BACHELOR OF CIVIL ENGINEERING EXAMINATION, 2023

(2nd Year, 2nd Semester)

STRUCTURAL MECHANICS II
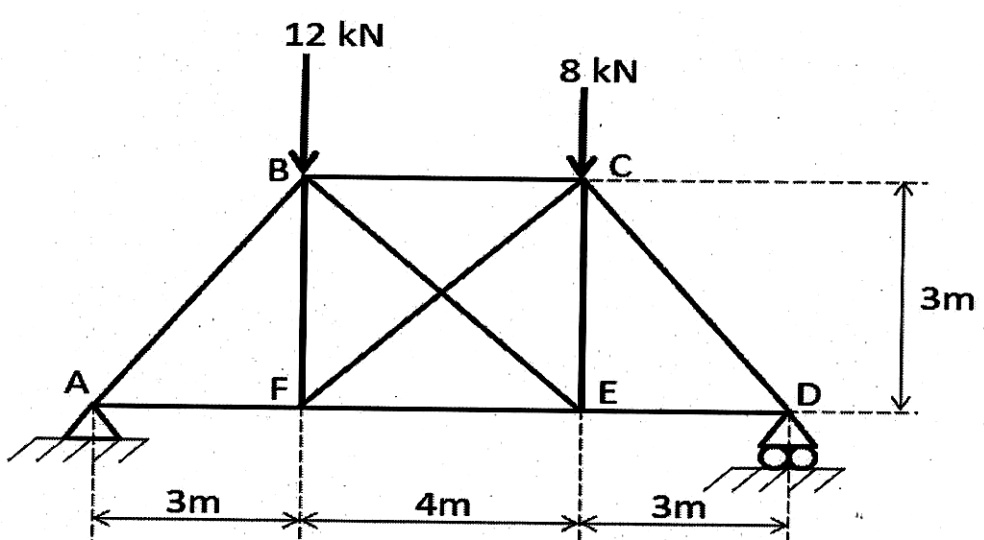
Time : Three hours   Full Marks : 100

(Use separate Answer scripts for each Part)

PART I

(60 Marks)

Instructions:	
I	All notations represent their standard relevant meaning.
II	If you feel that any data or condition is/are missing in any question, please assume relevant inputs and mention the same.

| Sl No	Question	Marks	CO
1	Figure: 01 (No Scale) Consider the truss from Figure: 01 where the joints of the truss A,B,C,D,E & F are shown and determine all the member forces and mention the same with the figure with proper notations showing the nature of member forces. All members are having Modulus of Elasticity: 200000 N/mm². The cross sectional area of all members are 1800 mm²	20	CO 3

[Turn over

| 2 | | 20 | CO 4 |

5 kN/m

3m

7m   11m
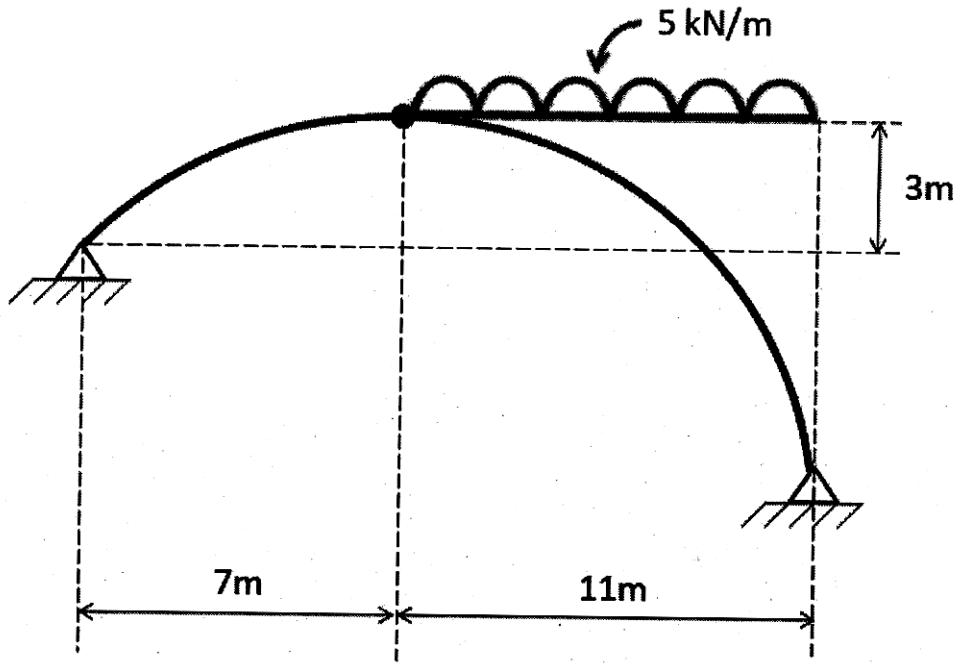
Figure: 02 (No Scale)

