PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations –MAY 2025
Date: 26-05-2025   **Time:** 01:00 pm – 04:00 pm

School: SOE	**Program:** B. Tech (Civil Engineering)	
Course Code : CIV2013	**Course Name:** Analysis of determinate Structures	
Semester: IV	**Max Marks**: 100	**Weightage**: 50%

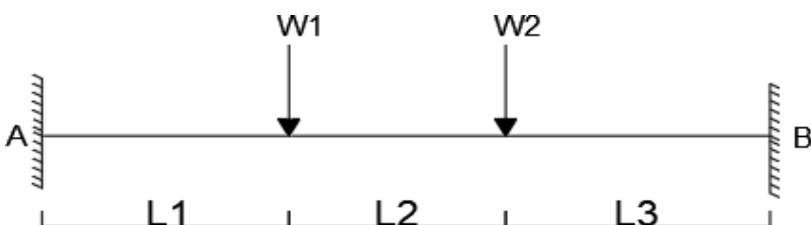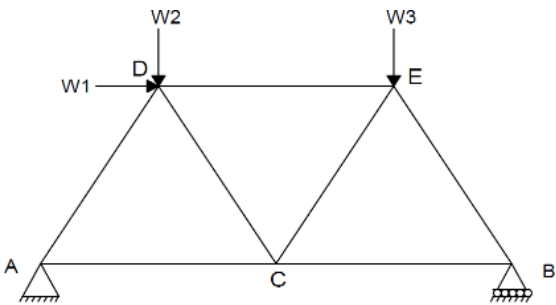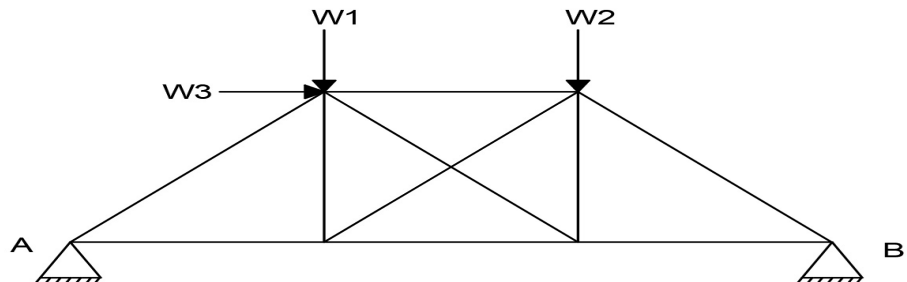| CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	10	20	20	30	20

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2 marks.   **5Q x 2M=10M**

1	Compute the Degree of Indeterminacy of Fixed Beam shown in the figure.	2 Marks	L2	CO1
2	Compute the Degree of Indeterminacy a Continuous beam shown in figure.	2 Marks	L2	CO1

3	Compute the Degree of Indeterminacy a Propped cantilever beam shown in figure.	2 Marks	L2	CO1
4	Compute the total Degree of Indeterminacy of a truss shown in figure.	2 Marks	L2	CO1
5	Compute the total Degree of Indeterminacy of a truss shown in figure	2 Marks	L2	CO1

Part B

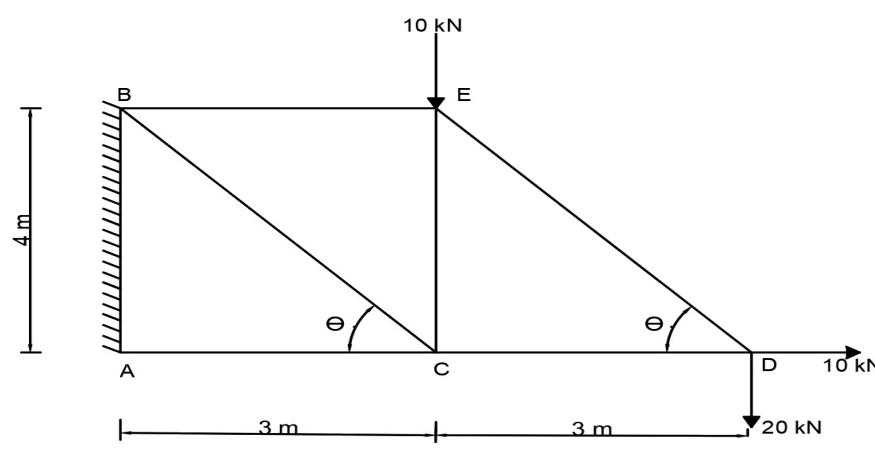**Answer the Questions.**   **Total Marks 90M**

