

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3150610****Date:06-01-2023****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.

- Q.1** (a) Explain segregation and bleeding of concrete. **03**  
(b) Explain volume batching and weigh batching for concrete mix. **04**  
(c) Write down the factors affecting the strength of concrete & explain any three in detail. **07**

- Q.2** (a) Write chemical composition of Ordinary Portland cement. **03**  
(b) Define the term “Bulking of fine aggregates”. Explain its significance for in relation to strength of concrete. **04**  
(c) Explain the Alkali-aggregate reaction. **07**

**OR**

- (c) List factors affecting the permeability of concrete. Explain any three of them in detail. **07**

- Q.3** (a) What do you understand by compaction of concrete? Explain “Why compaction is needed?” **03**  
(b) Write short note on cold weather concreting. **04**  
(c) Define durability of concrete? Enlist factors affecting durability of concrete. Explain any three in brief. **07**

**OR**

- Q.3** (a) What is the role of fly ash in cement industry. **03**  
(b) How can we check cement on site? Why the field testing of cement is important? **04**  
(c) Enlist various Non-Destructive tests for assessment of strength of concrete. Explain Rebound Hammer test. **07**

- Q.4** (a) Explain in brief about freezing and thawing effect of concrete. **03**  
(b) Describe the effect of size, shape, texture and grading on concrete. **04**  
(c) Explain wet process for manufacturing of cement. **07**

**OR**

- Q.4** (a) Describe the effect of quantity of Gypsum in cement. **03**  
(b) Explain different types of slump with appropriate figure. **04**  
(c) Describe shrinkage of concrete. Giving the classification of shrinkage, explain harmful effects of shrinkage of concrete. **07**

- Q.5** (a) Briefly explain Gel-space ratio. **03**  
(b) List various crack repair techniques and explain any one in detail. **04**  
(c) Write importance of curing of concrete. Explain different methods of curing procedure. **07**

**OR**

- Q.5** (a) Explain Impact and crushing value of aggregate. **03**  
(b) Write a note on “Fiber reinforced concrete”. **04**

- (c) What do you mean by Design of concrete mix. Explain the steps for Mix Design Procedure as per relevant Indian Standards. **07**

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