

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 131304****Date: 27-05-2013****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 Bogue's compound its abbreviation and properties. **07**  
 (b) Enlist the different laboratory tests for physical properties of cement and explain any one of them. **07**
- Q.2** (a) State various methods of curing and explain water curing in detail. **07**  
 (b) State texture classification of coarse aggregate as per Indian standard. **07**
- OR**
- (b) State factors affecting workability and explain any two in detail **07**
- Q.3** (a) Explain alkali aggregate reaction and factors controlling it. **07**  
 (b) Define creep of concrete and factors affecting creep of concrete. **07**
- OR**
- Q.3** (a) Define the following **07**  
 Dry unit weight, Water content, Relative density, Air content, Degree of saturation, Liquidity index and Void ratio.  
 (b) State particle size classification of soils as per BIS. **07**
- Q.4** (a) Define permeability of soil and factors affecting permeability. **07**  
 (b) The test results of Standard Proctor Test are as under, plot moisture content-dry density curve and determine the Maximum Dry Density (MDD) and Optimum Moisture Content(OMC) **07**
- |                     |      |      |      |      |      |
|---------------------|------|------|------|------|------|
| Moisture Content(%) | 5    | 10   | 15   | 20   | 25   |
| Bulk density(gm/cc) | 1.70 | 1.96 | 2.15 | 2.21 | 2.14 |
- OR**
- Q.4** (a) Define Ultimate bearing capacity, Net ultimate bearing capacity, Net safe bearing capacity, Gross safe bearing capacity, Net safe settlement pressure, Net allowable bearing pressure, Backfill. **07**
- Q.4** (b) Find out the slope and deflection of a simply supported beam loaded with udl on full span by Moment Area Method. **07**
- Q.5** (a) A masonry pier of 3m X 4 m supports a vertical load of 80 kN as shown in figure 1. Find the stresses developed at each corner of the pier. **10**  
 (b) Explain middle third rule and slenderness ratio **04**
- OR**
- Q.5** (a) A continuous beam as shown in figure 2 is loaded with a udl of 25 kN/m on entire span. Draw bending moment diagram using moment distribution method. **10**  
 (b) Explain statically determinate and indeterminate structures, Internally indeterminate structures and externally indeterminate structures. **04**

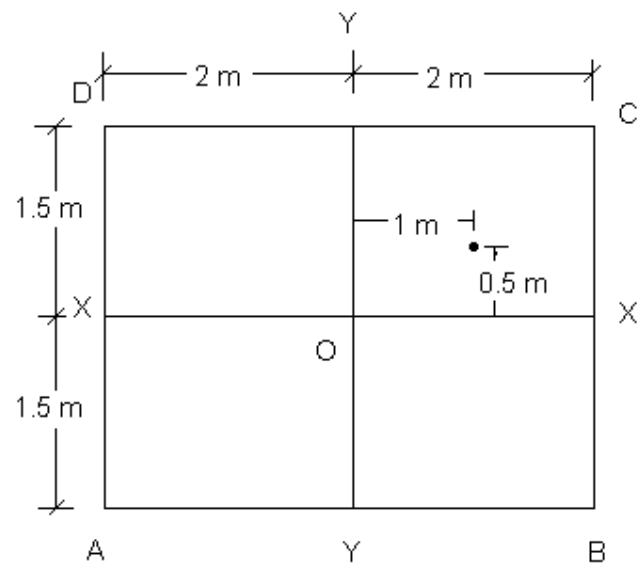


FIGURE- 1

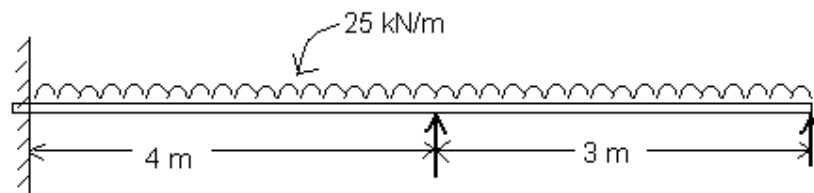


FIGURE- 2

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