Reg. No.												

Question Paper Code	11935

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Fifth Semester

Civil Engineering

20CEPC504 - STRUCTURAL ANALYSIS I

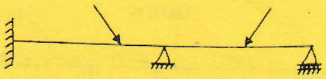
(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

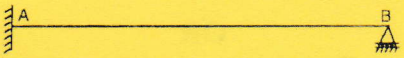
PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Define static indeterminacy of a structure.	*2,K1,CO1*
2.	Find the static indeterminacy of the given structure.	*2,K2,CO1*



3.	Explain the use of 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.	Explain the relative stiffness factor.	*2,K1,CO3*
7.	Define flexibility coefficient.	*2,K1,CO5*
8.	Suggest a primary structure for the following beam.	*2,K2,CO5*

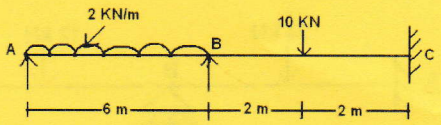


9.	List the different methods of Matrix analysis.	*2,K1,CO6*
10.	What do you mean by system stiffness matrix?	*2,K2,CO6*

PART - B (5 × 13 = 65 Marks)

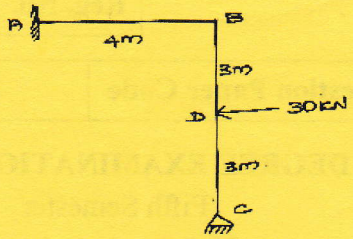
Answer ALL Questions

11.	a)	Solve using strain energy method and Draw SFD & BMD.	*13,K3,CO1*



OR

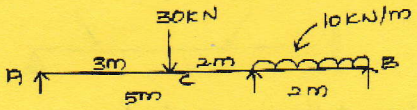
	b)	Solve using Strain energy method and Draw SFD & BMD.	*13,K3,CO1*



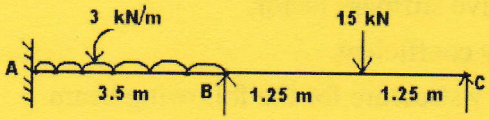
12. a) A continuous beam ABC consists of spans AB and BC of 5 m length in each. Both ends of the beam are fixed. The span AB carries a point load of 15 kN at its middle point. The span BC carries a point load of 25 kN at its middle point. Find the moments and reactions at the supports. Assume the beam is of uniform section. Use slope deflection method. *13,K3,CO2*

OR

b) Solve using Slope deflection method and Draw SFD & BMD. *13,K3,CO2*

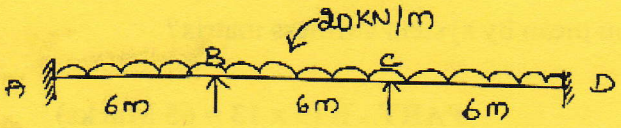


13. a) Analyze the continuous beam shown in figure by moment distribution method and Draw SFD & BMD. *13,K3,CO3*

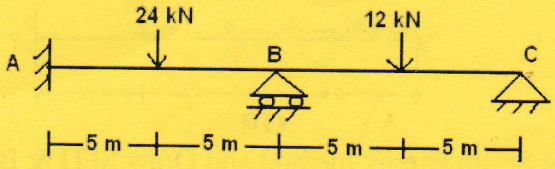


OR

b) Solve using Moment Distribution method and Draw SFD & BMD. *13,K3,CO3*

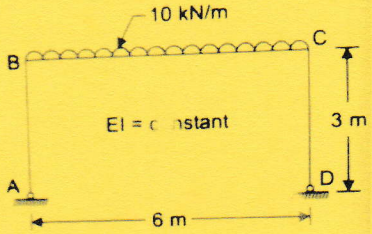


14. a) Analyze using Matrix flexibility method and Draw SFD & BMD. *13,K3,CO5*

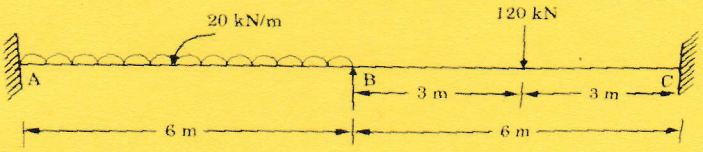


OR

b) Analyze using Matrix flexibility method and Draw SFD & BMD. *13,K3,CO5*

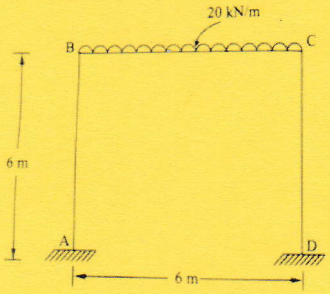


15. a) Analyze using Matrix stiffness method and Draw SFD & BMD. *13,K3,CO6*



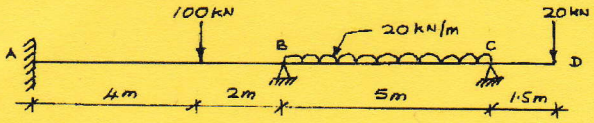
OR

b) Analyze using Matrix stiffness method and Draw SFD & BMD. *13,K3,CO6*



PART - C (1 × 15 = 15 Marks)

16. a) Analyze the continuous beam ABCD shown in figure by slope deflection method. The support B sinks by 15mm. Take $E = 200 \times 10^5$ kN/m^2 and $I = 120 \times 10^{-6}$ m^4 *15,K3,CO4*



OR

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