Consider the 3 hinged parabolic arch with supports at different levels from Figure: 02 and determine bending moment, normal thrust and radial shear at a point on the arch which is located at distance 4m inside the arch from the right support.

| 3 | | 20 | CO 5 |

20 kN

10 kN

2m   2m

6m
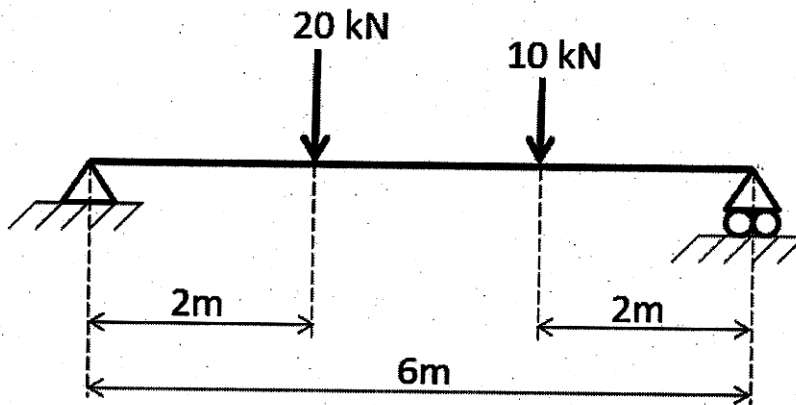
Figure: 03 (No Scale)

Consider the simply supported beam from Figure: 03 and

(a) Draw Influence Line Diagram (ILD) for reaction forces. Also determine the amount of reaction forces using the diagrams. (Marks: 2.5+2.5+3)

(b) Draw ILD for shear force at a point on the beam 3m from the left support. Determine the amount of shear force on that point using the ILD. (Marks: 3+3)

(c) Draw ILD for bending moment at a point on the beam 1m right from the right support. Determine the amount of bending moment at that point using the ILD. (Marks: 3+3)

Ref. No.: Ex/CE/PC/B/T/224/2023

B.E. CIVIL ENGINEERING SECOND YEAR SECOND SEMESTER EXAM 2023
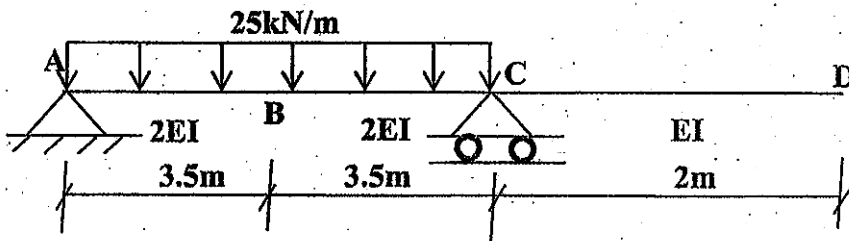
Subject: STRUCTURAL MECHANICS II

Full Marks:100   **Time: 3hours**

(Use Separate Answer scripts for each Part)

Part- II (Marks 40)

1. Find slope and deflection at point B and D. Use conjugate beam method.   (CO.2)   (15)

2. Determine the bending moment at different locations of the continuous beam shown below. Also draw the bending moment and shear force diagrams. Use **Three moments theorem.**   (CO 1)   (25)