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10CV53

**Fifth Semester B.E. Degree Examination, Aug./Sept. 2020**  
**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. Draw influence line diagram, for shear force and bending moment at a section for a simply supported beam. (08 Marks)
- b. A load system moves from left to right on a girder of span 10 m. Find the absolute maximum bending moment. Refer Fig. Q1 (b). (12 Marks)

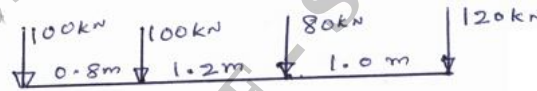


Fig. Q1 (b)

- 2 Analyse the continuous beam shown in Fig. Q2 by slope deflection method. Draw shear force diagram and bending moment diagram. B sinks by 10 mm.  $E = 2 \times 10^5$  MPa,  $I = 16 \times 10^7$  mm<sup>4</sup>. (20 Marks)



Fig. Q2

- 3 Analyse the Rigid frame shown in Fig. Q3 by moment distribution method. Draw SFD and BMD. (20 Marks)

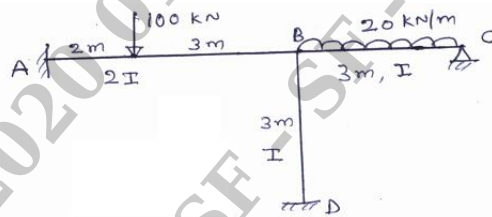


Fig. Q3

- 4 Analyze the portal frame shown in Fig. Q4 by slope deflection method. Draw BMD. (20 Marks)

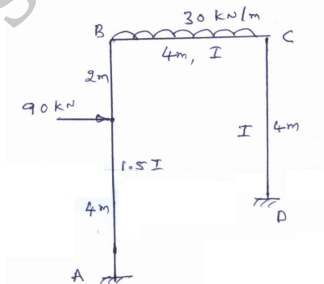


Fig. Q4

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 Analyze the continuous beam shown in Fig. Q5 by rotation contribution method. Draw BMD. (20 Marks)

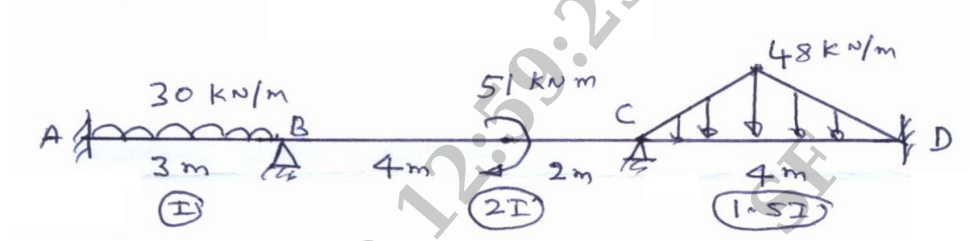


Fig. Q5

- 6 Analyze the two spanned beam shown in Fig. Q6 by flexibility matrix method. Draw BMD. (20 Marks)

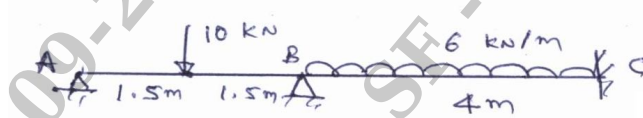


Fig. Q6

- 7 Analyze the rigid frame shown in Fig. Q7 by stiffness matrix approach method. Draw SFD. (20 Marks)

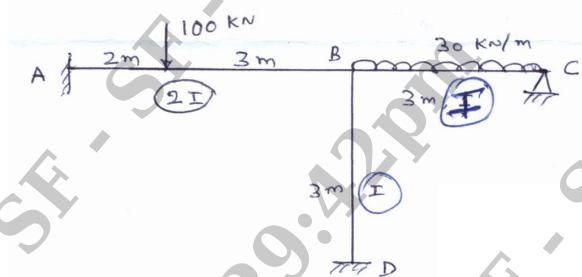


Fig. Q7

- 8 a. Explain : (i) Degree of freedom (ii) Free vibration (iii) Natural frequency (iv) Periodic motion. (08 Marks)
- b. Find the natural frequency of the two simply supported beams with attached mass system as shown in Fig. Q8 (b). Given :  $L = 1\text{m}$  ;  $EI = 1$ . (12 Marks)

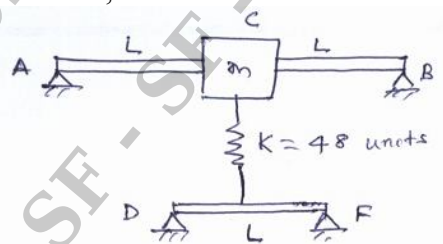


Fig. Q8 (b)

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