

# CRASH COURSE

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10CV53

## Fifth Semester B.E. Degree Examination, May 2017 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 any missing data suitably.

### PART – A

- 1 A simply supported beam shown in Fig Q(1) is subjected to a set of four concentrated loads which move from left to right. Determine
- Maximum Bending moment and shear force at 6m from left support
  - Absolute shear force and absolute maximum bending moment
- use influence line principle. (20 Marks)

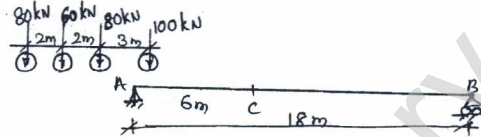


Fig Q1

- 2 Analyse a continuous beam shown in Fig Q2. Using slope deflection method. The support 'C' sinks by 10mm. Take  $EI = 3000 \text{ kN-m}^2$ . Draw BMD and elastic curve. (20 Marks)

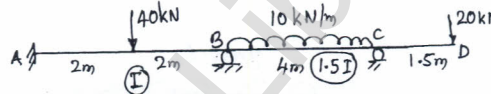


Fig Q2

- 3 Analyse the frame shown in Fig Q3. Using moment distribution method sketch BMD. Take EI constant throughout. (20 Marks)

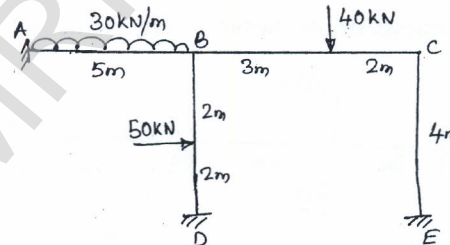


Fig Q3

- 4 Analyse the frame shown in Fig Q4 using moment distribution method. Sketch BMD. (20 Marks)

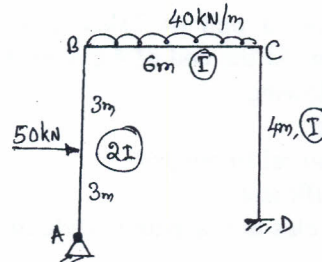


Fig Q4  
1 of 2

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 using Kani's method. Sketch BMD. (20 Marks)

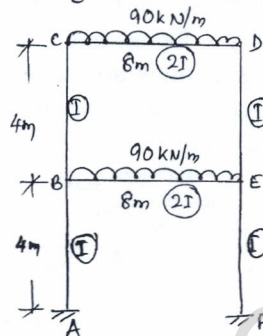


Fig Q5

- 6 Analyse the continuous beam shown in Fig Q6. Using flexibility matrix method. Sketch BMD. (20 Marks)

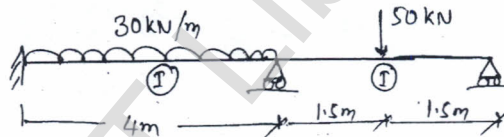


Fig Q6

- 7 Analyse the continuous beam shown in Fig Q7 using stiffness matrix method. Sketch BMD. (20 Marks)

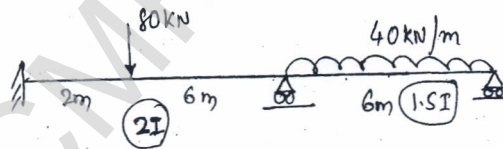


Fig Q7

- 8 a. Explain :  
 i) Degree of freedom ii) Damping iii) Free and Forced vibration iv) Natural frequency. (08 Marks)
- b. In a free vibration test, a pull of 73kN is applied to a elevated tank to give an initial displacement of 50mm. At the end of 4 cycles with time 2sec, the amplitude is 25mm. From these compute the following :  
 i) Damping ratio  
 ii) Undamped natural frequency  
 iii) Damping coefficient  
 iv) Number of cycles to reach amplitude of 5mm. (12 Marks)

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