Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 1722009 **Date: 07-06-2013**

Subject Name: Concrete Technology

Time: 10.30 am – 01.00 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)**	Describe the manufacture of cement. Which are the physical requirements of cement.	**07**
	(b)	Classify aggregates on the basis of origin, shape and size. Explain what type of aggregates will be acceptable to you as project incharge? Why?	**07**
Q.2	**(a)**	Describe the importance of quality of water used for concrete.	**07**
	(b)	Explain Grading of aggregates and Alkali Aggregate reaction.	**07**
		OR	
	(b)	Describe sieve analysis for aggregate and determination of fineness modulus. Also prepare required tabular form.	**07**
Q.3	**(a)**	List the factors affecting strength of concrete and explain any two out of them in detail.	**07**
	(b)	Describe the rebound hammer test with labeled sketch. Also mention under which circumstance this method is useful.	**07**
		OR	
Q.3	**(a)**	Enlist the destructive test performed on hardened concrete and explain any one in detail.	**07**
	(b)	Calculate the gel space ratio and theoretical strength of an sample of concrete with 3000gm of cement with 0.5 w/c ratio at 60% hydration.	**07**
Q.4	**(a)**	What are the different steps needed for process of manufacture of concrete. Describe any one in detail.	**07**
	(b)	What is shrinkage? Describe in detail.	**07**
		OR	
Q.4	**(a)**	Determine the quantity of fine and coarse aggregate for the following data,	**07**

Mass of water/m^3 of concrete	190kg
Mass of cement/m^3 of concrete	395kg
Specific gravity of cement	3.15
Specific gravity of fine aggregate	2.58
Specific gravity of coarse aggregate	2.64
% Entrapped air	2%
%fine Aggregate/Total Aggregate	32%

	(b)	Distinguish between following Accelerating admixture ï Retarding admixture Portland Pozzolana Cement ï Ordinary Portland Cement	**07**
Q.5	**(a)**	Explain the action and application of superplasticizer.	**07**

(b) Define maturity of concrete. Lab experiment conducted at Poona on a particular mix showed strength of 315 Kg/cm^2 for fully matured concrete. Find whether form work can be removed for an ideal concrete placed at Srinagar at the age of 14 days, when the average temperature is 6ºC if the concrete is likely to be subjected to a stripping stress of 245 Kg/cm^2. (Take constants A & B are 21 & 61 respectively) **07**

OR

Q.5 Answer the following in one or two sentences **14**

- Define M25 grade of concrete.
- What is loss on ignition.
- What is segregation.
- What is importance of gypsum in the manufacture of cement.
- What are mineral admixtures.
- For construction of dam which cement will be used.
- What is sulphate resisting cement

****