Reg No.:_____ Name:_____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (S, FE) May 2024/ S5 (PT) (S,FE) June 2024 Examination (2015 Scheme)

Course Code: CE403

Course Name: STRUCTURAL ANALYSIS - III

Max. Marks: 100 Duration: 3 Hours

PART A

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

1 a) Explain different approximate methods used in the analysis of frames. (4)

b) Analyse the frame shown in Figure 1 using portal method. (11)

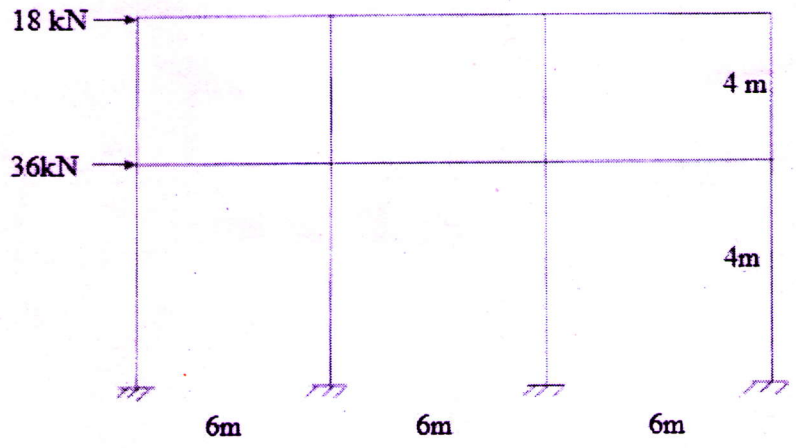

Figure 1

2 a) What are the assumptions in cantilever method of analysis? (2)

b) Analyse the frame shown in Figure 1 using cantilever method. (13)

3 a) Compare nodal degrees of freedom and joint degrees of freedom. (5)

b) Differentiate between flexibility method and stiffness method. (5)

c) What is the relationship between stiffness and flexibility matrix? (5)

PART B

Answer any two full questions, each carries 15 marks.

4 Analyse the portal frame using stiffness method. (15)

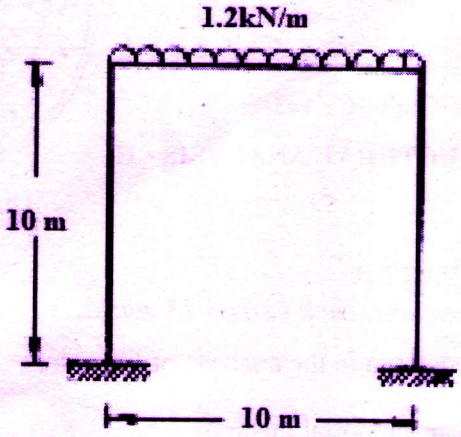

Figure 2

5 Analyse the continuous beam using stiffness method and draw the BMD. (15)

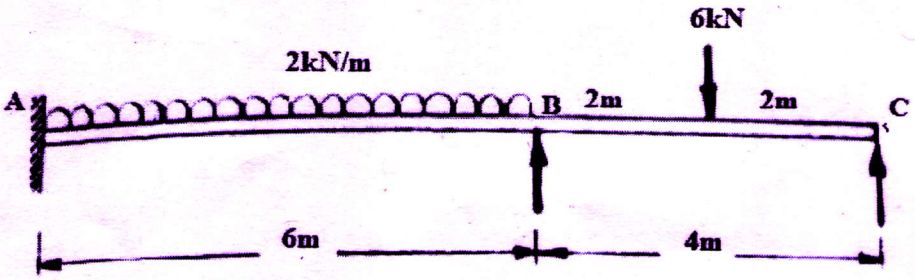

Figure 3

6 Analyse the rigid frame using flexibility method. Assume uniform EI. (15)

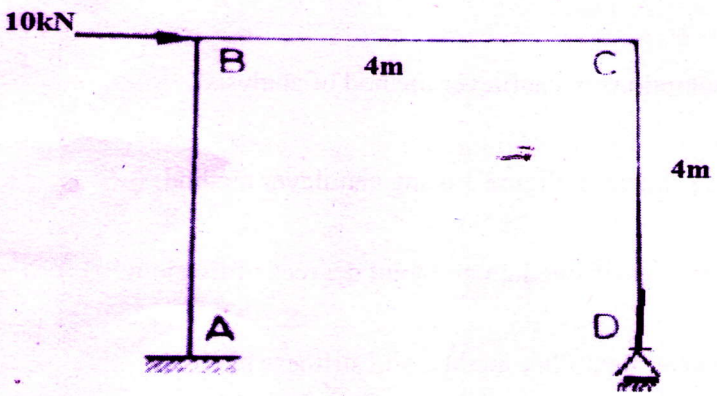

Figure 4

PART C

Answer any two full questions, each carries 20 marks.

7 a) Analyse the frame using direct stiffness method. Draw BMD. (15)

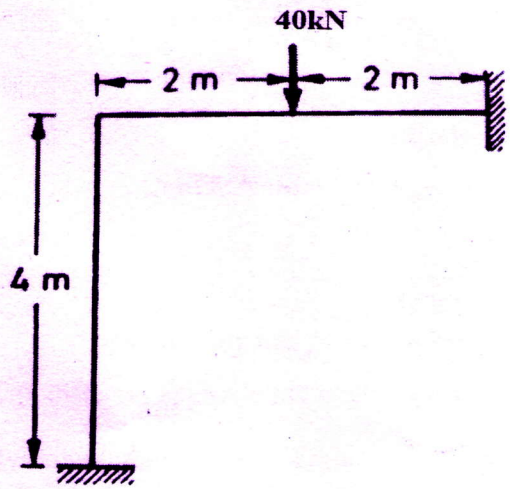

Figure 5

b) Explain the rotation of axes in two dimension. (5)

8 a) Analyse the beam using direct stiffness method. Draw BMD. (15)

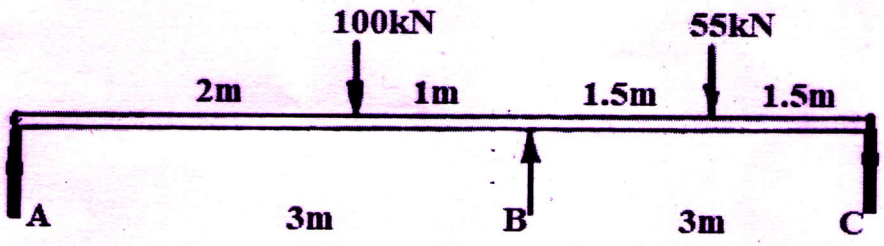

Figure 6

b) Explain about vibration isolation. (5)

9 a) Derive the equation of motion of a SDOF system subjected to un-damped free vibration and subsequently the displacement (motion) form. (12)

b) Differentiate between steady state and transient vibration. (4)

c) Explain the components of a basic dynamic system. (4)

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