Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(OLD) • EXAMINATION – WINTER 2016

Subject Code:130605 **Date:10/01/2017**

Subject Name:Concrete Technology

Time:10:30 AM to 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 manufacturing of OPC cement with flow chart. **07**

(b) What are the steps involved for the manufacture of concrete & describe any one in short ? **07**

Q.2 **(a)** Determine the quantity of fine and coarse aggregate for the following data. Find also the mix proportion by wt and mix proportion by volume **07**

Mass of water/m^3 of concrete 200kg
Mass of cement/m^3 of concrete 400kg
Specific gravity of cement 3.15
Specific gravity of fine aggregate 2.47
Specific gravity of coarse aggregate 2.69
% Entrapped air 2%
%fine Aggregate/Total Aggregate 38%
Bulk density of Cement = 1440kg/m^3
, C. A. = 1598kg/m^3
F.A. = 1655kg/m^3

(b) State the importance of the following test on Ordinary Portland Cement and also, if the wate requirement by consistency test is 30%, the give the water requirement for the following Test. 1) Setting time 2)Compressive strength 3) Soundness **07**

OR

(b) What is fineness modulus? Find the fineness modulus for the given sample of aggregates and give its significance as per the result. **07**

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Sieve size.	Mass retained.(in grams)
80mm	00
40mm	00
20mm	90
10mm	801
4.75mm	109

Q.3 **(a)** How will you classify aggregates on the basis of size, shape,texture and origin. **07**

(b) Describe the importance of the quality of water used for concrete **07**

OR

Q.3 **(a)** Give specific uses of the following cements **07**

1. Pozzolana Cement
2. Rapid hardening Cement
3. Ordinary Portland cement

(b) State three chemical and three mineral admixture and give their uses. **07**

Q.4	**(a)**	In slump test of fresh concrete, Explain True slump, Shear slump and Collapse slump.	**07**
	(b)	Explain the term durability of concrete.. Also discuss the major causes of inadequate durability	**07**

OR

Q.4	**(a)**	Calculate the gel space ratio of a sample of concrete made with 500 gm. of cement with 0.50 W/C ratio, on full hydration and at 70 percent hydration. Also calculate the theoretical strength of concrete in both the cases.	**07**
	(b)	Explain crack repair by routing and sealing.	**07**
Q.5	**(a)**	Explain the assessment procedure for inspection and evaluation of damaged structure.	**07**
	(b)	Enlist the tests on hardened concrete those you have performed in the laboratory and explain any one in detail.	**07**

OR

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

- What is difference between Entrained air and entrapped air.
- What is the effect of fineness of cement on strength
- What is shrinkage.
- What is bulking of sand.
- Define maturity of concrete
- Which strength of concrete is measured by testing a cube.
- What is difference between setting and hardening.

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