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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code: CE303

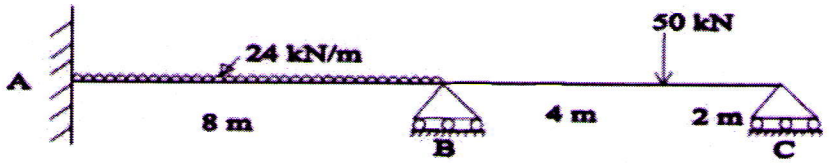
Course Name: STRUCTURAL ANALYSIS -11

Max. Marks: 100 Duration: 3 Hours

PART A

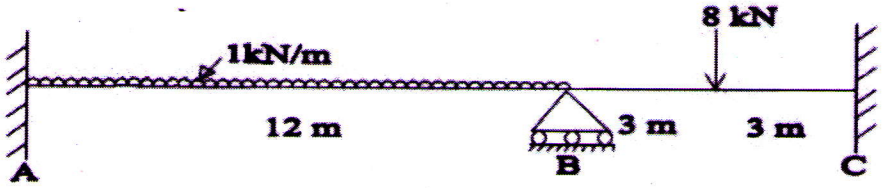
Answer any two full questions, each carries 15 marks. Marks

1 a) Analyse the continuous beam shown below using theorem of three moments. The support B sinks by 30 mm and C by 10 mm. Take EI= 10MNm^2 (15)

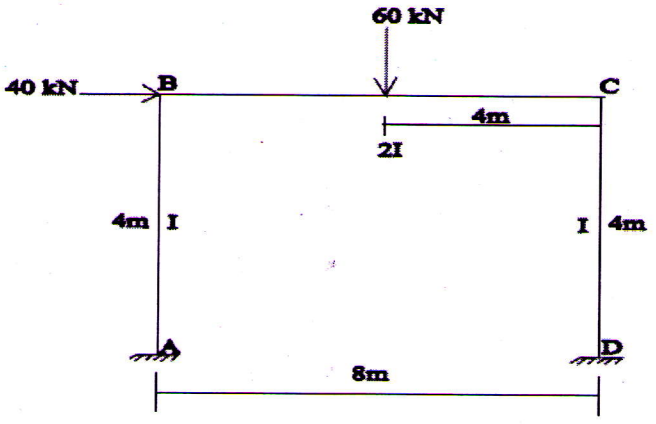


2 a) What is sway in frames and how can it be prevented? (3)

b) Using slope deflection method, draw the BMD and SFD of the continuous beam shown below. The support B sinks by 10 mm. Take EI= 6000 kNm^2 (12)



3 a) Analyse the portal frame shown in figure by slope deflection method and draw the BMD. (15)

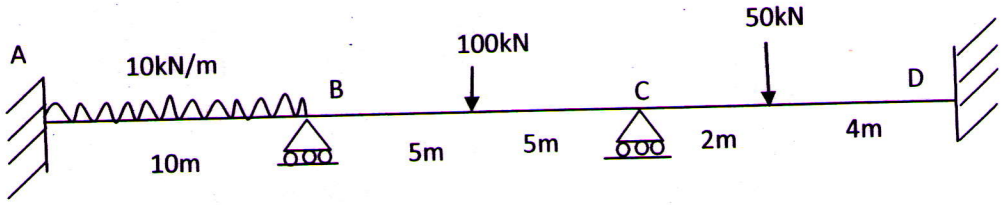


PART B

Answer any two full questions, each carries 15 marks.

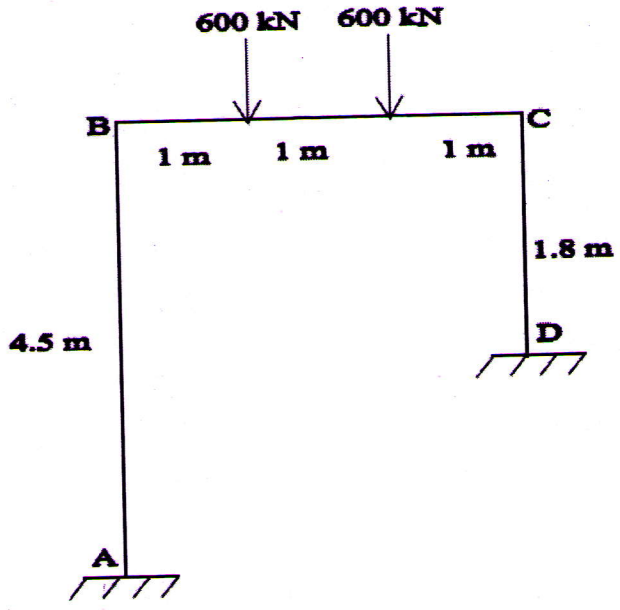
4 a) Define i) Stiffness ii) Carry over factor and iii) Distribution factor (3)

b) Analyse the continuous beam shown below by moment distribution method and draw the BMD. (12)



