Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI EXAMINATION – WINTER 2025

Subject Code:3150610 Date:19-11-2025

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

MARKS

Q.1 **(a)** How do you ensure that quality of water is satisfactory for concrete works? **3**

(b) Explain the role of each Bogue's compound in the process of hydration of cement. **4**

(c) Determine the fineness modulus of the coarse aggregate for which sieve result is as shown below. Sample taken = 3000 g. **7**

Sieve size (mm)	80	40	20	16	10	4.75	2.36	1.18	0.6	0.3	0.15
Weight retained (g)	0	0	2622.50	349.25	28.25	0	0	0	0	0	0

Q.2 **(a)** How is aggregate classified according to: (a) size, (b) shape and (c) texture? **3**

(b) What are mineral admixtures? Why are they generally used? List various mineral admixtures used with concrete. **4**

(c) In a mix design, the following results are obtained: Water = 185 kg, Fine Aggregate (FA) = 778 kg, and Coarse Aggregate (CA) = 1024 kg. If FA at site is found to contain 2% moisture and CA contains 1% moisture, determine the correct weight of Water, FA and CA. **7**

OR

(c) What is meant by shrinkage of concrete? Briefly discuss various types of shrinkage taking place in concrete. **7**

Q.3 **(a)** When do you recommend use of lightweight and heavy-weight aggregates? **3**

(b) What is fly ash? Explain its use as admixture in making concrete. **4**

(c) Explain the term durability of concrete and explain the factors influencing it. **7**

OR

Q.3 **(a)** What is compaction of concrete? Why it is necessary? **3**

(b) Write explanatory notes on pervious concrete. **4**

(c) Briefly explain the wet process of cement manufacture. **7**

Q.4 **(a)** After designing concrete mix for first trial, how do you proceed to finalize the mix with further trial? **3**

(b) Explain the term permeability of concrete and its effect on concrete. **4**

(c) State the steps involved in designing concrete mixes as per IS:10262. **7**

OR

Q.4 **(a)** Explain about segregation of concrete. **3**

(b) List various precautions to be taken during underwater concreting. **4**

(c) What do you understand by creep of concrete? Discuss the factors affecting creep of concrete. **7**

Q.5 **(a)** Explain different types of slump with sketch. **3**

(b) What is curing? Explain its importance. **4**

	(c)	Define workability and explain various factors influencing workability.	**7**
		OR	
Q.5	**(a)**	Explain about grading of aggregate and its significance.	**3**
	(b)	Explain mechanism of sulphate attack on concrete.	**4**
	(c)	Explain the basic principle on which rebound hammer works. What are its limitations?	**7**

****