

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? 07
Describe the Bogue's chemical compound composition of Portland cement with their function.

(b) List the methods of measurement of workability. Explain slump test. 07
Also mention its range of workability of concrete for different placing condition as per IS.

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 : **03**
- (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**
