Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1722009 **Date: 14/07/2012**

Subject Name: Concrete Technology

Time: 10:30 am – 13:00 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 the procedures for manufacture of cement and describe any one in detail. **07**

(b) State the major compounds of cement & the importance of each in detail. **07**

Q.2 **(a)** State the different tests on cement & describe any one in detail. **07**

(b) State any five different types of cement & describe any one in detail with all respect. **07**

OR

(b) State different types of admixtures & describe any one in detail with all respect. **07**

Q.3 **(a)** Define workability & which are the factors affecting workability & describe any one in detail. **07**

(b) Which are the tests on workability & explain any one in detail. **07**

OR

Q.3 **(a)** State the steps for manufacturing of concrete & explain any one in detail. **07**

(b) Define curing. State the different methods of curing & describe any one in detail. **07**

Q.4 **(a)** Define strength & stiffness of concrete. State the tests on hardened concrete & describe any one in detail. **07**

(b) State the factors affecting the strength of concrete & describe any one in detail. **07**

OR

Q.4 **(a)** Which are the different NDT & Destructive tests on concrete & explain Rebound Hammer Test in detail. **07**

Q.4 **(b)** Describe the effects of types of aggregates, grading of aggregates & surface texture of aggregates on fresh & hardened concrete. **07**

Q.5 **(a)** Design the concrete mix by I S Recommended guide lines by using I S 10262 by mass. **07**

Characteristic strength of concrete = 20N/mm^2
Type of aggregates = crushed angular
Max^m size of aggregates =20 mm
Grade of FA = Zone II
Workability = 0.8 CF
Type of exposure = Mild
Type of cement = OPC 53 grade

	OPC 53	Fine aggregates	Coarse aggregates
Specific gravity	3.15	2.6	2.9
Bulk density	1440 kg/mm^3	1700 kg/mm^3	1600 kg/mm^3

(b) State the chemical compounds of cement, its basic equation & hydration of cement. **07**

OR

Q.5 **(a)** Design the concrete mix by I S Recommended guide lines by using I S 10262 by volume. **07**

Characteristic strength of concrete = 30N/mm^2
Type of aggregates = crushed angular
Max^m size of aggregates =20 mm
Grade of FA = Zone I
Workability = 0.82 CF
Type of exposure = Moderate
Type of cement = OPC 53 grade

	OPC 53	Fine aggregates	Coarse aggregates
Specific gravity	3.15	2.6	2.9
Bulk density	1440 kg/mm^3	1700 kg/mm^3	1600 kg/mm^3

(b) Which are the physical requirements of cement &different uses of PPC & RHC. **07**

****