Code No: 126DZ

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech III Year II Semester Examinations, May - 2017
STRUCTURAL 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) Define Carryover factor and rotation factor. [2]
b) Calculate the distribution factors at the joints of the frame shown below figure 1. [3]

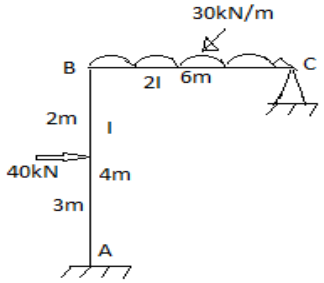

Figure 1

c) What is the effect of rib shortening in two hinged arch. [2]
d) Draw elastic curve and bending moment diagram for the Frame shown in Figure 2. [3]

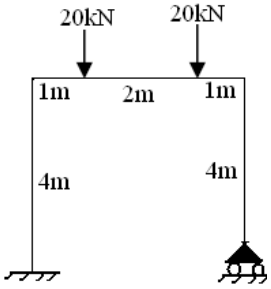

Figure 2

e) What are the assumptions made in the portal method? [2]
f) Draw the axial force, shear force and bending moment diagrams (qualitatively) of the frame loaded as shown below figure 3. [3]

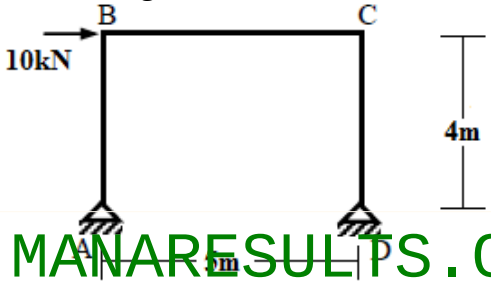

Figure 3

g) Define Stiffness and Flexibility. [2]

h) Differentiate static and kinematic indeterminacy of structure, what is the SI and KI of the beam shown below figure 4. [3]

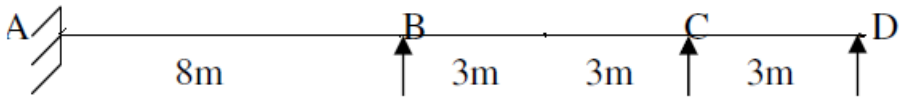

Figure 4

i) What is the static indeterminacy of truss shown figure 5 below: [2]

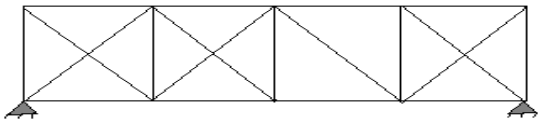

Figure 5

j) Draw ILD (Qualitatively) for the continuous beam shown in Figure 6 below. [3]

Figure 6

PART - B

(50 Marks)

2. Analyze the continuous beam shown in figure 7 by Kani's method and draw BMD. [10]

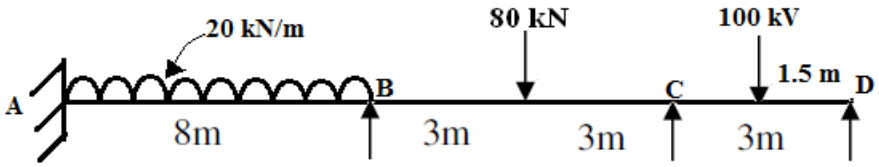

Figure 7

OR

3. Analyze the portal frame shown below figure 8 by moment distribution method. [10]

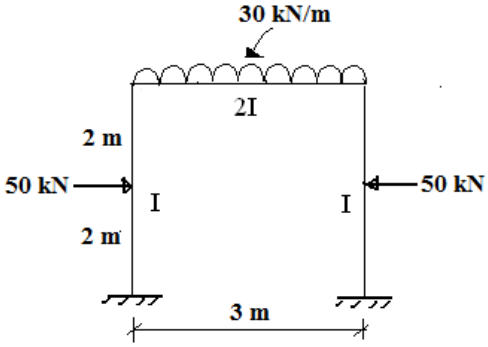

Figure 8

4. A two hinged parabolic arch has a span of 35m and a central rise of 7m. Calculate the bending moment, radial shear and normal thrust at a section distant 10m from the left hinge, due to a single point load of 6kN acting at 12m from the right support. [10]

