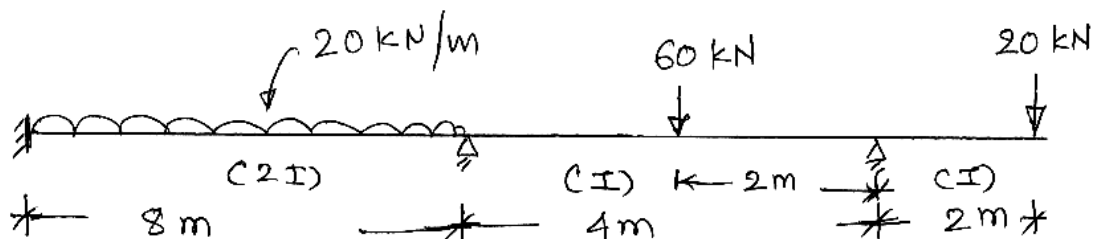


GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 131304****Date: 23-12-2014****Subject Name: Basics of Structural Engineering****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Using moment area method, analyze the beam (Fig. 1) and plot bending moment diagram. **10**
- (b)** Write the physical tests performed for cement. **04**
- Q.2 (a)** Find the deflection at the centre of the beam, for a simply supported beam with UDL using moment area method. **07**
- (b)** Explain the Kernel of the section for rectangular section and derive the equation for the eccentricity. **07**
- OR**
- (b)** Find the deflection at the centre of the beam, for a simply supported beam with point load at centre using moment area method. **07**
- Q.3 (a)** What is shrinkage of the concrete? What are the factors affecting to it? **07**
- (b)** Explain the alkali aggregate reaction on aggregate. **07**
- OR**
- Q.3 (a)** Explain the concept of the creep. Also write the factors affecting to it? **07**
- (b)** What is curing? What are the factors affecting to it? Write the types of curing. **07**
- Q.4 (a)** Explain the concept of consolidation of soil. **07**
- (b)** Explain the one of the method to determine permeability. **07**
- OR**
- Q.4 (a)** Write the methods available to determine shear strength of soil. Explain any one of them **07**
- (b)** Explain one of the field methods to determine the soil bearing capacity. **07**
- Q.5 (a)** Explain various methods to be used for compaction. **07**
- (b)** Derive the middle quarter rule for circular section. **07**
- OR**
- Q.5 (a)** What is durability of concrete? What are the factors affecting it.? **07**
- (b)** Explain the various steps to be performed for subsoil investigation. **07**

**Fig. 1 (Q.1(a))**
