

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

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, choosing ONE full question from each module.

**Module-1**

- 1 a. Explain the constituents of cement with their percentage and functions. (10 Marks)  
b. Define Fineness modulus. Explain test procedure to determine the Fineness modulus and Importance of Fineness modulus. (10 Marks)

**OR**

- 2 a. What are Bogue's compounds? Briefly explain their contribution towards gaining of strength of cement with graph. (10 Marks)  
b. What is an Admixture? What are the effects of air entrainment and Retarders on the properties of concrete? (10 Marks)

**Module-2**

- 3 a. Define Workability. Briefly explain the factors which affects the workability of concrete. (10 Marks)  
b. What is the Importance of curing in concrete? Briefly discuss any two methods. (10 Marks)

**OR**

- 4 a. Mention the various stages of manufacturing of concrete. Discuss any two stages. (10 Marks)  
b. Explain good and bad practices of making and using fresh concrete. (10 Marks)

**Module-3**

- 5 a. Explain the factors affects the strength of concrete. (10 Marks)  
b. Write short notes on : i) Shrinkage of concrete ii) Creep. (10 Marks)

**OR**

- 6 a. What is durability of concrete? Explain the factors affecting the durability of concrete. (10 Marks)  
b. Mention various non – destructive testing of concrete. Explain any two methods in brief. (10 Marks)

**Module-4**

- 7 Design a concrete mix for  $M_{25}$ .  
a. Grade designation :  $M_{25}$ .  
b. Type of cement : OPC 43 grade  
c. Max. Nominal size of aggregates 20mm down  
d. Min. cement content :  $300 \text{ kg/m}^3$   
e. Water cement ratio : 0.50  
f. Workability : 75mm slap  
g. Exposure condition : Moderate (RCC)  
h. Method of concrete placing : Manual  
i. Max. cement content :  $450 \text{ kg/m}^3$   
j. Chemical admixture : NIL  
k. Fine aggregate zone : Zone 2.

A Cement : Type of cement = OPC 43 grade  
Specific gravity : 3.15

B Coarse Aggregate : Specific gravity : 2.80  
Water absorption : 1%  
Free surface moisture : NIL

C Fine Aggregate : Specific gravity : 2.65  
Water absorption : 2%  
Free surface moisture : 2%

D Chemical Admixture – NIL.

(20 Marks)

**OR**

- 8 Discuss the concept of mix design. Write step by step procedure for mix design using IS code. Also discuss the variables in proportioning of concrete. (20 Marks)

**Module-5**

- 9 a. What are requirements of RMC according QCI? Briefly discuss advantages and disadvantages of RMC. (10 Marks)  
b. What is Light weight concrete? Discuss the uses and advantages of Light weigh concrete. (10 Marks)

**OR**

- 10 a. Enumerate the benefits of self compacting concrete. Explain any two test on self compacting concrete. (10 Marks)  
b. List the types of Fibres used in FRC and discuss Factors affecting properties of FRC. (10 Marks)