

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEM-III Examination-Dec.-2011**

**Subject code: 130605**

**Date: 13/12/2011**

**Subject Name: Concrete Technology**

**Time: 2.30 pm -5.00 pm**

**Total marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What are the raw materials used for the production of concrete? Describe the Bogue's chemical compound composition of Portland cement with their function. **07**
- (b) List the methods of measurement of workability. Explain slump test. Also mention its range of workability of concrete for different placing condition as per IS. **07**
- Q.2** (a) (i) What is the role of calcium chloride and gypsum in the reaction of cement? **02**  
(ii) Write the sizes of cubes used in compressive strength test of cement and concrete **02**  
(iii) Distinguish between grade of cement and grade of concrete. **03**
- (b) Discuss various aspects of durability. What care should be taken to assure good durability in concrete? **07**
- OR**
- (b) (i) Define fineness modulus. Give particle range of fineness modulus for coarse and fine aggregates. **03**  
(ii) What is soundness of cement? How it can be tested in the laboratory? **04**
- Q.3** (a) Distinguish the relation between:  
(i) workability of concrete and size and shape of aggregate. **04**  
(ii) gel space ratio and compressive strength of concrete. **04**
- (b) Differentiate between rapid hardening cement and quick setting cement. **06**
- OR**
- Q.3** (a) Differentiate between:  
(i) initial and final setting time of cement. **03**  
(ii) setting and hardening of cement. **03**  
(iii) flakiness and elongation index. **03**
- (b) Explain alkali aggregate reaction. **05**

- Q.4 (a)** Name the test for strength of aggregate. Explain aggregate crushing value test. **06**
- (b)** Explain need of curing. State different methods of curing. On which factors curing method depends? In which condition steam curing can be adopted? **08**

**OR**

- Q.4 (a)** Write a short note on :
- (i) fiber reinforced concrete. **03**
- (ii) ready mixed concrete. **03**

- Q.4 (b)** What is non destructive testing of concrete? Explain rebound hammer test with its limitations. **08**

- Q.5 (a)** Describe the importance of quality of water used for the production of concrete. **06**
- (b)** Define nominal mix concrete and design mix concrete. Describe step by step procedure of IS method of mix design. **08**

**OR**

- Q.5 (a)** Discuss the factors which influence the choice of mix design. **07**
- (b)** Name the materials used for repairing of cracks. List various crack repair techniques and explain any one in detail. **07**

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