

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017**

Course Code: CE303

Course Name: STRUCTURAL ANALYSIS –II (CE)

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer any two full questions, each carries 15 marks.*

Marks

- 1 Derive the three-moment theorem equations for general loading. (15)
- 2 a) Analyse the continuous beam shown in Fig. 1, using three-moment theorem (Assume  $EI$  as constant throughout the beam). Draw BMD. (7)

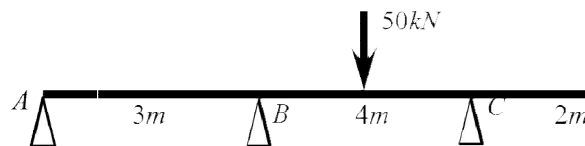


Fig. 1

- b) Find the bending moments at B and C of the continuous beam shown in Fig. 1, using slope deflection method (Assume  $EI$  as constant throughout the beam). (8)
- 3 Analyse the 2D frame shown in Fig. 2, using slope deflection method. Draw BMD. (15)

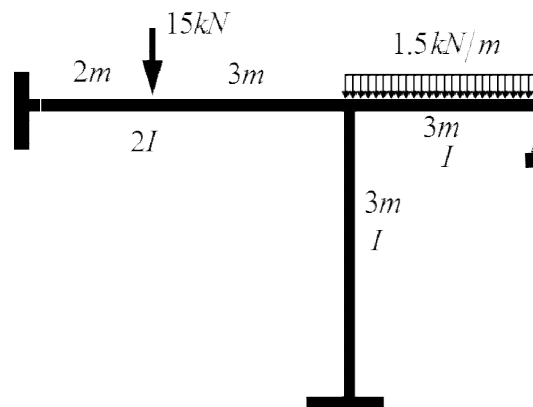


Fig. 2

(15)

**PART B***Answer any two full questions, each carries 15 marks.*

- 4 Analyse the 2D frame shown in Fig. 2, using moment distribution method. Draw BMD. (15)
- 5 a) Derive expressions for stiffness at the near-end and carry over factor for a beam (8)

with hinged far-end.

- b) Differentiate between moment distribution method and Kani's method. (7)
- 6 Analyse the 2D frameshown in Fig. 3, using Kani's method. Draw BMD. (15)

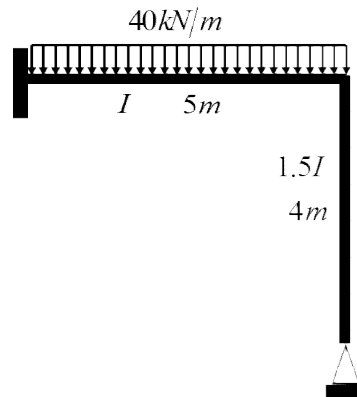


Fig.3

(15)

### PART C

*Answer any two full questions, each carries 20 marks.*

- 7 Analyse and draw bending moment and twisting moment diagrams for a beam semi-circular in plan, and supported at three equally spaced hinges. The radius of the beam in plan is 3m, and it carries a UDL of 10kN/m. (20)
- 8 a) Derive expressions for shear force, bending moment and torsion of a beam with the shape of a quadrant of a circle in plan, fixed at one end and free at the other, with a point load at the free end. (10)
- b) Find out shape factor for an isosceles triangular section of base  $b$  and height  $h$ . (10)
- 9 Find the plastic moment capacity required for the beam shown in Fig. 4. Assume uniform section throughout. (20)

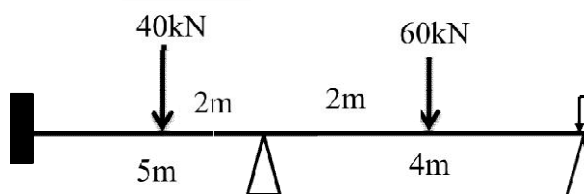


Fig. 4

(20)

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