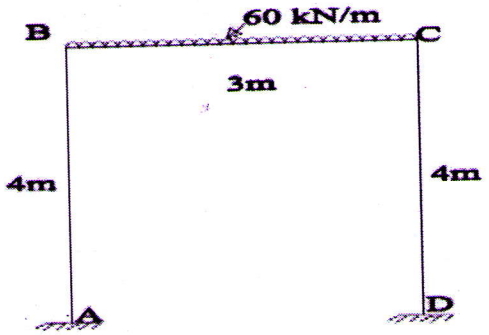
EI is constant

5 a) A stiff jointed frame ABCD shown in figure is of constant section throughout. Analyse the frame by moment distribution method (15)



6 a) Define i) Rotation factor ii) Displacement factor and iii) Storey moment (3)

b) Analyse the frame shown in figure by Kani's method. Assume moment of inertia of columns as 1.5 times that of beam. (12)



PART C

Answer any two full questions, each carries 20 marks.

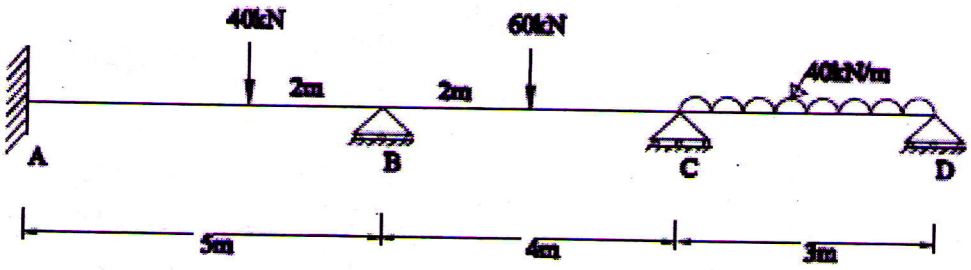
7 a) Analyse and draw bending moment and twisting moment diagrams for a beam semi-circular in plan, and supported at three equally spaced hinges. The radius of the beam in plan is 3m, and it carries a UDL of 15 kN/m. (15)

b) Compare the structural behaviour of a beam curved in plan with that of a similar straight beam spanning over the same horizontal distance and support conditions, when subjected to vertical load. (5)

8 a) Write the significance of plastic analysis. What are the assumptions made in plastic analysis (5)

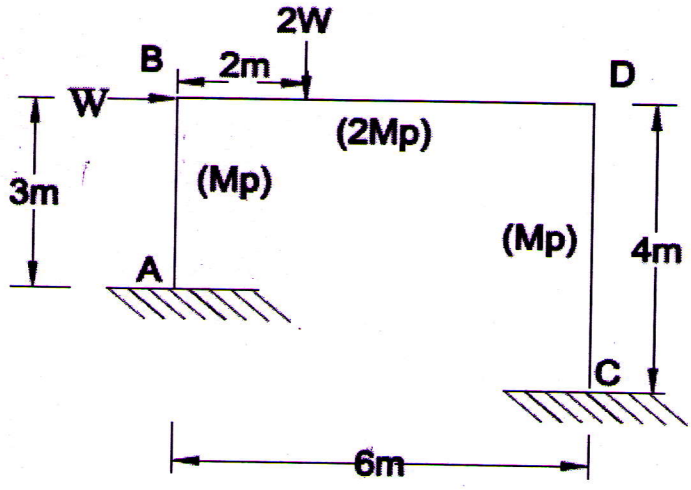
b) Define i) Plastic moment ii) Plastic modulus and iii) Shape factor (3)

c) Determine the plastic moment capacity M_P required for the continuous beam shown in figure. Assume uniform section throughout. (12)



9 a) Explain Kinematic method of plastic analysis. (5)

b) Determine the collapse load W_C in the frame given below (15)



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