

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022****Subject Code:3150610****Date:04/06/2022****Subject Name:Concrete Technology****Time:02:30 PM TO 05:00 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) State the advantages of concrete as a construction material. **03**
- (b) Enlist Bouge's compounds of cement. Explain their role in the hydration process. **04**
- (c) Determine the Fineness Modulus for the given Sieve analysis performed on fine aggregate. Weight of F.A. retained on lower than 150 $\mu$  is 35 gm. **07**

IS Sieve size	10 mm	4.75 mm	2.63 mm	1.18 mm	600 $\mu$	300 $\mu$	150 $\mu$
Weight retained (gm)	0	10	50	50	95	175	85

- Q.2** (a) Plot the flow chart for dry and wet process of cement manufacturing. **03**
- (b) Classify the coarse aggregates based on source, shape and texture. **04**
- (c) Explain briefly Alkali-Aggregate reaction. Discuss factors promoting the Alkali-Aggregate reaction in detail. **07**

**OR**

- (c) Explain the test for the determination of aggregate crushing value. **07**

- Q.3** (a) State the methods adopted for the transportation of concrete. Explain any one method. **03**
- (b) Explain the segregation of concrete. **04**
- (c) Enlist various factors affecting workability of concrete and discuss it in detail. **07**

**OR**

- Q.3** (a) State the importance of compaction to achieve desired quality of concrete. **03**
- (b) Discuss the effect of Height/Diameter ratio on strength of concrete. **04**
- (c) Explain the test method to determine flexural strength of concrete in detail. **07**

- Q.4** (a) Define the terms. (i) Shrinkage (ii) Creep (iii) Durability **03**
- (b) Explain following factors which contributes to cracks in concrete. **04**
- (i) Plastic Shrinkage (ii) Carbonation
- (c) Briefly explain the sulphate attack on concrete. Also discuss the methods to control sulphate attack. **07**

**OR**

- Q.4** (a) State the objectives of concrete mix design. **03**

- (b) Define Permeability of concrete. State the factors due to which concrete will have higher permeability in actual structures. **04**
- (c) Define nominal mix and design mix for concrete. Explain step by step procedure of the IS method of mix design. **07**
- Q.5** (a) State the Limitations of Rebound Hammer Test. **03**
- (b) Enlist methods to measure the workability of fresh concrete. Explain any one in detail. **04**
- (c) Explain the pull out test method in detail. **07**
- OR**
- Q.5** (a) State the essential characteristics of water that can be used for mixing and curing of concrete. **03**
- (b) Write short note on Ferro Cement. **04**
- (c) Discuss Fiber Reinforced Concrete in detail. **07**

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