

**Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020**  
**Structural Analysis – II**

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

**PART – A**

- 1 a. What is influence line? Explain its importance in structural analysis. (05 Marks)  
 b. The loading system shown in Fig.Q1(b) crosses a girder 25 m span with 100 kN load leading. Determine:  
 i) Maximum BM at section X 8 m from the left end of the girder and (07 Marks)  
 ii) Absolute maximum Bending Moment (BM) on the girder (ILD or otherwise) (08 Marks)

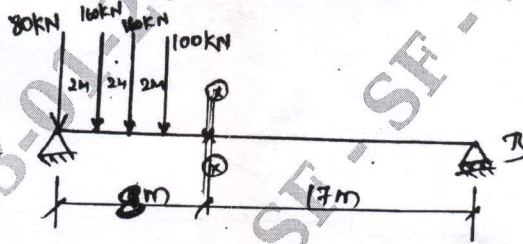


Fig.Q1(b)

- 2 Analyze the continuous beam shown in Fig.Q2 by slope deflection method. Draw BMD.

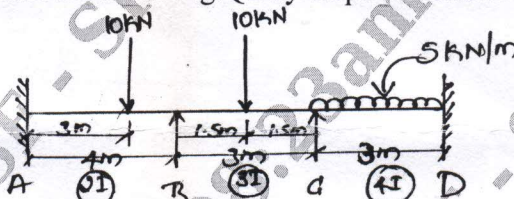


Fig.Q2

(20 Marks)

- 3 a. Define: (i) Stiffness factor (ii) Distribution factor (04 Marks)  
 b. Analyze the Portal frame by Moment Distribution Method and draw BMD for Fig.Q3(b).

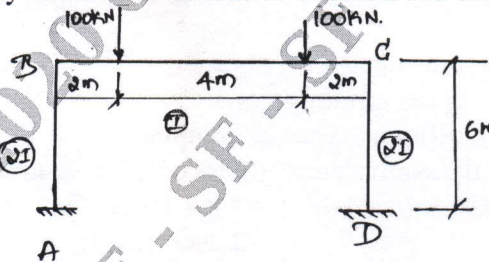


Fig.Q3(b)

(16 Marks)

- 4 Frame ABCD is subjected to a horizontal force of 20 kN at joint C as shown in Fig.Q4. Analyze and draw BMD. Using Slope Deflection Method.

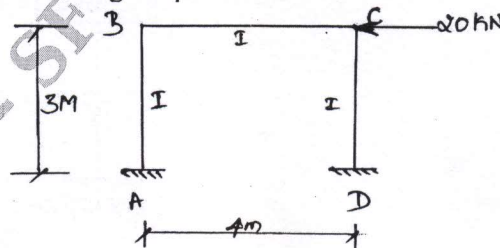


Fig.Q4

(20 Marks)

**PART - B**

5 Analyze the continuous beam shown in Fig.Q5 by Kani's method and draw BMD.

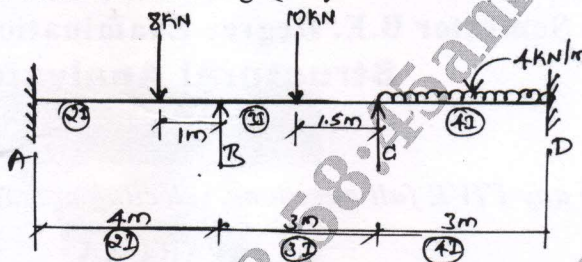


Fig.Q5



(20 Marks)

6 Analyze the frame shown in Fig.Q6 by flexibility matrix method.

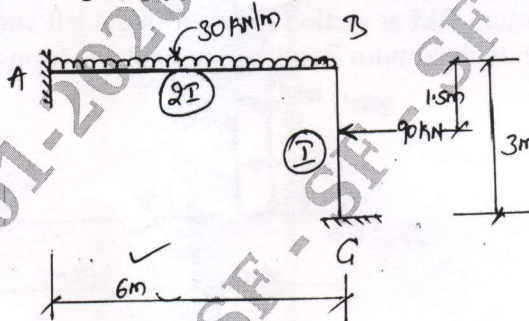


Fig.Q6

(20 Marks)

7 Analyze the rigid jointed plane frame shown in Fig.Q7 by stiffness method and draw BMD.

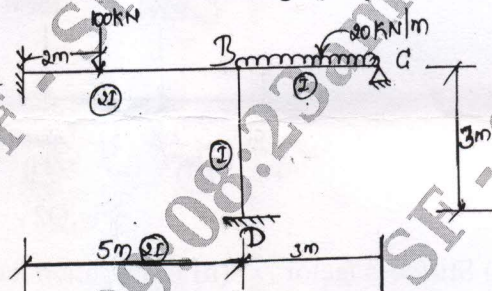


Fig.Q7

(20 Marks)

- 8 a. i) Explain the concept of vibration. (04 Marks)  
 ii) Explain types of vibration. (03 Marks)  
 iii) Explain different types of damping. (03 Marks)

b. Determine the equivalent stiffness of the system shown in Fig.Q8(b).  
 Take  $E = 210 \times 10^5 \text{ N/m}^2$ ,  $I = 3.8 \times 10^2 \text{ m}^4$ .

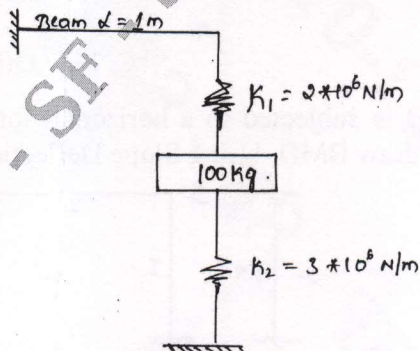


Fig.Q8(b)

(10 Marks)

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