R18

ANURAG Engineering College
(An Autonomous Institution)
III B.Tech I Semester Regular/Supplementary Examinations, Dec–2023/Jan-2024
STRUCTURAL ANALYSIS-II
(CIVIL ENGINEERING)

Time: 3 Hours   **Max.Marks:75**

Section – A (Short Answer type questions)   (25 Marks)
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	What are the forces in the arch	CO1	L1	2M
2.	What do you understand by the term normal thrust?	CO1	L1	3M
3.	What are the limitations of moment distribution method?	CO2	L1	2M
4.	Differentiate carry over factor and distribution factor	CO2	L2	3M
5.	What is the purpose of portal frames?	CO3	L1	2M
6.	Mention the reasons due to which sway may occur in portal frames.	CO3	L1	3M
7.	State the equilibrium condition used in the stiffness method	CO4	L1	2M
8.	Is it possible to develop the stiffness matrix for an unstable structure	CO4	L1	3M
9.	State the assumptions made in cantilever method	CO5	L1	2M
10.	For which frames portal method is suitable?	CO5	L1	3M

Section B (Essay Questions)
Answer all questions, each question carries equal marks.   (5 x 10M = 50M)

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11. A)	Explain Castigliano's theorem-II and unit load method.	CO1	L2	10M

OR

B)	A steel two-hinged circular arch rib has a span of 30 m and a rise of 3 m. The rib section is uniform throughout with an overall depth of 7 m. Neglecting all effect except those due to bending. Find from first principles, the bending stress at the crown due to a temperature change of 30^0 K. Take E= 2×10^5 N/mm^2 and α= 11×10^{-6} per 1K. Assume required data.	CO1	L3	10M

12. A)	Analyse the frame by moment distribution method and draw bending moment diagram.	CO2	L3	10M

OR
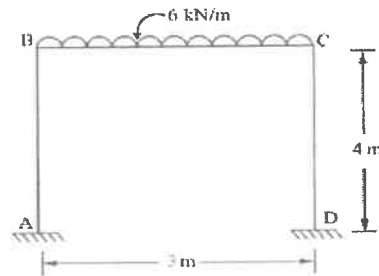
B)	Analyze the frame by moment distribution method and draw bending moment diagram	CO2	L3	10M
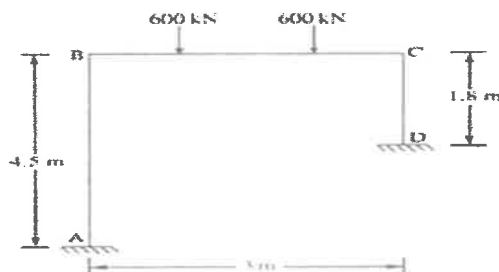
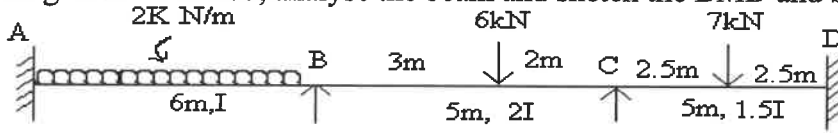|			
13. A)	A continuous beam ABCD consists of three spans and is loaded as shown in fig. Using Kani's method, analyse the beam and sketch the BMD and SFD	CO3	L3	10M

OR

B)	Analyze the following frame using Kani's method? Draw B.M.D	CO3	L3	10M
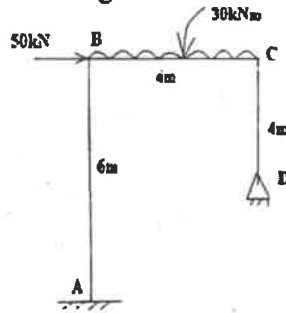
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14. A)	Examine the moment of the continuous beam shown in fig below by flexibility matrix method	CO4	L2	10M
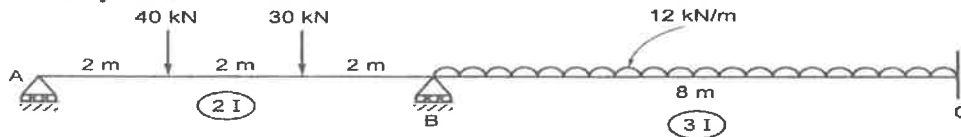
OR

B)	A continuous beam ABCB is simply supported over the supports A, B, C and D. AB = 10m, BC = 8m and CD=10m. Moment of inertia is constant throughout. A single concentrated central load of 12 tons acts on AB and a uniformly distributed load of 10Tons/m acts over BC. Examine the final forces by stiffness matrix method and draw BMD	CO4	L2	10M

15. A)	Analyze the below frame by portal method.	CO5	L3	10M

OR
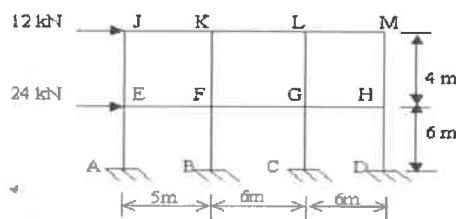
B)	Analyze the frame shown in fig by cantilever method.	CO5	L3	10M