OR

5. Analyze the portal frame shown in figure 9 by slope-deflection method. [10]

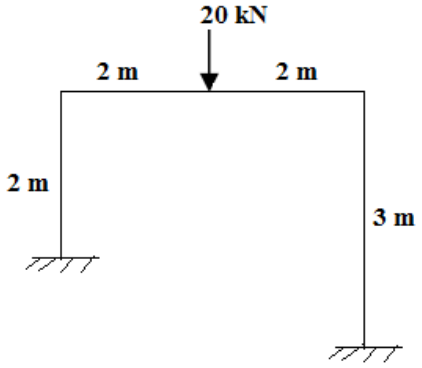

Figure 9

6. Analyze the frame shown in Figure 10 using portal method. [10]

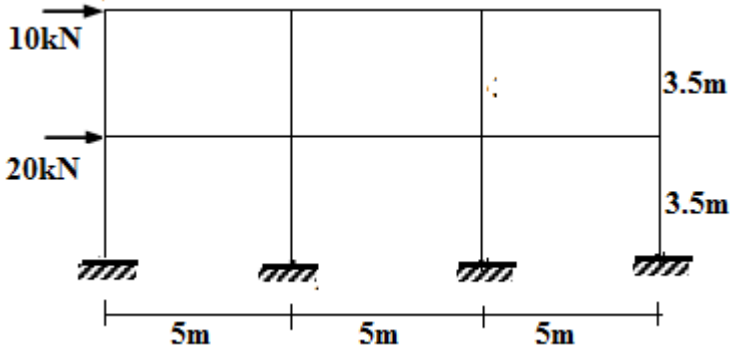

Figure 10

OR

7. Analyze the building frame shown in Figure 11 below by cantilever method. [10]

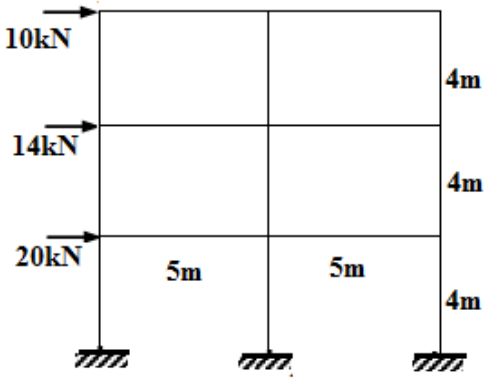

Figure 11

8. Analyze the continuous beam shown in Figure 12 using Flexibility method and draw the Bending moment diagram. [10]

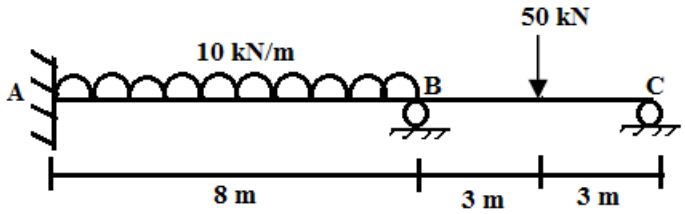

Figure 12

OR

9. Analyze the frame by stiffness matrix method, and draw BMD, take EI as constant. (Figure 13) [10]

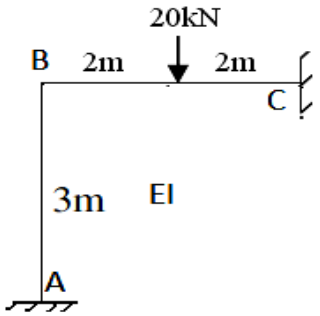

Figure 13

10. Draw the influence line for moment at 'B' M_B for the two span continuous beam ABC simply supported at A and C, AB=4m, BC=5m. EI is constant. [10]

OR

11. A truss is loaded as shown in figure 14. All the members of the truss have same cross sectional area. Find the axial force in the member BC and DE. [10]

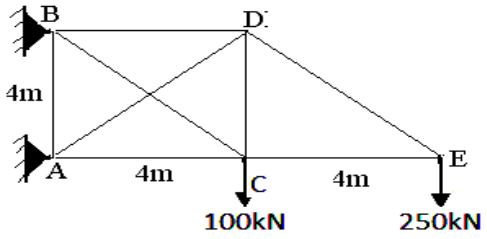

Figure 14

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