PVP 14

Code: CE5T4

III B.Tech - I Semester – Regular/Supplementary Examinations
October 2019

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) Distinguish between force method and displacement method.
b) What are the advantages of Kani's method over moment distribution method?
c) What is the difference between beam action and arch action?
d) What are the assumptions made in Substitute frame method?
e) What are the internal forces developed at any point in arch?
f) Define rotation factor and distribution factor.
g) State Muller- Breslau principle.
h) Determine the Kinematic and static indeterminacy of the beam as shown in figure-1.

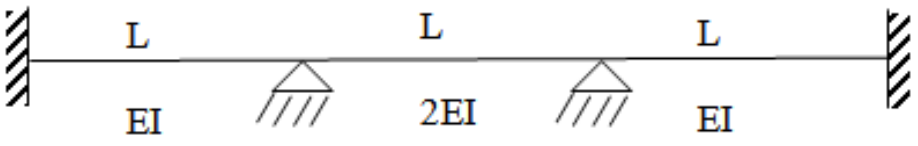

Figure-1

i) When do you require sway analysis of a portal frame and write the shear equation for the case of frame with side sway

j) State Castigliano's theorems.

k) What are the various methods available for the calculation of member forces in pin jointed frames?

PART – B

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

3 x 16 = 48 M

2. Analyze the beam as shown in figure-2 using Slope deflection method. 16 M

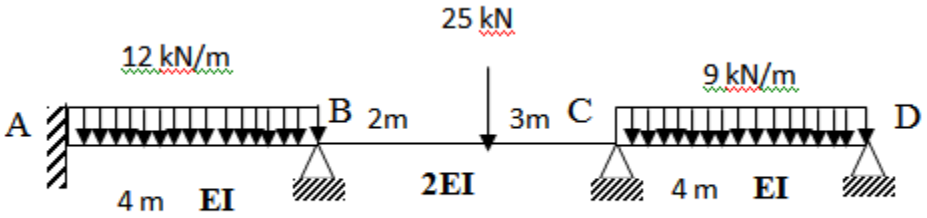

Figure-2

3. Analyze the portal frame ABCD shown in figure-3 using Moment distribution method. Given $I_{AB}:I_{BC}:I_{CD}$ =1:2:4

16 M

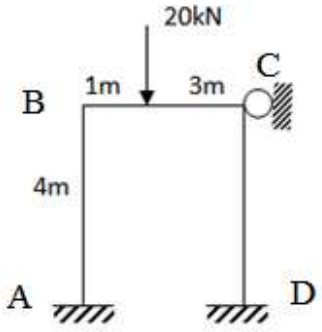

Figure - 3

4. Analyze the continuous beam shown in figure-4 using Kani's method. The support 'B' sinks by 2mm for the beam $I=13160 \times 10^4 mm^4$; $E=2 \times 10^5 N/mm^2$. 16 M

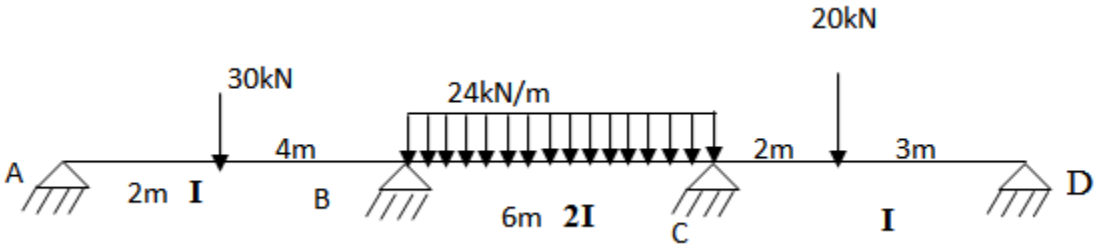

Figure-4

5. Analyze the truss as shown in figure-5. 16 M

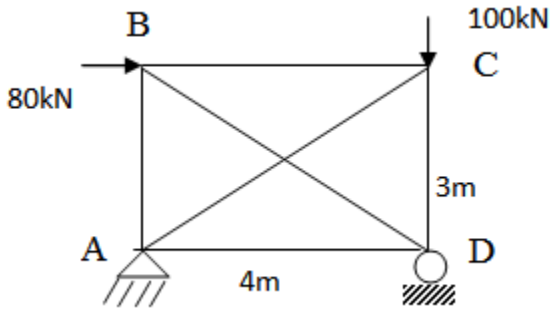

Figure-5

6. A two hinged parabolic arch of span L and rise 'L/4' subjected to a concentrated load 'W' at quarter point. Show that the value of the horizontal thrust at the supports is 285W/512 and also find internal forces at a distance of 'L/3' from left support. 16 M