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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular & Supplementary Examinations August-2023

STRUCTURAL ANALYSIS

(Civil Engineering)

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

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

UNIT-I

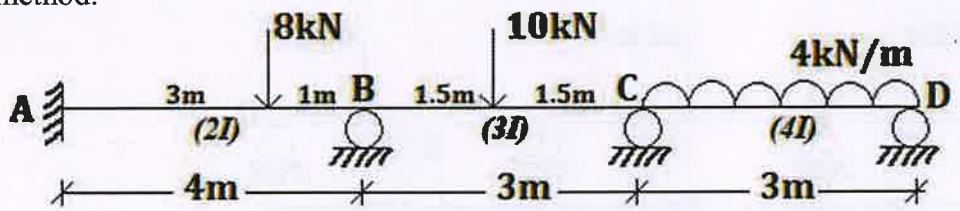
1	Derive an expression for maximum positive/negative shear force and maximum bending moment for a simply supported beam subjected to two point loads W1 and W2 with a constant spacing between them.	**CO2**	**L2**	**12M**
	OR			
2	In a simply supported girder AB of span 20m, determine the maximum bending moment and maximum shear force at a section 5m from A, due to the passage of a uniformly distributed load of intensity 20kN/m, longer than the span. Also find the location and magnitude of absolute maximum bending moment.	**CO2**	**L3**	**12M**

UNIT-II

3	State and derive Castigliano's first theorem.	**CO2**	**L3**	**12M**
	OR			
4	A simply supported beam of span 6m is subjected to a concentrated load of 45kN at 2m from the left support. Calculate the deflection under the load point. Take E = 200 x 10^6 kN/m^2 and I = 14.0 x 10^{-6} m^4 using method of virtual work.	**CO3**	**L4**	**12M**

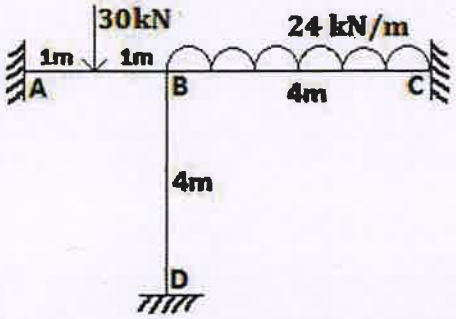
UNIT-III

5	Determine the support moments for the continuous beam as shown in the figure and draw the bending moment diagram using slope deflection method.	**CO4**	**L4**	**12M**



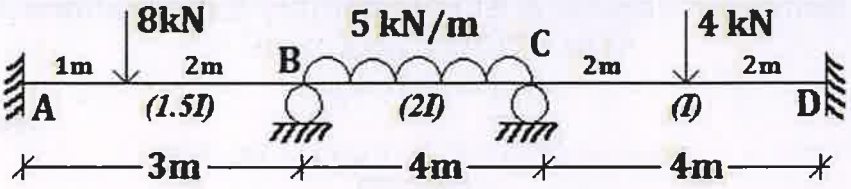
OR

6	Analyse the frame shown below. Assume uniform flexural rigidity.	**CO4**	**L4**	**12M**



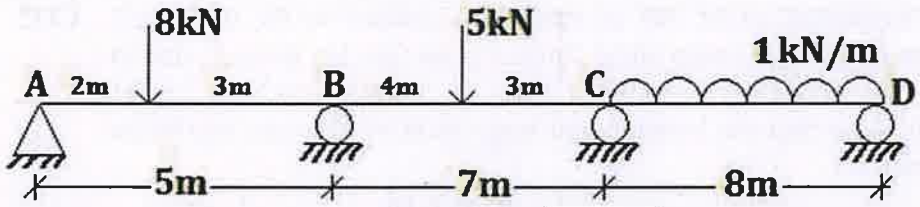
UNIT-IV

7	Determine the support moments at A, B, C and D for the continuous girder shown in the figure using moment distribution method.	CO4	L5	12M



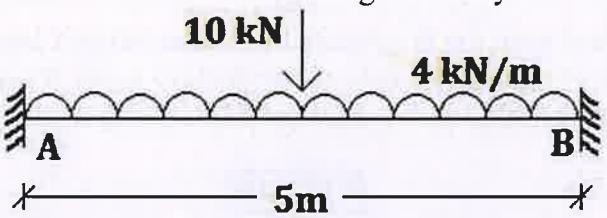
OR

8	A continuous beam ABCD, 20m long is simply supported at its ends and is loaded as shown in the figure. If support 'B' sinks by 10mm, analyse the beam by moment distribution method and sketch the bending moment diagram. Take $E = 2.1 \times 10^5$ N/mm^2 and $I = 85 \times 10^5$ mm^4.	CO5	L4	12M



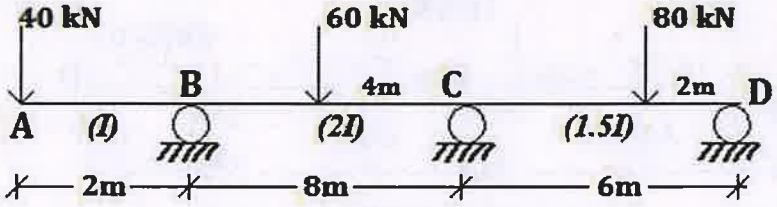
UNIT-V

9	Analyse the fixed beam shown below using flexibility matrix method.	CO6	L4	12M



OR

10	Analyse the continuous beam shown in the figure using displacement method.	CO6	L4	12M



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