

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 **07**
- Accelerating admixture ñ Retarding admixture
- Portland Pozzolana Cement ñ Ordinary Portland Cement
- 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 6°C 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
