

# CBCS SCHEME

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15CV44

## Fourth Semester B.E. Degree Examination, Feb./Mar. 2022 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 IS-10262, IS 383, IS8112, IS3812 are permitted.*

### Module-1

- 1 a. With the help of neat sketch explain the manufacture of cement by dry process. (08 Marks)  
b. Cement concrete is a good construction material. Justify. (08 Marks)

OR

- 2 a. Briefly explain the constituents of cement with their function. (08 Marks)  
b. Briefly explain the following :  
(i) Effect of air entrainment on properties of concrete. (04 Marks)  
(ii) Functions of admixture on Fresh concrete. (04 Marks)

### Module-2

- 3 a. Write a note on Segregation and Bleeding. (08 Marks)  
b. Why curing is necessary? Explain different types of curing. (08 Marks)

OR

- 4 a. Define workability. Enumerate the important properties of plastic concrete. (08 Marks)  
b. Mention the precautions to be considered during transport of concrete? What are different types of transport of concrete? (08 Marks)

### Module-3

- 5 a. Explain the factor which affects strength of concrete. (08 Marks)  
b. Define shrinkage. Explain different types of shrinkage. (08 Marks)

OR

- 6 a. Explain the factors which influence corrosion of RCC structure. (08 Marks)  
b. Why non-destructive testing is required for hardened concrete. Explain any three non-destructive test on hardened concrete. (08 Marks)

### Module-4

- 7 a. What are the objectives of mix design? Enumerate factors to be considered for a mix design. (08 Marks)  
b. Explain step-by-step procedure for a mix design as per IS-10262. (08 Marks)

OR

- 8 Design concrete mix design for proportion :  
Stipulated for proportion

- (i) Grade designation : M40
- (ii) Type of cement : OPC 43 grade confirming to IS 8112.
- (iii) Type of mineral admixture : Fly ash confirming to IS 3812 (Part-I)
- (iv) Maximum nominal size of aggregate : 20 mm
- (v) Minimum cement content : 320 kg/m<sup>3</sup>
- (vi) Maximum water cement ratio : 0.45
- (vii) Workability : 100mm (Slump)
- (viii) Exposure condition : Severe
- (ix) Method of concrete placing : Pumping
- (x) Degree of supervision : Good
- (xi) Type of aggregate : Crushed angular aggregate
- (xii) Maximum cement content : 450 kg/m<sup>3</sup>
- (xiii) Chemical admixture type : Super plasticizer

Test data for materials :

- (i) Cement used : OPC 43 grade confirming to IS 8112
- (ii) Specific gravity of cement : 3.15
- (iii) Fly ash Confirming to IS 3812 (Part-I)
- (iv) Specific gravity of fly ash : 2.2
- (v) Chemical admixture : Super plasticizer confirming to IS 9103
- (vi) Specific gravity of coarse aggregate : 2.74
- (vii) Specific gravity of fine aggregate : 2.74
- (viii) Water absorption coarse aggregate : 0.5%
- (ix) Water absorption of fine aggregate : 0.1%
- (x) Free moisture coarse aggregate : Nil
- (xi) Free moisture fine aggregate : Nil
- (xii) Sieve analysis coarse aggregate : Confirming to Table 2 of IS 383
- (xiii) Sieve analysis of fine aggregate : Confirming to Zone 1 Table 4 of IS 383. (16 Marks)

**Module-5**

- 9 a. Explain the properties of light weight concrete. (08 Marks)  
b. Explain the advantages and disadvantages of RMC. (08 Marks)

OR

- 10 a. Briefly explain the factors affecting the properties of Fibre Reinforced Concrete. (08 Marks)  
b. What are the different methods of testing of self compacting concrete? Explain any one method in brief. (08 Marks)

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