Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: BE03006021 **Date: 17-12-2025**

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)**	Explain the key aspects of sustainable concrete.	**03**
	(b)	Discuss the functions of each Bogue's compound.	**04**
	(c)	Describe the laboratory test to find the normal consistency of cement.	**07**
Q.2	**(a)**	Explain the precautions to be taken in storing the cement bag.	**03**
	(b)	Discuss the alkali aggregate reaction.	**04**
	(c)	Explain the functions and types of chemical admixtures used in concrete.	**07**
		OR	
	(c)	Explain the effect of size, shape, and grading of aggregates on workability and strength.	**07**
Q.3	**(a)**	Define workability of concrete and describe three slump cone patterns with the sketch.	**03**
	(b)	Discuss the factors affecting the strength of hardened concrete.	**04**
	(c)	Explain the relationship between water-cement ratio and compressive strength with graphs.	**07**
		OR	
	(a)	Explain slump loss and segregation in concrete.	**03**
	(b)	Describe various curing methods and their importance.	**04**
	(c)	Explain the factors affecting creep of concrete.	**07**
Q.4	**(a)**	Define permeability and its importance for concrete durability.	**03**
	(b)	Explain the factors affecting durability of concrete.	**04**
	(c)	Describe the mix design procedures of concrete as per IS: 10262-2019.	**07**
		OR	
	(a)	Discuss sulphate attack and its preventive measures for durable concrete.	**03**
	(b)	Explain carbonation-induced corrosion in reinforced concrete structures.	**04**

	(c)	Describe the factors influencing the mix proportions of concrete.	**07**
Q.5	**(a)**	Define High Performance Concrete and mention its characteristics.	**03**
	(b)	Describe the procedure for ready-mix concrete and its field applications.	**04**
	(c)	Discuss the procedure and working principle of Rebound Hammer Test.	**07**

OR

	(a)	Define Geopolymer Concrete and state its advantages over conventional concrete.	**03**
	(b)	Explain various special concreting methods used under extreme weather conditions.	**04**
	(c)	Discuss different non-destructive testing methods of in-situ concrete and their significance.	**07**

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