Reg. No.															

Question Paper Code	12878

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Fifth Semester

Civil Engineering

20CEPC504 - STRUCTURAL ANALYSIS I

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

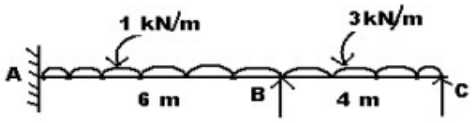
Answer ALL Questions

		Marks	K – Level	CO
1.	Give example of beam with one degree indeterminacy.	2	K2	CO1
2.	How to determine kinematic indeterminacy of a structure?	2	K2	CO1
3.	What are the assumptions made in slope-deflection method?	2	K1	CO2
4.	Write down the slope deflection equation for a beam AB fixed at A and B subjected to a settlement δ at B.	2	K1	CO2
5.	What is distribution factor? Explain.	2	K1	CO3
6.	What is the difference between absolute and relative stiffness?	2	K1	CO3
7.	What is a primary structure in matrix flexibility method?	2	K1	CO5
8.	Write the element flexibility matrix for a beam member.	2	K1	CO5
9.	What are the properties of stiffness matrix?	2	K1	CO6
10.	What is displacement method of analysis?	2	K1	CO6

PART - B (5 × 13 = 65 Marks)

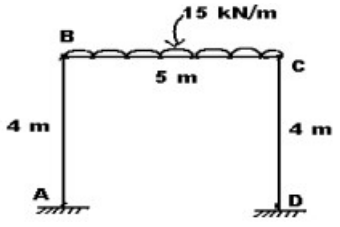
Answer ALL Questions

11. a) Solve using strain energy method. — 13 K3 CO1

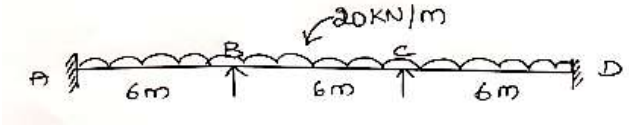


OR

b) Solve using strain energy method. — 13 K3 CO1



12. a) Solve using Slope Deflection Method. *13 K3 CO2*



OR

b) Analyze the portal frame ABCD shown in figure by slope deflection method. Take EI = constant. *13 K3 CO2*

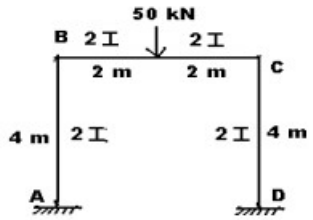


Fig.

13. a) Analyze the beam shown in figure by moment distribution method and draw the SFD and BMD. Take EI = constant. *13 K3 CO3*

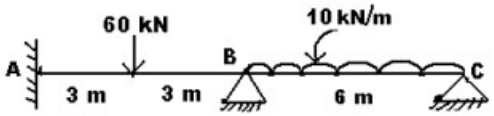
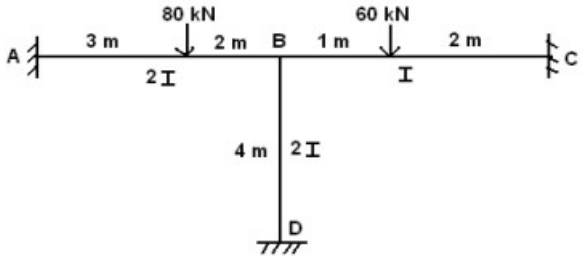


Fig.

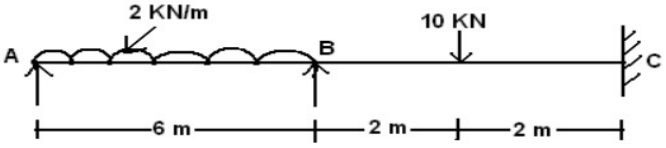
OR

b) Analyze the structure loaded as in figure by using moment distribution method. *13 K3 CO3*



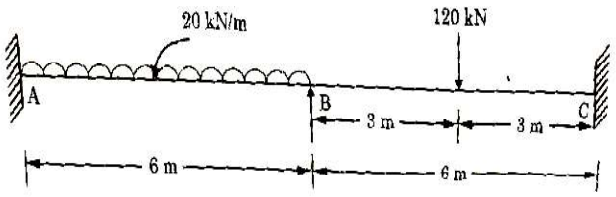
14. a) *13 K3 CO5*

Analyze using Matrix flexibility method.

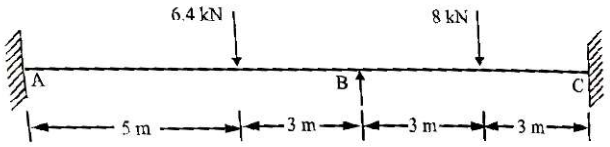


OR

b) Analyse using Matrix flexibility method. *13 K3 CO5*

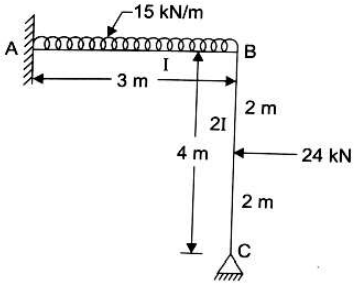


15. a) Analyze using Matrix stiffness method. *13 K3 CO6*



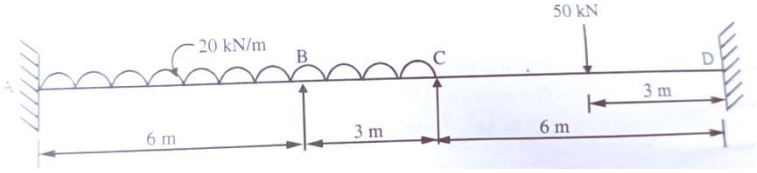
OR

b) Analyze using Matrix stiffness method. *13 K3 CO6*



PART - C (1 × 15 = 15 Marks)

16. a) Analyse the continuous beam ABCD shown in figure by slope deflection method. The support B sinks by 10mm. Take E = $2X10^5$ N/mm^2 and I = $16x10^7 mm^4$. *15 K3 CO4*



OR

b) Analyse the continuous beam ABCD shown in figure by slope deflection method. The support B sinks by 15mm. Take E = $200x10^5$ kN/m^2 and I = $120x10^{-6} m^4$ *15 K3 CO4*