Code: CE5T4

III B.Tech - I Semester – Regular/Supplementary Examinations October 2017

STRUCTURAL ANALYSIS - II
(CIVIL ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11x 2 = 22 M

1.

a) Write Slope Deflection equation for any beam when supports are at different levels?

b) Modification in final moment equation, when continuous beam end support is simply supported or hinged?

c) What are the assumptions made in substitute frame method?

d) What is relative stiffness of a member whose farther end is hinged or simply supported?

e) Define the term Rotational factor.

f) Write the equation to calculate final bending moment from the iteration of Kani's method.

g) Explain about Muller – Breslau principle.

h) Explain about Castigliano's first theorem.

i) What are the various methods available to calculate the member of forces in a truss?

j) A two hinged parabolic arch of span 30 m and raise of 6m carries a point load of 60 kN at a distance of 10 m from the left support. How would you calculate the value of vertical reaction at each support?

k) Explain about Rib shortening in two hinged arches.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. Analyse and draw SFD & BMD for the continuous beam shown in Figure-1 by using Slope Deflection Method.

16 M

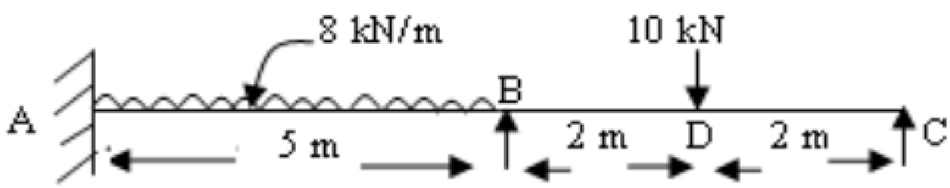

Figure-1

3. Analyse the Portal frame shown in Figure-2 by using Moment Distribution Method. Draw SFD and BMD. 16 M

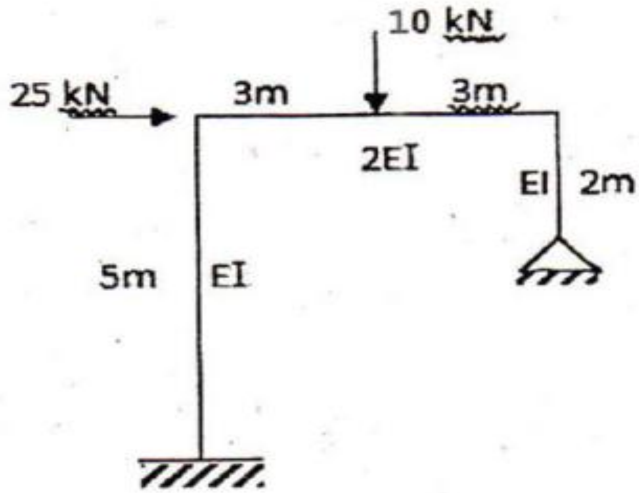

Figure-2

4. Analyse the portal frame in Figure-3 by using Kani's method. Draw SFD and BMD. 16 M

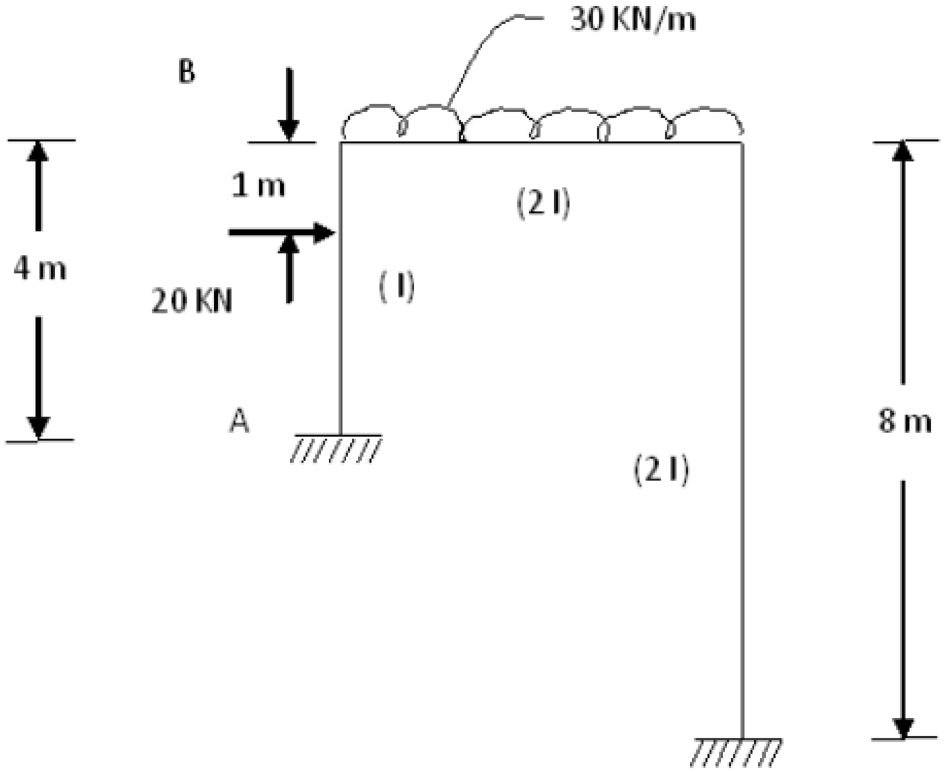

Figure -3

5. Calculate the member forces of given truss shown in Figure 4 by using method of joints and indicate whether the member is in tension or compression? 16 M

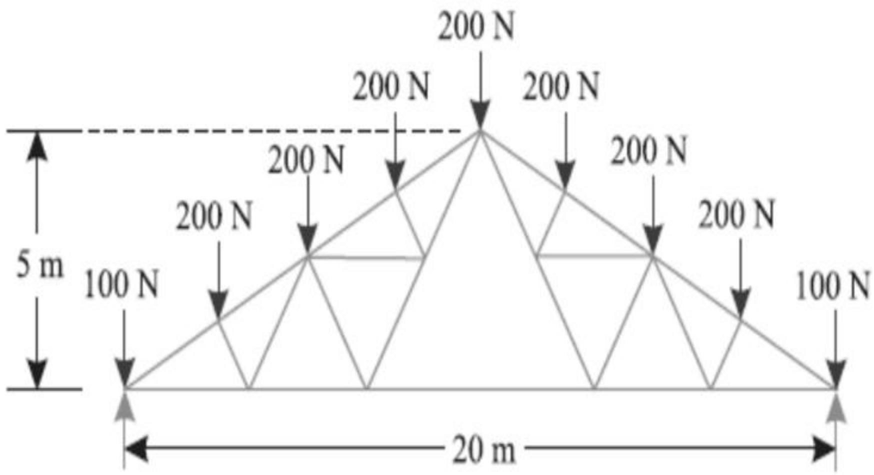

Figure-4

6. a) Write any three methods for calculation of deflections in rigid joint plane frames. Explain briefly about any one method. 6 M

b) A two hinged symmetrical semicircular arch has a span of 24 m and a rise of 12 m. The arch carries a vertical load of 120 kN at the left quarter span. Calculate the Horizontal thrust at the supports. Calculate the normal thrust and radial shear at the right quarter span. 10 M