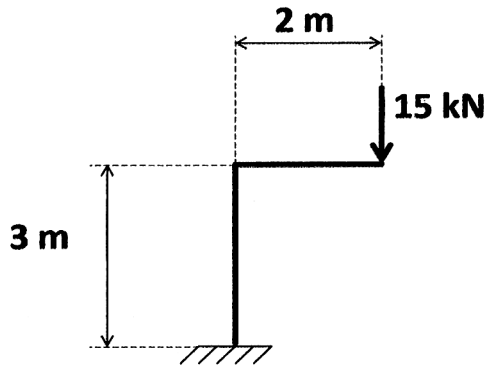
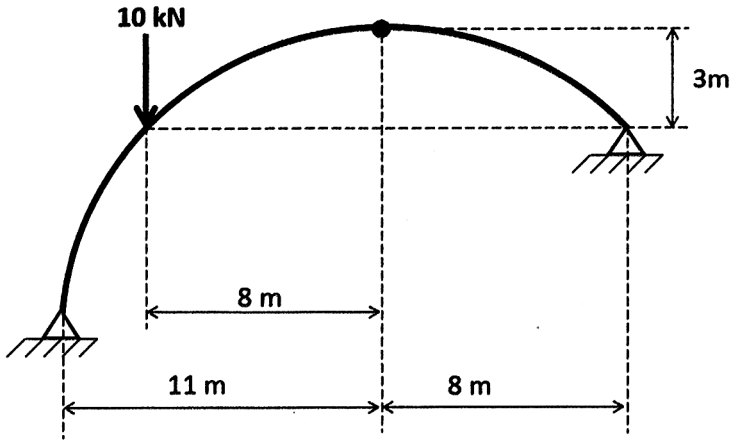
Name of the Examination: BACHELOR OF ENGINEERING (CIVIL ENGINEERING)

Subject : STRUCTURAL MECHANICS- II (1st Year, 2nd Semester)

Time : 3 Hours Full Marks: 100

Part - I (50 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**
1	(a) Derive the expression of strain energy for a prismatic circular shaft subjected to torsion. (8 marks) (b) Consider the system from Figure: 1 and find out vertical deflection of free end using Castigliano's theorem. Consider the flexural rigidity as EI and ignore axial deformation. (12 marks)  Figure: 1 (Not to Scale)	20
2	Consider a simply supported beam of 5m and Flexural rigidity EI is subjected uniformly distributed load of 6kN/m on its entire span. Find out deflection of the beam in terms of EI at 2.5m from the left support using Strain Energy stored in the system.	15
3	Consider the 3 hinged parabolic arch from the Figure: and find out bending moment and Radial shear at a point which is located at 2m inside the arch from the right hinge.  Figure: 2 (Not to Scale)	15

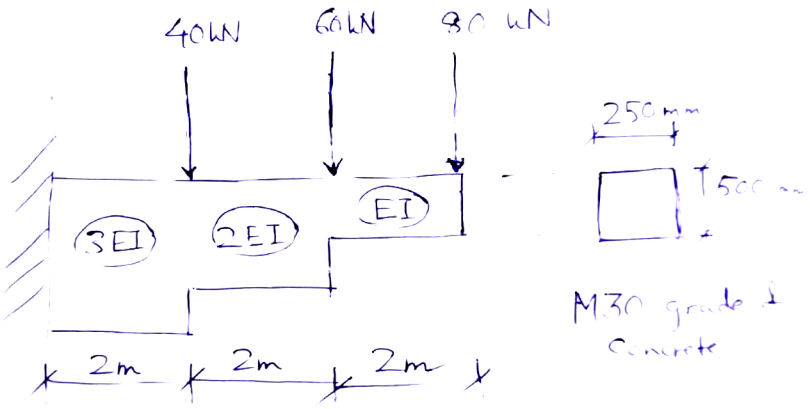
Bachelor of Engineering (Civil Engineering) - First Year - Second Semester

