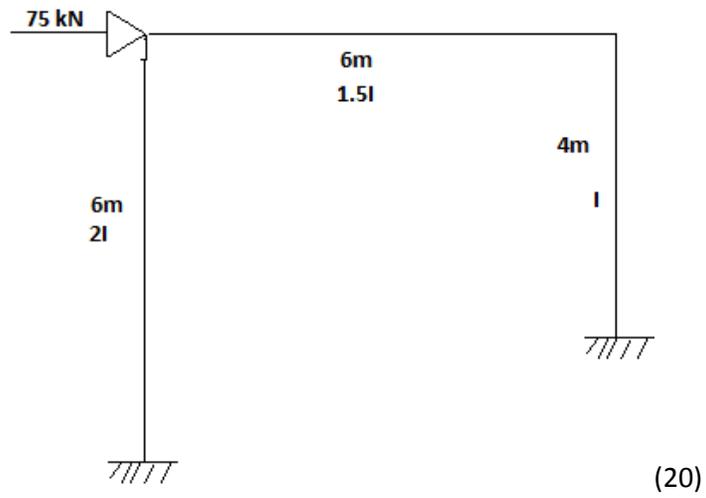


V) Analyse the beam by slope deflection method and draw the BMD

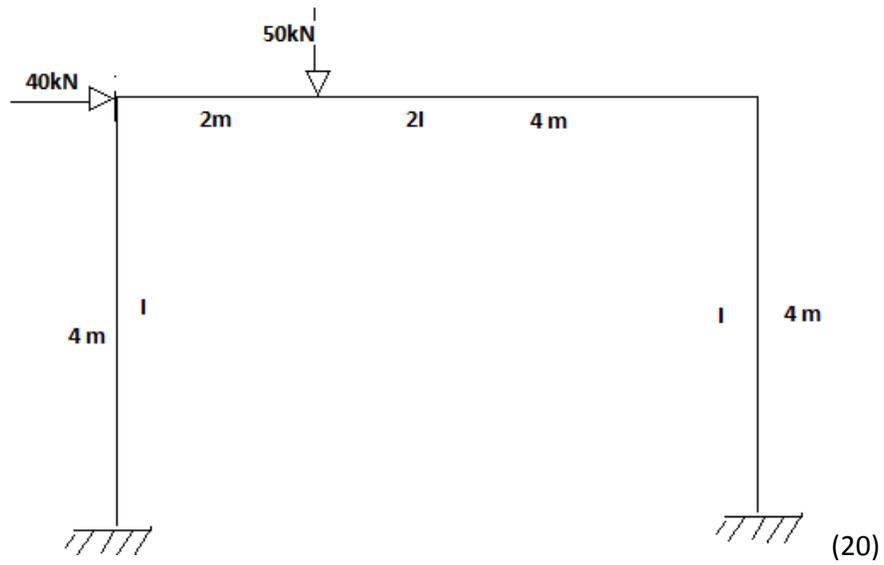


### Module III

VI) Analyse the frame by moment distribution method and draw the BMD.



VII) Analyse the frame by Kani's method.



#### Module IV

VI) a. Explain damped free vibration for single degree of freedom.

b. A vibrating system consists of a weight 60 kN and spring stiffness of 3000 N/m is viscously damped so that the ratio of two consecutive amplitudes is 1.0 and 0.8 . Determine the natural frequency of the undamped system ,logarithmic decrement, damping ratio, damping coefficient and damped natural frequency. (5+15=20)

VII) A one storey building idealized as a rigid supported by weightless columns. It was found that a lateral force of 100N is required to produce a lateral displacement of 8 mm. the displacement in the return swing was 4 mm and the period of the displacement cycle was 2 sec. From the data calculate i) damped and undamped frequencies (ii) effective weight of girders (iii) coefficient of viscous damping (iv) displacement after 5 cycles. (20)