6	Three hinged symmetrical parabolic arch of span 60m and rise 15 m is subjected to UDL of magnitude 25 kN/m on left half of the arch. Calculate the reactions and draw BMD.	10 Marks	L3	CO3
	Or			
7	A Suspension Cable having supports at same level of span 50m and maximum dip of the cable is 6 m subjected to UDL of magnitude 20 kN/m throughout the length Find maximum tensile force induced in the cable and also cross sectional area required for the cable, if f_s= 1400 N/mm²	10 Marks	L3	CO3
8	Calculate the slopes at the supports and deflection at mid span of simply supported beam of span 5m, subjected to point of magnitude 60 kN at mid span section by moment area method. Take EI = 20x10³ kNm² .	10 Marks	L3	CO4
	Or			

9	Calculate the maximum slope and deflection for a cantilever beam of length 4 m and subjected to point load of magnitude 20 kN at the free end by moment area method. Take EI = 5×10^3 kNm^2.	10 Marks	L3	CO4

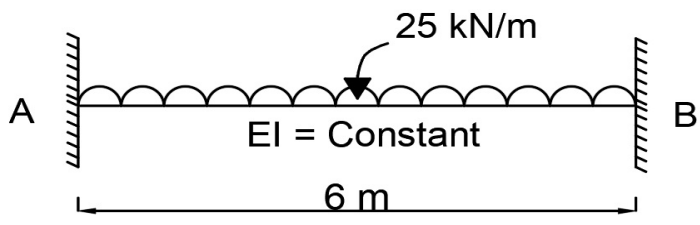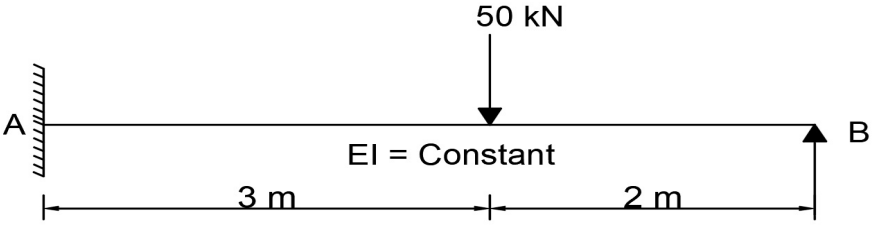| 10	Calculate the maximum slopes and deflection for simply supported beam of span 5 m, subjected to point of magnitude 80 kN at mid span section by conjugate beam method. Take EI = 20×10^3 kNm^2.	10 Marks	L3	CO4
	Or			
11	Calculate the maximum slope and deflection for a cantilever beam of length 4 m and subjected to point load of magnitude 40 kN at the free end by moment area method. Take EI = 20×10^3 kNm^2.	10 Marks	L3	CO4
12	Calculate forces in all the members of a truss loaded as shown in the figure by method of joints and indicate the nature and magnitude against the members.	20 Marks	L3	CO2
	Or			
13	Calculate the maximum slopes and deflection for simply supported beam of span 6m, subjected to point of magnitude 60 kN at mid span section as shown in fig by conjugate beam method.	20 Marks	L3	CO2
14	Three hinged symmetrical parabolic arch of span 60 m and rise 12 m is subjected to UDL of magnitude 20 kN/m on left half of the arch. Calculate reactions and draw BMD. Also calculate the radial shear and Normal thrust at 10m from the left support.	20 Marks	L3	CO3
	Or			

15	The suspension cable of span 30m, dip of the cable id 6 m, subjected to uniformly distributed load of magnitude 20 kN/m throughout the length and it is supported at A & B. The supports are the same level. Calculate the maximum tensile force induced in the cable. Also calculate the vertical force and maximum bending on pier. Take back stay is 60^0 with respect to vertical and height of the pier is 5 m for the following supporting devices.
	     a) Friction less pulley
	     b) Saddle or Roller support
		20 Marks	L3	CO3

16	Analyze a fixed beam loaded as shown in the figure by the consistent deformation method and draw the BMD and SFD. Take EI = Constant.	20 Marks	L3	CO5

25 kN/m

A   B

EI = Constant

6 m

	Or			

17	Analyze the propped cantilever beam loaded as shown in the figure by consistent deformation method and draw the BMD and SFD. Take the value EI = Constant.	20 Marks	L3	CO5

50 kN

A   B

EI = Constant

3 m   2 m