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**S.E. (Civil Engineering) (Second Semester) EXAMINATION, 2016**  
**CONCRETE TECHNOLOGY**  
**(2008 PATTERN)**

**Time : Three Hours**

**Maximum Marks : 100**

- N.B. :—**
- (i) Answer Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6 from Section I and Q. No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10, Q. No. 11 or Q. No. 12 from Section II.
  - (ii) Answer to the two Sections should be written in separate-books.
  - (iii) Neat diagrams must be drawn wherever necessary.
  - (iv) Figures to the right side indicate full marks.
  - (v) Your answer will be valued as a whole.
  - (vi) Use of electronic pocket calculator is allowed.
  - (vii) Assume suitable data, if necessary.
  - (viii) Use of IS code 10262,456 is not allowed.

**SECTION I**

1. (a) Explain the wet process of manufacturing Portland cement. [6]  
(b) Write a short note on classification of Aggregates. [6]  
(c) Write a short note on classification of Admixtures. [6]

*Or*

2. (a) What are the Bogue's compounds ? State the significance of each compound. [6]

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- (b) What is bulking of sand and its effect on batching ? [6]
- (c) Write a short note on : [6]
  - (i) Fly ash
  - (ii) Hydration process of cement.
- 3. (a) What is the purpose of curing ? What are the different methods of curing ? [5]
- (b) Explain the relationship between compressive strength and tensile strength of concrete. [5]
- (c) Write a short note on : [6]
  - (i) Segregation
  - (ii) Bleeding.

*Or*

- 4. (a) Explain the compressive strength of concrete. How is it determined in laboratory ? [6]
- (b) Write short note on : [6]
  - (i) Shrinkage
  - (ii) Swelling
- (c) Enlist the factors affecting workability of concrete ? [4]
- 5. (a) Briefly outline the IS code method of concrete mix design. [6]
- (b) What do you mean by nominal mix, standard mix and design mix ? [6]
- (c) What do you mean by : [4]
  - (i) Mean strength
  - (ii) Variance
  - (iii) Standard deviation
  - (iv) Coefficient of variation.

*Or*

6. (a) Explain the factors governing the selection of mix proportions. [6]  
(b) Explain DOE method of mix design in brief. [6]  
(c) What is the procedure of trial mixes when using a designed mix. [4]

## SECTION II

7. (a) What precaution should be taken while placing concrete in deep formwork. [4]  
(b) Write short notes on : [12]  
(i) Impact echo test  
(ii) Pullout test  
(iii) Ultrasonic pulse velocity test.

*Or*

8. (a) Write a short note on analysis of fresh concrete. [4]  
(b) Explain briefly principles of design of formwork. [6]  
(c) Write a short note on : [6]  
(i) Rebound hammer test  
(ii) Marsh cone test.
9. Write a short note on : [16]  
(i) Vibrators  
(ii) Self compacting concrete  
(iii) Light weight concrete  
(iv) Ferrocement.

*Or*

10. Write a short note on : [16]

- (i) Hauling equipment
- (ii) High density concrete
- (iii) Fiber reinforced concrete
- (iv) Under water concreting.

11. (a) What is durability of concrete ? What is significance of durability ? What effect of w/c ratio makes on durability ? [6]

(b) Write a short note on : [12]

- (i) Carbonation of concrete
- (ii) Evaluation of cracks
- (iii) Repair of stitching.

*Or*

12. (a) Explain the various reasons of cracking of hardened concrete. [6]

(b) Explain process of preparation of surface for repair along with its importance. [6]

(c) Write short note on : [6]

- (i) Sulphate attack on concrete
- (ii) Shotcrete.