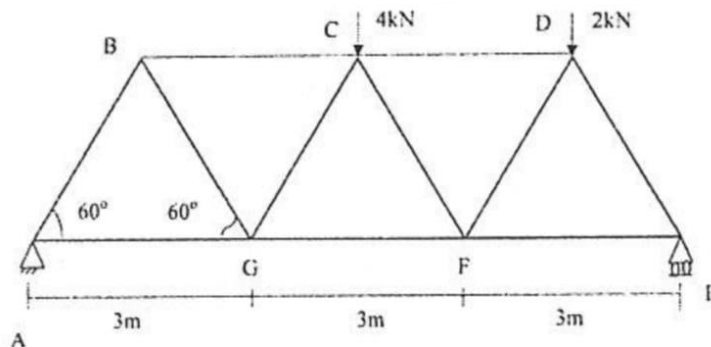


THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Fifth Semester**Civil Engineering***CE3502- Structural Analysis I***Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks***PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	Define strain energy.	L1	1	2
2.	Compare statically determinate structures and indeterminate structures.	L2	1	2
3.	Give the slope deflection equation for the beam with pinned ended support.	L3	2	2
4.	Write the general slope deflection equation.	L2	2	2
5.	Define distribution factor.	L1	3	2
6.	What is carry-over factor?	L1	3	2
7.	What is a primary structure?	L1	4	2
8.	State the fundamental compatibility condition used in the flexibility method.	L2	4	2
9.	Enumerate the term kinematic redundancy.	L3	5	2
10.	Define a stiffness matrix.	L1	5	2

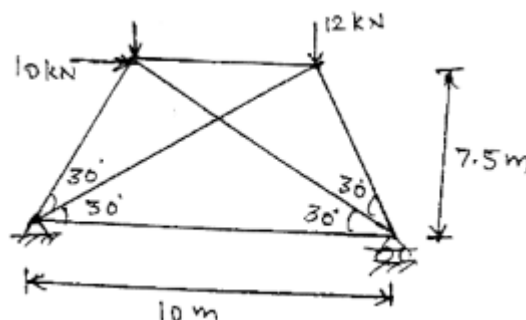
PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11. a	Find the forces in the members AB, AG and BG by method of joints.	L5	1	16



Or

- b Determine the force on the members of the truss by the strain energy method as shown in the Figure. All members have the same cross-sectional area.



12. a Analyze the two-spaced continuous beam shown in the Figure 12(a) by the slope deflection method and draw the bending moment and shear force diagram. Take the $E = 2 \times 10^5 \text{ N/mm}^2$. L4 2 16

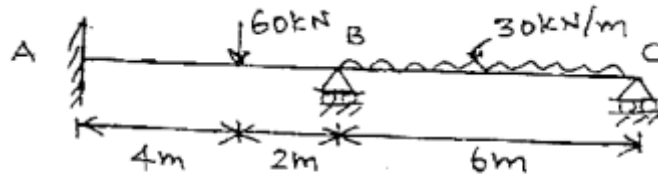
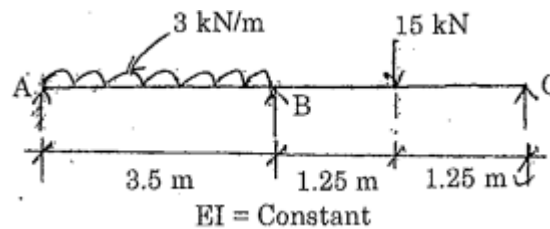


Figure 12(a)

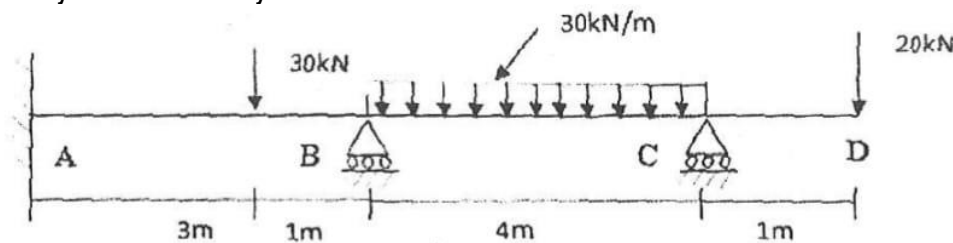
Or

- b Explain the step-by-step procedure for analyzing the portal frame by using slope deflection method with an example. L4 2 16
13. a Analyze the continuous beam ABC as shown in figure by moment distribution method. Take $EI = \text{Constant}$. L4 3 16



Or

- b Analyze the beam by moment distribution method. L4 3 16

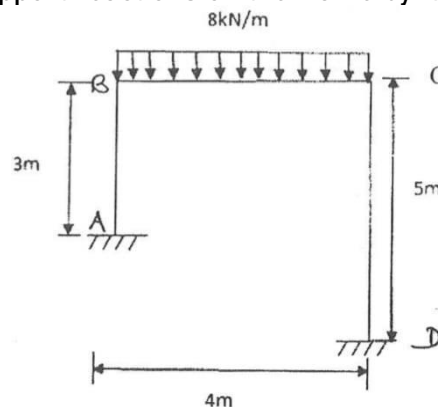


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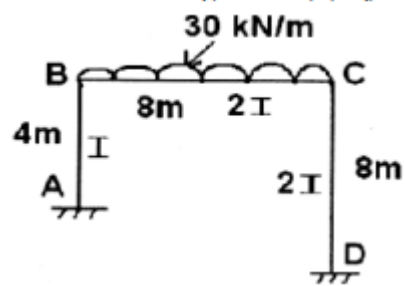
14. a Explain the step-by-step procedure for analyzing the pin jointed frame by using flexibility matrix method. L4 4 16

Or

- b Determine the support reactions on the frame by flexibility methods. L4 4 16



15. a Analyze the frame shown in figure by the matrix stiffness method. L4 5 16



Or

- b Explain the step-by-step procedure for analyzing the truss by matrix stiffness method. L4 5 16