Code No: 126DZ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech III Year II Semester Examinations, May - 2016

STRUCTRUAL ANALYSIS - II

(Common to CE, CEE)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A (25 Marks)

1.a) Distinguish between the joint stiffness factor and the modified stiffness factor. [2]

b) Define the carry-over factor and obtain the carry-over factor for a beam of prismatic member shown in Fig. 1. [3]

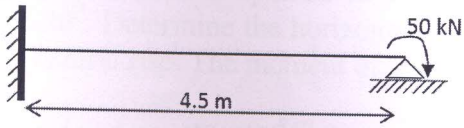

Fig. 1

c) Define kinematic degrees of freedom with two examples. [2]

d) A two hinged parabolic arch of span *'L'* and central rise '*H*' is subjected to uniformly distributed load *'w/m'* over its entire span. Determine the horizontal thrust. [3]

e) What is a substitute frame? [2]

f) Explain the cantilever method of frame analysis. [3]

g) Distinguish between static and kinematic indeterminacy. [2]

h) Explain the procedure of stiffness method of analysis. [3]

i) Differentiate between the internal and external indeterminacies. [2]

j) Draw the ILD for the support moment at the fixed support of a propped cantilever beam. [3]

PART - B (50 Marks)

2. Using moment distribution method, analyse the frame supported and loaded as shown in Fig.2. Draw BMD. [10]

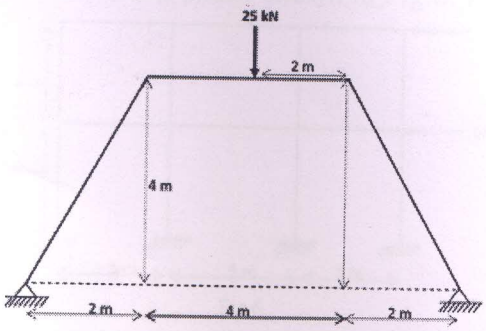

Fig.2

OR

3. Analyse the frame shown in Fig.3 by Kani's method. Draw BMD and elastic curve. [10]

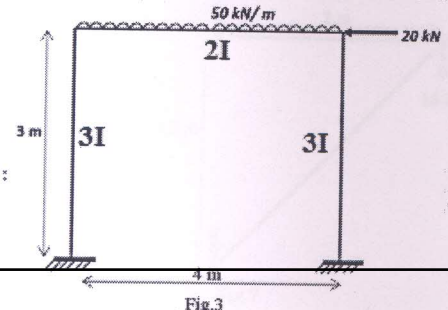

Fig.3

Analyse the frame shown in Fig.4, by Slope-deflection method. Assume the constant flexural rigidity. Draw BMD. [10]

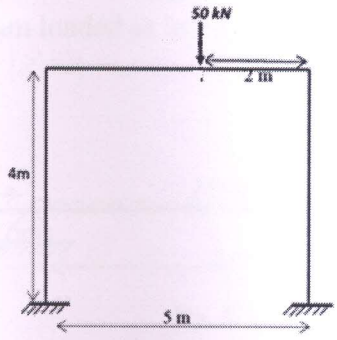

Fig.4

OR

5. A two hinged steel parabolic arch of span 30 m and central rise 6 m is subjected to a rise of temperature of 30^0. Determine the horizontal thrust developed in the arch. Also find the change in the central rise. The moment of inertia of the arch at the crown is 125×10^8 mm^4.
Adopt $E = 2\times10^5$ N/mm^2 and $\alpha = 12\times10^{-6}/^0C$. [10]

6. Analyse the frame shown in Fig.5, using cantilever method. Draw BMD. [10]

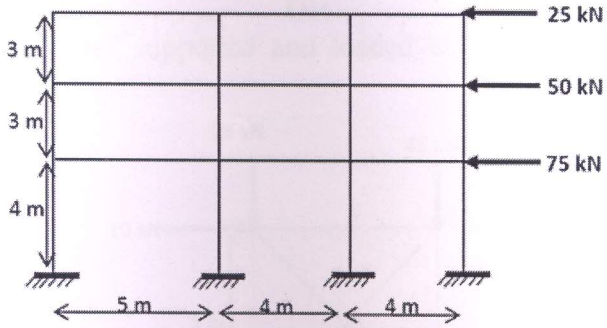

Fig.5

OR

7. Using portal method, analyse the frame shown in Fig.6. Draw BMD. [10]

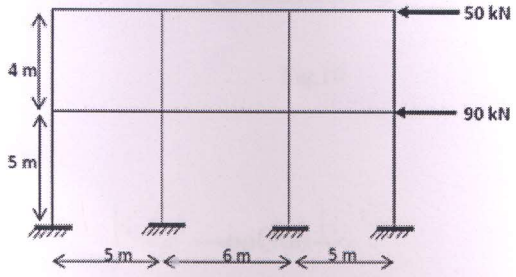

Fig.6

8. Analyse the plane truss supported and loaded as shown in Fig.7. Adopt the cross-sectional area of each member is 1200 mm^2 and modulus of elasticity is 200 kN/mm^2. [10]

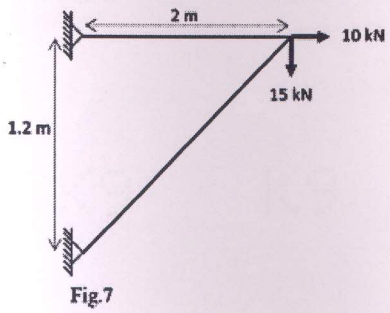

Fig.7

OR

Analyse the continuous beam loaded as in Fig. 8 by flexibility method. Draw BMD and elastic curve. [10]

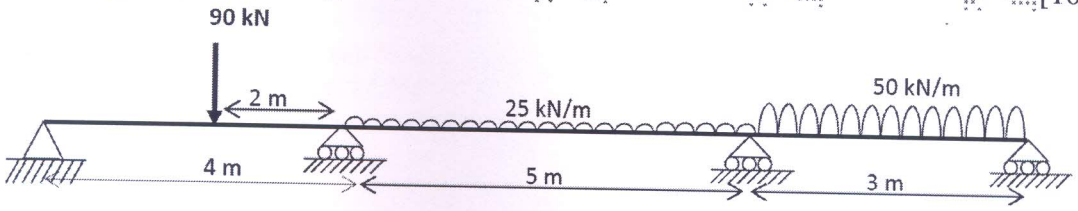

Fig. 8

10. Draw the influence line diagram for the bending moment at the section X-X of a beam supported as shown in Fig. 9. [10]

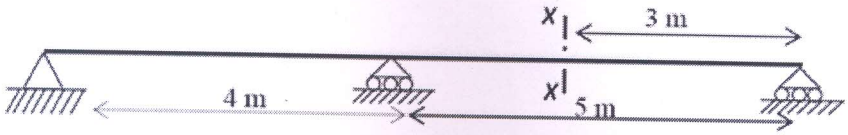

Fig. 9

OR

11. Analyse the plane truss supported and loaded as shown in Fig.10. Assume AE is constant. [10]

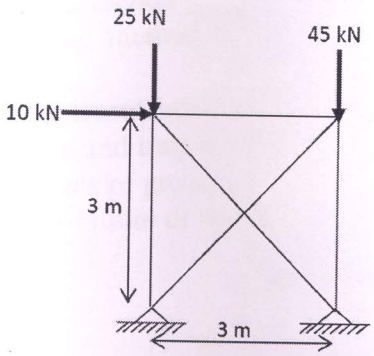

Fig.10

---ooOoo---