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**[5057]-206****S.E (Civil Engineering) (Second Semester) EXAMINATION, 2016****CONCRETE TECHNOLOGY****(2012 PATTERN)****Time : Two Hours****Maximum Marks : 50**

**N.B. :—** (i) Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 and Q. 7 or Q. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Your answers will be valued as a whole.

(v) Use of electronic pocket calculator is allowed.

(vi) Assume suitable data, if necessary.

(vii) Use of IS code 10262,456 is not allowed.

1. (a) What are the minor compounds in Portland Cement ? What is their role ? [6]
- (b) Explain in detail importance of compaction of concrete. What are the different methods of compaction ? [6]

*Or*

2. (a) What is bulking of sand and its effect on batching ? [6]
- (b) Write a short note on shrinkage and its different types. [6]

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3. (a) State the various types of destructive tests carried on hardened concrete. Explain "Flexural Test". [6]
- (b) Write short notes on : [6]
- (i) Under water concreting
- (ii) Cold weather concreting.

*Or*

4. (a) Write short notes on : [6]
- (i) High density concrete
- (ii) Self compacting concrete.
- (b) Define Ferrocement. What are the properties and specifications of ferrocement materials used in the construction industry ? [6]

5. (a) What do you mean by nominal mix standard mix and design mix ? [6]
- (b) Briefly outline the IS code method of concrete mix design. Write the procedure of standard mixes. [7]

*Or*

6. (a) Write major factors affecting mix design. Explain water-cement ratio. [4]
- (b) What do you mean by : [4]
- (i) Mean strength
- (ii) Variance
- (iii) Standard Deviation
- (iv) Coefficient of variation.
- (c) Explain the DOE method of mix design in brief. [5]

7. (a) What are the factors contributing cracks in the concrete ? [5]
- (b) What is durability ? What is significance of durability ? What effect of w/c ratio makes on durability ? [8]

*Or*

8. (a) Write a short note on “Retrofitting by FRP”. [5]
- (b) What is effect of permeability on concrete ? What measures should be taken to reduce permeability of concrete ? [8]

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