

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Structural Analysis – II

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.**
2. Missing data may be assumed suitably.

PART – A

- 1 a. What is an influence line? Explain its importance in structural analysis. (04 Marks)
 b. The load system shown in Fig. Q1 (b) move from left to right on a girder of span 10 m. Find the absolute maximum B.M. for the girder. Also find the maximum +ve and -ve S.F. anywhere on the beam. (16 Marks)

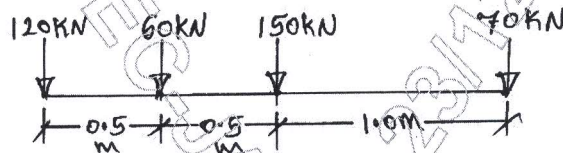


Fig. Q1 (b)

- 2 Analyse the continuous beam shown in Fig. Q2 by slope deflection method and draw B.M. diagram. Support B sinks by 1.0 mm and C rises up by 0.5 mm relative to support A. Take $EI = 30000 \text{ kN-m}^2$. (20 Marks)

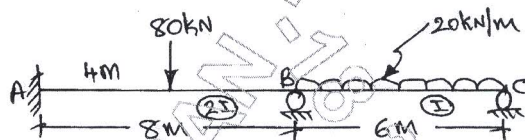


Fig. Q2

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

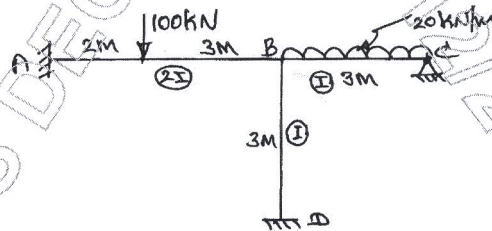


Fig. Q3

- 4 Find the total force P to be applied at C to prevent sway shown in Fig. Q4. Use slope deflection method. (20 Marks)

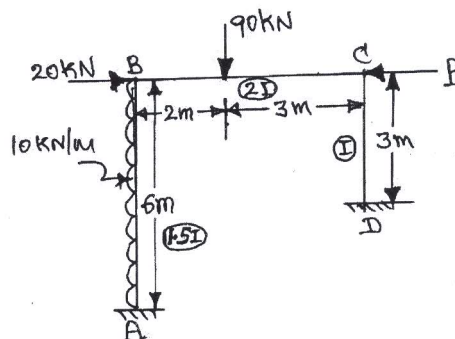


Fig. Q4

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 Analyse the multistorey building frame shown in Fig. Q5 by Kani's method and draw BMD. Use principle of symmetry only. (20 Marks)

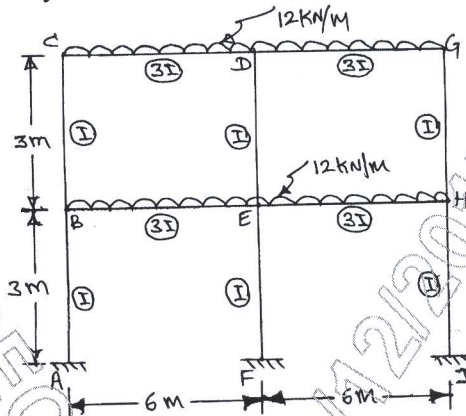


Fig. Q5

- 6 Analyse the frame shown in Fig. Q6 by flexibility matrix method. Draw BMD. (20 Marks)

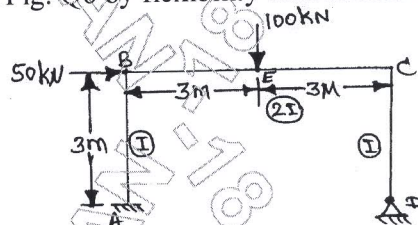


Fig. Q6

- 7 Analyse the portal frame shown in Fig. Q7 by stiffness matrix method. Draw BMD EI constant. (20 Marks)

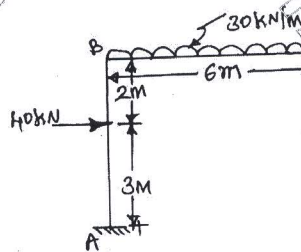


Fig. Q7

- 8 a. Define natural frequency and period of vibration. (04 Marks)
 b. Determine the natural frequency of the systems shown in Fig. Q8 (b). (10 Marks)

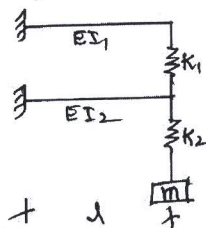


Fig. Q8 (b)

- c. Set up the differential equation of motions for the free vibration of a spring mass system. (06 Marks)