Structural Mechanics- II **CE/5/T/105** **PART 2**

F.M=50

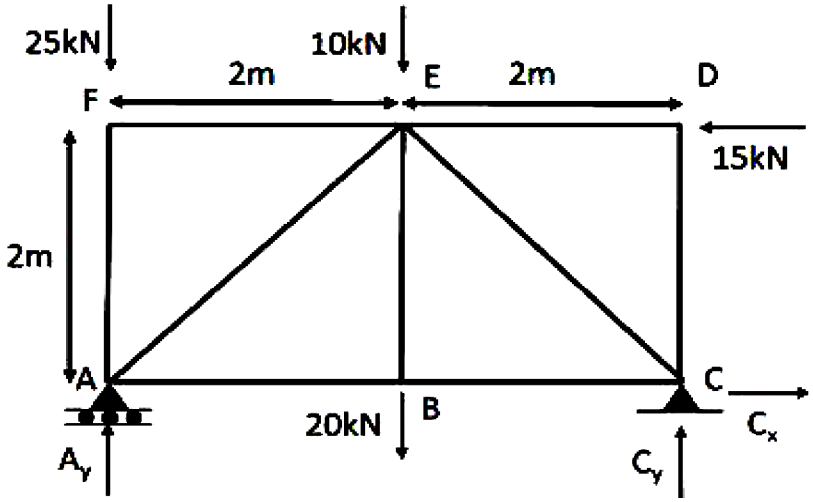
Answer Question no 1 and any two from the rest

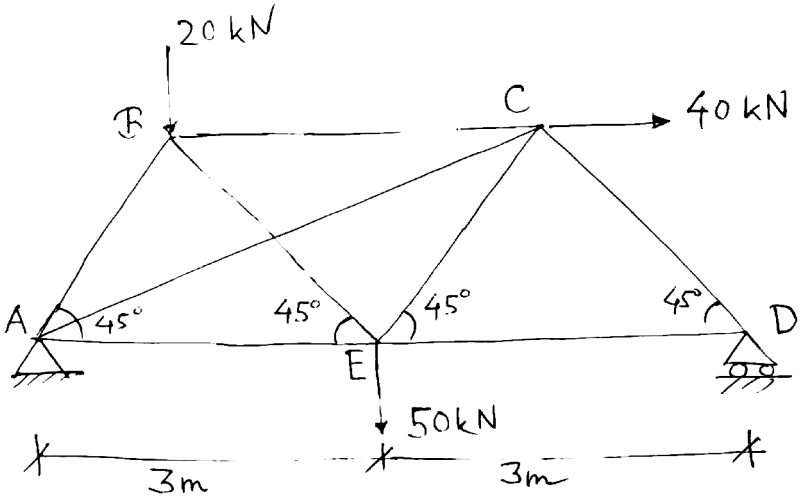
1. State Moment-Area Theorem. Explain Conjugate Beam method



For the beam shown above find the deflection and slope at the free end using Moment-Area Theorem or Conjugate Beam method 5+15

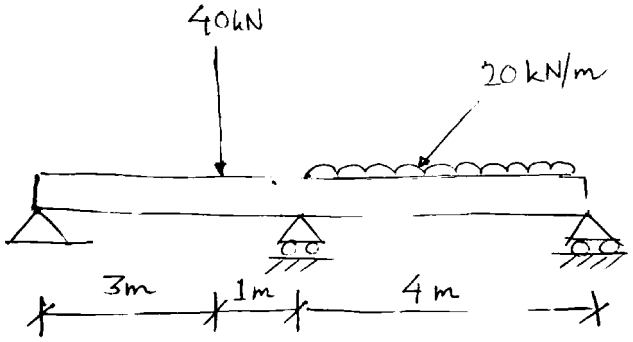
2. For the truss shown below find the deflection at B 15





3 Analyse the truss shown above assuming same cross sectional area for all members. 15

4. Analyse the continuous beam using three moment theorem 15



5. Use Double integration method to find the maximum deflection for the beam and also write down the deflection equation. The answer may be expressed in terms of EI 15