O.P.Code: 20CE0115 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Regular & Supplementary Examinations June-2024
STRUCTURAL ANALYSIS
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1	a	What is meant by Influence Line Diagram (ILD)? State some of the benefits of it.	CO1	L1	3M
	b	A simply supported beam AB is subjected to a point load W. Derive an expression and draw the ILD for reaction at A, reaction at B, shear force & bending moment at a distance of x from support.	CO1	L5	9M

OR

2		A simple girder of 20m span is traversed by a moving udl of 6m length with an intensity of 20 kN/m from left to right. Analyze for maximum bending moment, maximum +ve/ –ve shear force at a section of 4m from left support. Also find the absolute maximum bending moment that occur any where in the girder.	CO1	L4	12M

UNIT-II

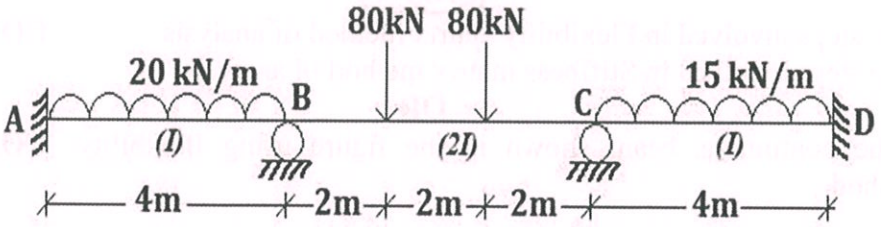
3	a	Define the term i) Strain Energy ii) Resilience iii) Proof Resilience iv) Modulus of Resilience	CO2	L1	6M
	b	Derive an expression for strain energy stored in a beam due to axial loading and due to bending.	CO2	L2	6M

OR

4		Find the deflection at the centre of a simply supported beam using Castigliano'stheorem carrying a uniformly distributed load of *w* per unit length over the entire span.	CO2	L1	12M

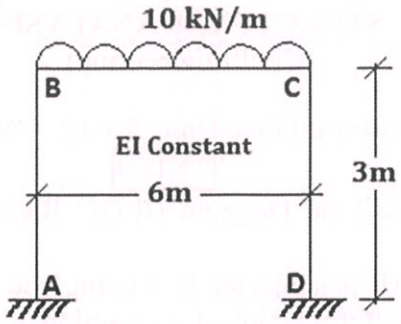
UNIT-III

5		Analyse the continuous beam loaded as shown in the figure by slope deflection method and sketch the bending moment diagram.	CO3	L3	12M



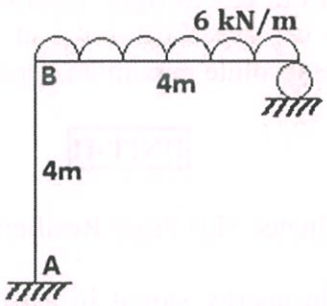
OR

6	Analyse the portal frame loaded as shown in the figure using slope-deflection method and sketch the bending moment & shear force diagrams.	CO3	L3	12M



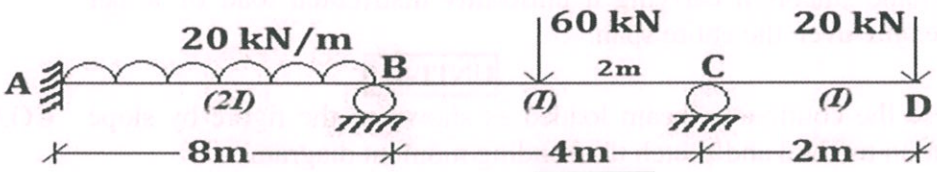
UNIT-IV

7	Analyse the frame shown in the figure by moment distribution method.	CO4	L3	12M



OR

8	Analyse the beam ABCD shown in the figure by moment distribution method.	CO4	L3	12M

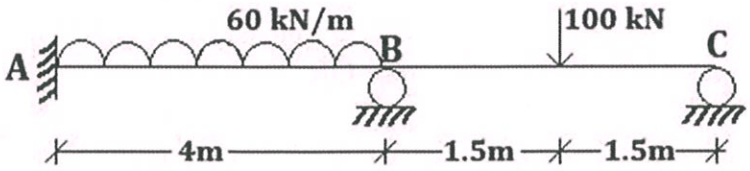


UNIT-V

9	Explain the steps involved in Flexibility matrix method of analysis Explain the steps involved in Stiffness matrix method of analysis.	CO5	L2	12M

OR

10	Analyse the continuous beam shown in the figure using flexibility matrix method.	CO5	L4	12M



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