Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER • 2014

Subject Code: 131304 **Date: 26-05-2014**

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)**	Enlist any six types of cements with their uses and state physical properties of any two cements as per Indian Standards.	**07**
	(b	What is curing? State different methods of curing and describe water curing.	**07**
Q. 2	**(a)**	Define coefficient of permeability. State and explain factors affecting permeability.	**07**
	(b	Define Liquid limit, Plastic limit, Shrinkage limit and Plasticity Index.	**07**
		OR	
	(b	Find out the slope and deflection at free end of the cantilever shown in figure 1 by Moment Area Method. Take $E = 2 \times 10^5$ N/mm^2 and $I = 8 \times 10^8$ mm^4 .	**07**

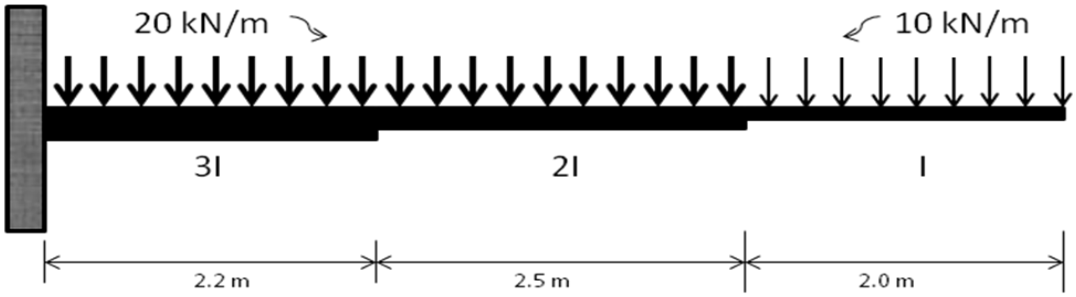

Figure-1

Q. 3	**(a)**	Analyze the beam shown in figure 2 by Moment Distribution Method and draw bending moment and shear force diagram.	**07**

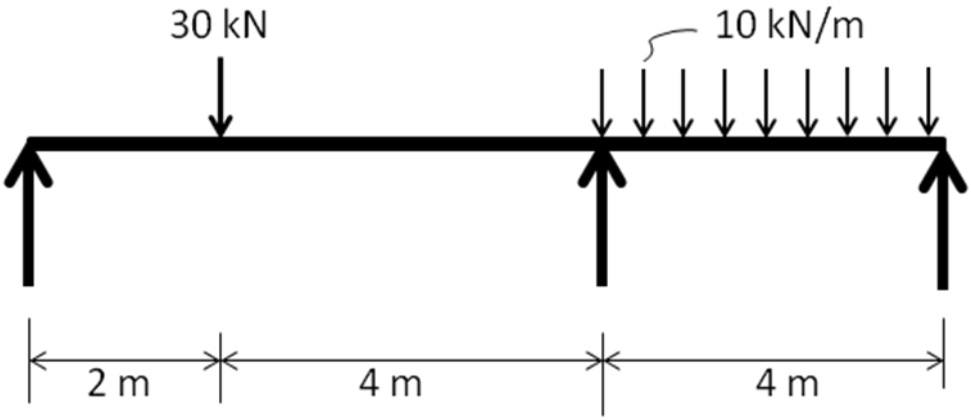

Figure-2

(b Find out the deflection at mid point B of simply supported beam shown in figure 3 by Moment Area Method. Take E = 2 x 10^5 N/mm^2 . **07**

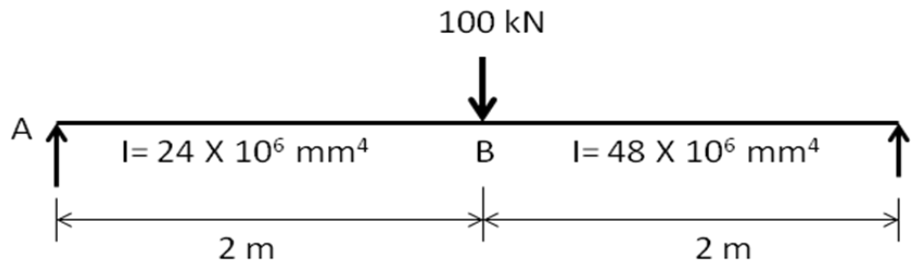

Figure -3

OR

Q.3 **(a)** A masonry pier is subjected to a compressive load of 960 kN as shown in figure 4 . Determine the stresses below all four corners. **07**

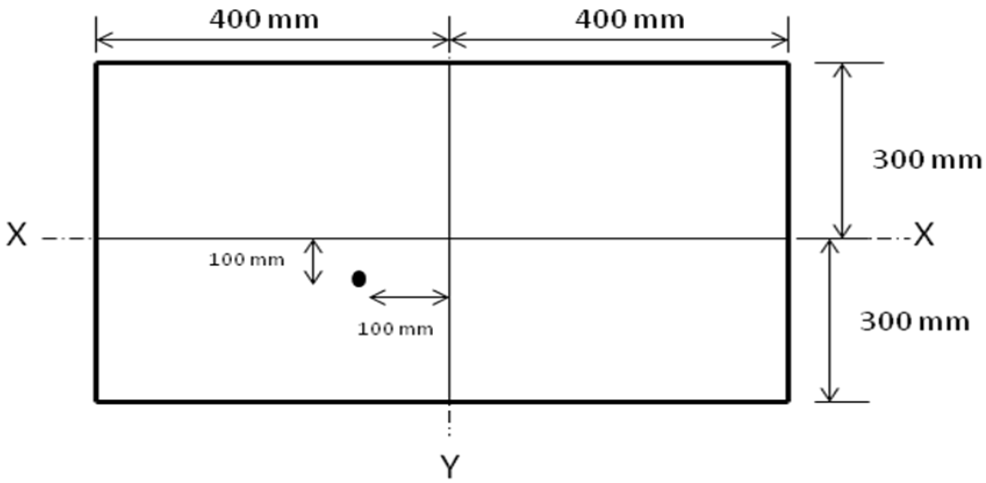

Figure-4

(b A hollow circular section of external diameter 320mm has to carry a crippling load of 16800 kN. The length of column is 5 m and its both ends are hinged. Determine the thickness of the section. Take E = 200 GPa. **07**

Q.4 **(a)** State the physical tests of cement and describe Compressive Strength test for cement. **07**

(b) State any seven types of admixtures and their uses. **07**

OR

Q.4 **(a)** Explain the effect of sulphate attack and chloride attack on concrete. **07**

(b) Explain various methods of mixing and placing of concrete. **07**

Q.5 **(a)** Describe Standard Proctor test for soils. **07**

(b) Explain bearing capacity of soils and factors affecting bearing capacity. **07**

OR

Q.5 **(a)** State the factors affecting field compaction of soils and describe various field methods of compaction. **07**

(b) State various methods of sub surface investigation. Discuss any one in detail. **07**

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