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.
- Make suitable assumptions wherever necessary.
- Figures to the right indicate full marks.
- Using moment area method, analyze the beam (Fig. 1) and plot bending Q.1 (a) 10 moment diagram.
 - Write the physical tests performed for cement. 04 **(b)**
- **Q.2** Find the deflection at the centre of the beam, for a simply supported beam with (a) **07** UDL using moment area method.
 - Explain the Kernel of the section for rectangular section and derive the **07 (b)** equation for the eccentricity.

OR

- **(b)** Find the deflection at the centre of the beam, for a simply supported beam with **07** point load at centre using moment area method.
- 0.3 What is shrinkage of the concrete? What are the factors affecting to it? 07 (a) **07**
 - **(b)** Explain the alkali aggregate reaction on aggregate.

- Explain the concept of the creep. Also write the factors affecting to it? **07** 0.3 (a) What is curing? What are the factors affecting to it? Write the types of curing. **(b) 07**
- **Q.4** (a) Explain the concept of consolidation of soil. 07
 - Explain the one of the method to determine permeability. **(b) 07**

- Write the methods available to determine shear strength of soil. Explain any 0.4 07 (a) one of them
 - **(b)** Explain one of the field methods to determine the soil bearing capacity. **07**
- **07 Q.5** Explain various methods to be used for compaction. (a)
 - Derive the middle quarter rule for circular section. **(b)**

- **Q.5** (a) What is durability of concrete? What are the factors affecting it.? 07 **07**
 - **(b)** Explain the various steps to be performed for subsoil investigation.

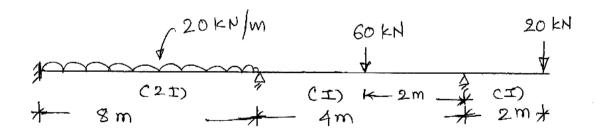


Fig. 1 (Q.1(a))

07
