Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-III EXAMINATION - SUMMER 2016

Subject Code: 130605 Date:04/06/2016 **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. (a) Describe the manufacture of cement. State the Oxide Composition of Ordinary 0.1 07 Portland cement. What is soundness of cement? Explain soundness test of cement. 07 0.2 Explain quality of water for concrete 07 (a) Explain Crushing Value test on aggregates. What is I S criteria for crushing value of **(b)** 07 aggregates. OR **(b)** What is fineness modulus? Find the fineness modulus for the given sample of 07 aggregates and give its significance as per the result. Sieve size Mass retained.(in grams) 80mm 00 40mm 00 20mm 80 10mm 780 4.75mm 140 List methods of measurement of workability of concrete. Explain any two in detail. 07 0.3 (a) Explain the need of curing. State different methods of curing of concrete. 07 **(b)** 0.3 Describe split cylinder test of concrete. 07 (a) Explain Nondestructive testing and describe ultrasonic pulse velocity test. 07 **(b)** Discuss various aspects of durability of concrete. What measures are taken by IS code 0.4 **07** (a) to conserve durable structure. Write short note on Ready Mixed Concrete and Vacuum Concrete. 07 OR 0.4 (a) Distinguish between following 07 Accelerating admixture – Retarding admixture Portland Pozzolana Cement - Slag Cement Determine the quantity of fine and coarse aggregate for the following data, **07** Mass of water/m³ of concrete 191.58kg Mass of cement/m³ of concrete 383.16kg Specific gravity of cement 3.15 Specific gravity of fine aggregate 2.59 Specific gravity of coarse aggregate 2.67 % Entrapped air % fine Aggregate/Total Aggregate 33%

Q.5	(a)	Explain crack repair by routing and sealing.	07
	(b)	Calculate the gel space ratio of a sample of concrete made with 500 gm of cement with 0.60 W/C ratio, on full hydration and at 60 percent hydration. Also calculate the theoretical strength of concrete in both the cases.	
		OR	
Q.5	(a)	Answer the following in one or two sentences	14
		 Give correlation between strength of cubes and cylinders. 	
		 Write sizes of cubes used in compressive strength of cement and concrete. 	
		 Define flakiness index. 	
		 List the various stages of manufacture of concrete. 	
		 What is design mix and what is nominal mix. 	
		 Define maturity of concrete 	
		 What is flexural strength of concrete grade M20. 	
