Reg No.:_____ Name:_____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S, FE) / S3 (PT) (S,FE) Examination June 2024 (2015 Scheme)

JYOTHI ENGG. COLLEGE LTD. THRISSUR EDUCATIONAL TRUST LEAD KINDLY LIGHT CHERUTHURUTHY

Course Code: CE303

Course Name: STRUCTURAL ANALYSIS -11

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) Analyse the continuous beam ABC shown in Fig. 1 using three moment equation. Draw the bending moment diagram. EI is constant throughout. (15)

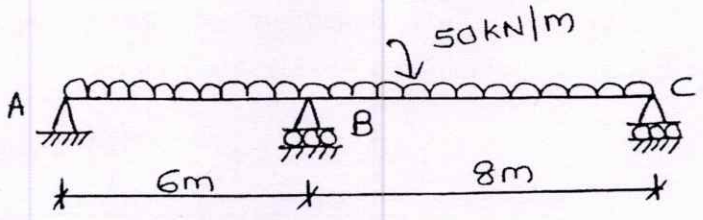

Fig. 1

2 a) Analyse the continuous beam shown in Fig. 2 by slope deflection method. Draw the bending moment diagram. (15)

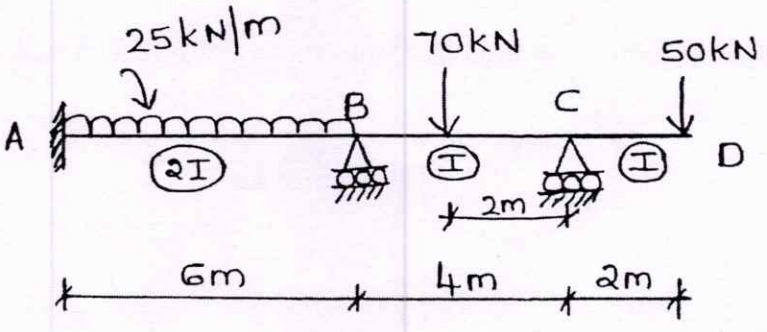

Fig. 2

3 a) Analyse the frame shown in Fig. 3 using slope deflection method. Draw the bending moment diagram. (15)

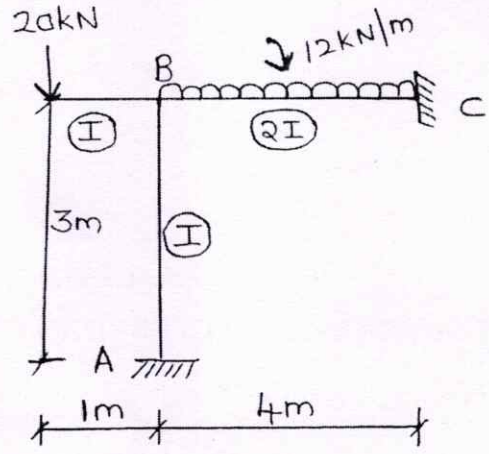

Fig. 3

PART B

Answer any two full questions, each carries 15 marks.

4 a) Analyse the continuous beam shown in Fig. 4 by moment distribution method. (15)

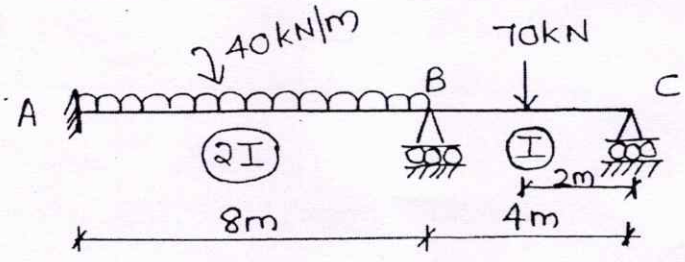

Fig. 4

5 a) Analyse the portal frame in Fig. 5 using moment distribution method. (15)

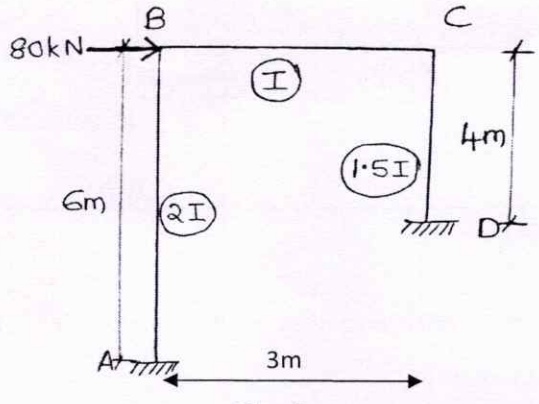

Fig. 5

6 a) Analyse the frame in Fig. 5 using Kani's method. (15)

PART C

Answer any two full questions, each carries 20 marks.

7 a) A semicircular girder is fixed at both ends. It is subjected to a udl over its entire span. Determine the expression for the moment at mid-span. Also determine the expression for bending moment, shear force and torsional moment at any point in the beam. (15)

b) Which are the forces developed at a section in a curved beam? (5)

8 a) State the major assumptions in plastic theory. (6)

b) Define (a) Plastic hinge (b) Plastic moment capacity (c) Shape factor (6)

c) Derive the shape factor for a rectangular section of depth 'd' and width 'b'. (8)

9 a) Explain the different methods for plastic analysis. (6)

b) Calculate the plastic moment capacity required for the continuous beam with working loads, as shown in Fig. 6. Take load factor=1.5. (14)

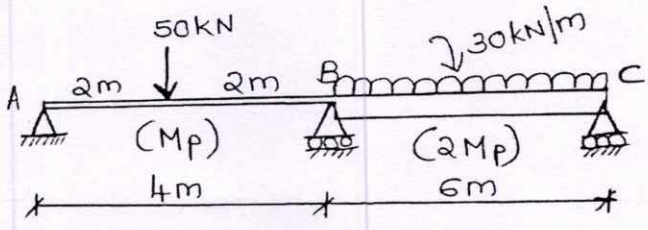

Fig. 6

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