

**Fifth Semester B.E. Degree Examination, Jan./Feb. 2021**  
**Structural Analysis – II**

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.  
 2. Assume missing data if any suitably

**PART – A**

- 1 a. Define influence line diagram and state the importance of influence lines. (04 Marks)  
 b. Draw ILD for shear force at section of the simply supported beam of span 'L'. (06 Marks)  
 c. Two wheel load of 20kN and 10kN at a fixed distance of 2m apart cross a simply supported beam of span 20m. Find maximum bending moment and positive and negative shear force at section 8m from left support of the beam. Any load can lead the other load. (10 Marks)
- 2 Analyse the continuous beam shown in Fig Q2, by using slope deflection method. Draw BMD, SFD and Elastic curve.

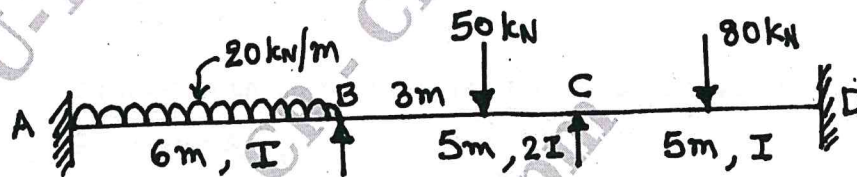


Fig Q2 (20 Marks)

- 3 Analyse the continuous beam shown in Fig Q3, by using moment distribution method. During loading support 'B' sinks by 20mm. Draw BMD and Elastic curve. Take  $EI = 10000 \text{ kN} - \text{m}^2$ .

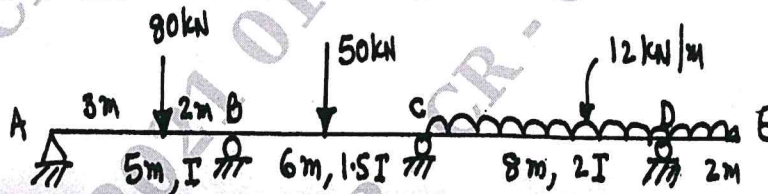


Fig Q3 (20 Marks)

- 4 Analyse the frame shown in Fig Q4, by using slope deflection method of using moment distribution method. Draw BMD and Elastic curve.

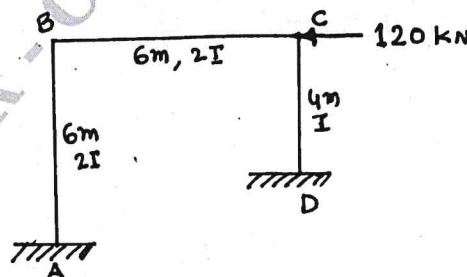


Fig Q4 (20 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART - B

5 Analyse the Frame shown in Fig Q5, by using Kani's method and draw BMD.

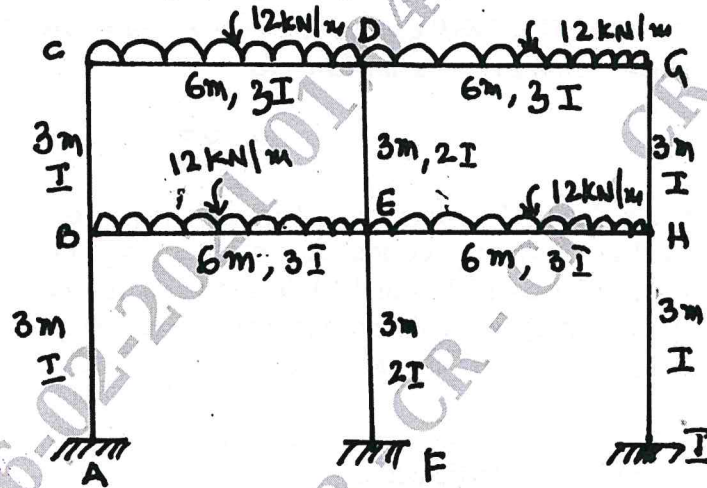


Fig Q5

(20 Marks)

6 Analyse the frame shown in Fig Q6, by using flexibility method. Draw BMD.

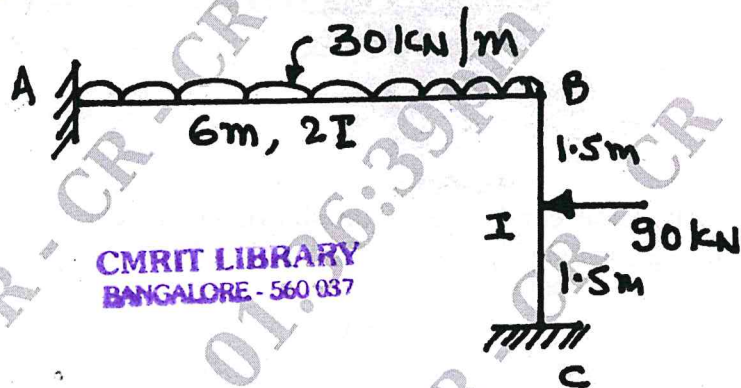


Fig Q6

(20 Marks)

7 Analyse the frame, shown in Fig Q7, by using stiffness method. Draw BMD.

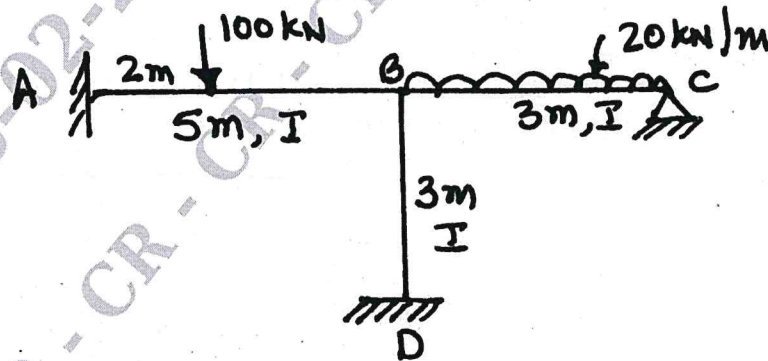


Fig Q7

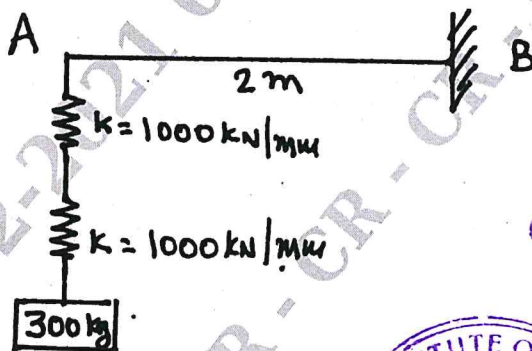
(20 Marks)

8 a. Define :

- i) Natural frequency
- ii) Free and Forced vibration
- iii) Degree of freedom
- iv) Periodic motion

(08 Marks)

b. Determine the Natural frequency and period of the system shown in Fig Q8(b).  
Take  $E = 210\text{GPa}$  and moment of inertia of the section in  $1300\text{ cm}^4$ .



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Fig Q8(b)

(12 Marks)



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