

Total No. of Questions—**12**]

[Total No. of Printed Pages—**4+2**

<b>Seat No.</b>	
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**[4262]-109**

**S.E. (Civil) (II Sem.) EXAMINATION, 2012**

**CONCRETE TECHNOLOGY**

**(2008 PATTERN)**

**Time : Three Hours**

**Maximum Marks : 100**

**N.B. :—** (i) Answer *three* questions from Section I and *three* questions from Section II.

(ii) Answers to the two Sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Figures to the right indicate full marks.

(v) Assume suitable data, if necessary.

**SECTION I**

**1. (a)** List the various types of cement. Explain them briefly. [6]

P.T.O.

- (b) What is bulking of sand ? Explain the field test to determine the extent of bulking of sand. [6]
- (c) What are the different types of mineral admixtures ? Explain any *two* mineral admixtures. [6]

*Or*

2. (a) Write flowchart for the manufacturing of cement by dry process and wet process. [6]
- (b) Explain Alkali-Aggregate Reaction. State factors promoting it and control of the reaction. [6]
- (c) What are the functions and types of admixtures ? [6]
3. (a) Explain water-cement ratio. Draw graphs giving relationship between w/c ratio and compressive strength. [6]
- (b) Define shrinkage of concrete and give its classification. Write a short note on “Carbonation Shrinkage”. [6]
- (c) State advantages and disadvantages of pull-out test. [4]

*Or*

4. (a) Define workability. State the factors affecting workability. Describe any *one* in detail. [6]

(b) Write short notes on :

(i) Bleeding

(ii) Segregation. [6]

(c) Describe the role of aggregate in creep of concrete. [4]

**5.** (a) What do you mean by nominal mix, standard mix and design mix ? [6]

(b) Write in general step by step procedure for concrete mix design. [6]

(c) Explain the factors affecting the choice of mix design. [4]

*Or*

**6.** (a) State the different methods of mix design. Explain DOE method of mix design in detail. [6]

(b) What do you mean by :

(i) Mean strength

(ii) Variance

(iii) Standard deviation

(iv) Coefficient of variation. [4]

- (c) Write a note on 'Absolute Volume', in respect of mix design to calculate volume of different ingredients of concrete. [6]

## SECTION II

7. (a) Explain 'pulse velocity method' for determining concrete properties. [6]
- (b) Write a short note on Analysis of Fresh Concrete. [6]
- (c) Explain briefly principles of design of formwork. [6]

*Or*

8. (a) State the various types of non-destructive tests carried on hardened concrete. Explain Rebound Hammer test with its limitation. [6]
- (b) Explain 'Marsh Cone Test' in detail. [6]
- (c) Write short notes on :
- (i) Impact echo test
- (ii) Basic members required for formwork. [6]

9. (a) What is self-compacting concrete ? What are advantages and disadvantages of it ? [6]
- (b) Write short notes on :
- (i) High density concrete
- (ii) Polymer concrete. [6]
- (c) What is ready-mix concrete ? [4]

*Or*

10. (a) Write a short note on Fibre Reinforced Concrete. [6]
- (b) State the advantages of light-weight concrete. [6]
- (c) What are the effects of hot weather on concreting ? [4]
11. (a) Write short notes on :
- (i) Shotcrete
- (ii) Sulphate attack on concrete
- (iii) Evaluation of cracks. [6]
- (b) Explain various reasons of cracking of hardened concrete. [6]
- (c) Write a note on corrosion of reinforcement and its remedial measures. [4]

*Or*

- 12.** (a) State and explain factors affecting permeability of concrete. [6]
- (b) Write notes on :
- (i) Chloride attack on concrete
- (ii) Carbonation of concrete. [6]
- (c) Explain 'Repair by Stitching'. [4]