

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER 2013****Subject Code: 131304****Date: 28-11-2013****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) State seven types of cements and their uses. **07**
(b) Explain initial and final setting time test of cement. **07**

- Q.2** (a) What is permeability? State and explain the factors affecting permeability of soils. **07**
(b) What is admixture? State five types of admixture and their uses. **07**

OR

- (b) Distinguish between standard proctor test and modified proctor test. **07**

- Q.3** (a) Explain alkali aggregate reaction and methods to control it. **07**
(b) What is curing? Explain water curing in detail. **07**

OR

- Q.3** (a) Sketch particle size distribution curve for well graded, uniformly graded and gap graded soils. Define coefficient of uniformity and coefficient of curvature. **07**
(b) What is soil exploration? In general what information is collected in soil exploration? **07**

- Q.4** (a) State field methods of compaction of soils and factors affecting compaction. **07**
(b) Define water content, void ratio, air content, degree of saturation and specific gravity. **07**

OR

- Q.4** (a) Explain the middle quarter rule for circular sections. **07**
(b) A rectangular column of width 200 mm and of thickness 150 mm carries a point load of 240 kN at an eccentricity of 10 mm as shown in Figure 1. Determine the maximum and minimum stresses on the section. **07**

- Q.5** (a) Analyse the following beam by moment distribution method (Ref. Figure 2. Support B sinks by 12 mm. $E=200\text{kN/mm}^2$ and $I = 20 \times 10^6 \text{ mm}^4$. Draw bending moment diagram also. **10**
(b) Explain carry over factor and distribution factor. **04**

OR

- Q.5** (a) Using moment area method, prove the deflection at centre of simply supported beam with UDL $w \text{ kN/m}$ thr'out is $5/384wl^4/EI$. **07**
(b) Find the expression for the maximum and minimum stresses at the base of an unsymmetrical column which is subjected to eccentric load. **07**

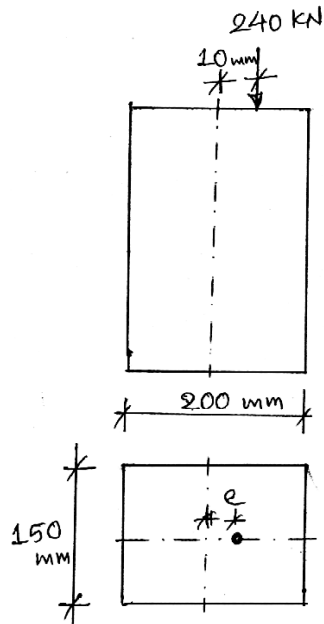


Figure 1
(OR. Q. 4 (b))

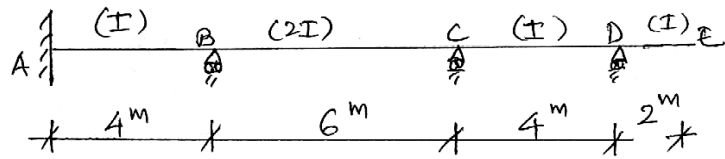


Figure 2
(Q. 5 (a))
