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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020

Course Code: CE303

Course Name: STRUCTURAL ANALYSIS -II

Max. Marks: 100 Duration: 3 Hours

PART A

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

1 Analyse the continuous beam given in Fig.1 using Three moment equation. Also draw SFD and BMD. (15)

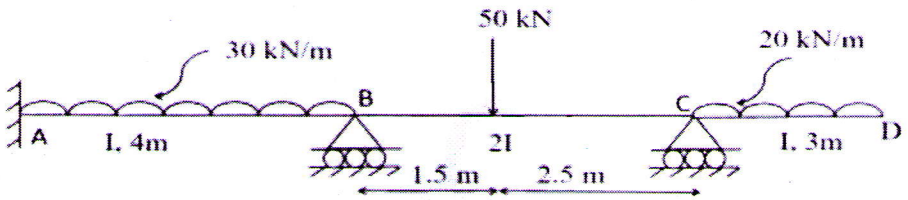

Fig.1

2 a) Write three moment equation and mention the terms involved it. (4)

b) How will you account for support settlement in the analysis of continuous beams by three moment equation? (3)

c) Analyse the continuous beam given in Fig.1 by Slope deflection method and draw BMD. (8)

3 Analyse the portal frame given in Fig.2 using Slope deflection method and draw BMD. (15)

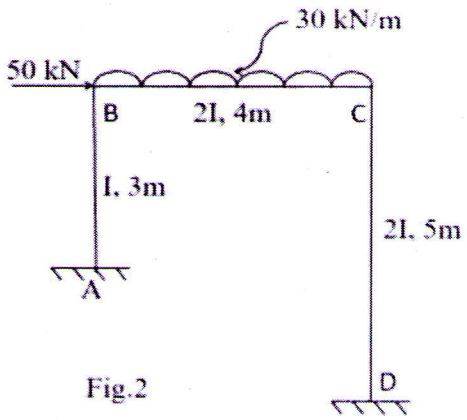

Fig.2

PART B

Answer any two full questions, each carries 15 marks.

4 a) Differentiate between absolute stiffness and relative stiffness. (5)

b) Analyse the continuous beam given in Fig.3 by Moment distribution method and draw BMD. (10)

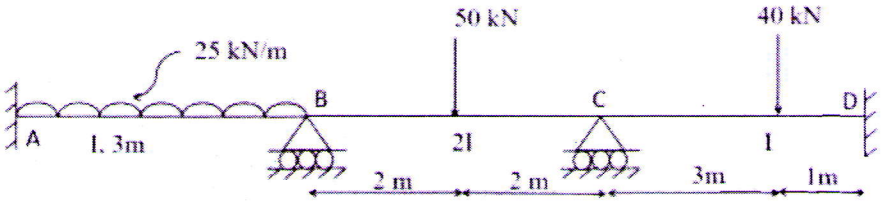

Fig.3

5 a) With the help of suitable figures, list the conditions under which a portal frame may sway laterally. (5)

b) Write down the analysis procedure of a continuous beam by Kani's method. (5)

c) What do you understand by support settlement and how does it affect the final moments in a continuous beam? (5)

6 Analyse the portal frame in Fig.4 by Kani's method and draw BMD. (15)

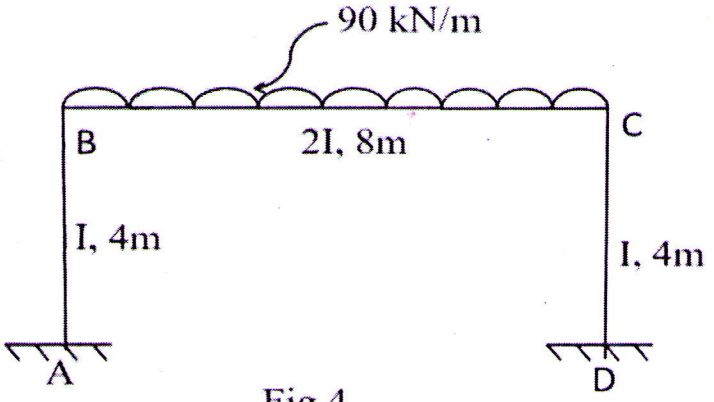

Fig.4

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 on three equally spaced hinges. The radius of the beam is 3.5 m and it carries a udl of 20 kN/m. (20)

8 a) Derive the expression for deflection at free end of a beam in the shape of a quadrant of a circle in pla, fixed at one end, with a point load at the free end. (8)

b) Calculate the plastic moment capacity of the portal frame shown in Fig.5 assuming same plastic moment for all members. (12)

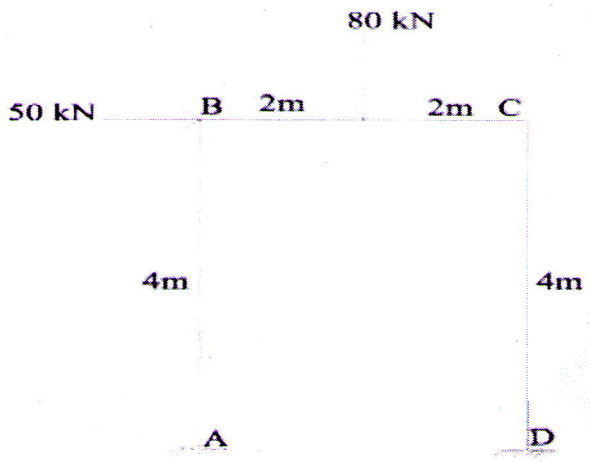

Fig.5

9 a) List the assumptions in Plastic theory. (5)

b) Define shape factor and derive the same for a circular section of diameter D. (7)

c) Calculate the plastic moment capacity of the continuous beam shown in Fig.6. (8)

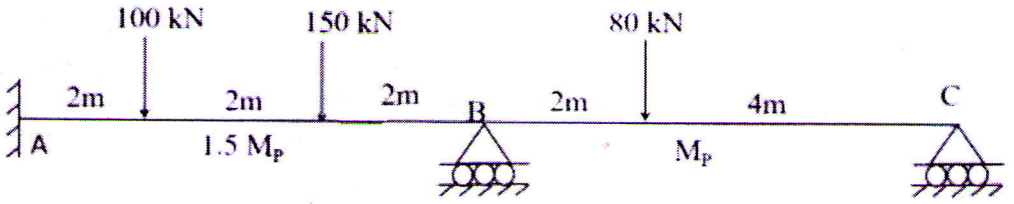

Fig.6

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