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## Fourth Semester B.E. Degree Examination, June/July 2019 Concrete Technology

Time: 3 hrs.

Max. Marks: 80

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Use of IS10262, IS 383 are permitted.*

### Module-1

- 1 a. Explain with the flow chart the manufacture of cement by dry process. (06 Marks)
- b. What are the various tests conducted on coarse aggregate for determining its strength? Explain any two. (06 Marks)
- c. List the different types of admixtures. (04 Marks)

OR

- 2 a. Explain hydration of cement and importance of Bogue's compounds. (08 Marks)
- b. Explain the effect of fly ash and silica fume in the hardened state of concrete. (08 Marks)

### Module-2

- 3 a. Define workability. Explain the factors affecting workability. (08 Marks)
- b. Explain the different methods of curing. (08 Marks)

OR

- 4 a. Explain the process of manufacturing of concrete. (08 Marks)
- b. Explain the good and bad practice of making and using fresh concrete. (08 Marks)

### Module-3

- 5 a. Explain the factors influencing the strength of hardened concrete. (08 Marks)
- b. List the insitu tests conducted on concrete. Explain the principle of rebound hammer test. (08 Marks)

OR

- 6 a. Discuss the various factors affecting the creep. (06 Marks)
- b. Explain the different methods of controlling chloride attack on concrete. (06 Marks)
- c. List the applications of ultrasonic pulse velocity test. (04 Marks)

### Module-4

- 7 Design a concrete mix by I.S. method for M30 grade concrete as per IS 10262.
  - a. Grade : M30
  - b. Cement : OPC – 43 Grade
  - c. Maximum nominal size of aggregate : 20mm
  - d. Minimum cement content ; 320 kg/m<sup>3</sup>
  - e. Maximum W/C ratio : 0.45
  - f. Workability : 75mm slump
  - g. Exposure condition : severe
  - h. Maximum cement content : 450 kg/m<sup>3</sup>
  - i. Method of concrete placing : pumping
  - j. Chemical admixture : Super plasticizer.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



Test data for materials

- i) Specific gravity of cement : 3.15
- ii) Specific gravity of F.A : 2.75
- iii) Specific gravity of C.A : 2.75
- iv) Fine aggregate conforming to zone – II of table 3 of IS 385.



(16 Marks)

**OR**

8 Design a concrete mix by IS method for M40 grade concrete as per IS:10262.

- a. Grade : M40
- b. Cement : OPC – 43 Grade
- c. Maximum nominal size of aggregate : 20mm
- d. Minimum cement content : 320 kg/m<sup>3</sup>
- e. Maximum W/C ratio : 0.45
- f. Workability : 100mm slump
- g. Exposure condition : severe (for reinforced concrete)
- h. Maximum cement content : 450 kg/m<sup>3</sup>
- i. Method of concrete placing : pumping
- j. Type of aggregate : crushed angular
- k. Degree of supervision : Good
- l. Chemical admixture : super plasticizer.

Test data for materials

- i) Specific gravity of cement : 3.15
- ii) Specific gravity of C. A : 2.75
- iii) Specific gravity of F.
- iv) Water absorption for  
C.A : 0.5%  
F.A. : 1.0%
- v) Fine aggregate confo



g zone-I of table 4 of IS 383.

(16 Marks)

**Module-5**

- 9 a. Explain the advantages and disadvantages of RMC. (06 Marks)
- b. Explain the properties of FRC. (06 Marks)
- c. List the applications of light weight concrete. (04 Marks)

**OR**

- 10 a. Discuss the properties of self compacting concrete. (08 Marks)
- b. Explain the applications of fiber reinforced concrete. (08 Marks)

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