

**Fourth Semester B.E. Degree Examination, July/August 2022**  
**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. Mention different types of cement. (10 Marks)  
b. Explain the following : (10 Marks)  
i) Fly ash      ii) Silico Fumes      iii) Rice husk ash      iv) GGBS.

OR

- 2 a. Explain the constituents of cement with their percentages functioning. (10 Marks)  
b. Explain the importance of size shape and texture of coarse aggregate on quality of concrete. (10 Marks)

**Module-2**

- 3 a. List and explain the factors affects the workability of concrete. (10 Marks)  
b. Enumerate good and bad practices of making and using of Fresh concrete. (10 Marks)

OR

- 4 a. Explain the process of hydration of cement. Enumerate its significance and the chemical reaction. (10 Marks)  
b. Write short notes : (10 Marks)  
i) Segregation      ii) Membrane curing.

**Module-3**

- 5 a. Explain the factors affecting the strength of concrete. (10 Marks)  
b. What is the Necessity of Non Destructive Testing (NDT)? Explain any two methods of NDT. (10 Marks)

OR

- 6 a. Mention the types of Shrinkage. Explain factor affecting Shrinkage. (10 Marks)  
b. Explain Sulphate attack and chloride attack. (10 Marks)

**Module-4**

- 7 a. What are the objectives of mix design? Explain the factors to be considered for mix design. (10 Marks)  
b. Mention different method of mix design; explain the factor affecting the choice of mix proportions. (10 Marks)

OR

8 Design a concrete mix of M<sub>25</sub> grade as per IS 10262-2019, with the following stipulations.

- a) Grade designation – M<sub>25</sub>
  - b) Type of cement OPC 43 grade
  - c) Maximum Nominal size of aggregate 20mm down
  - d) Minimum cement content : 300 Kg/m<sup>3</sup>
  - e) Workability : Slump : 75mm
  - f) Exposure condition : moderate
  - g) Method of concrete placing : Manual
  - h) Maximum cement content : 450Kg/m<sup>3</sup>
  - i) Chemical admixture : NIL
  - j) Fine aggregate zone : zone 2
- A. Specific gravity of cement : 3.15
- B. Coarse aggregate
- (i) Specific gravity 2.80
  - (ii) Water absorption 1%
  - (iii) Free surface moisture content : NIL
- C. Fine aggregate
- (i) Specific gravity 2.65
  - (ii) Water absorption 2%
  - (iii) Free surface moisture contact : 2%

(20 Marks)

Module-5

- 9 a. Enumerate the necessity of RMC with advantages and disadvantages. (10 Marks)
- b. Write short notes on :
- (i) Geopolymer concrete
  - (ii) High performance concrete. (10 Marks)

OR

- 10 a. List the types of Fibres used in FRC and discuss factors affecting properties of FRC. (10 Marks)
- b. What is self compacting concrete? Explain the properties of SCC. (10 Marks)

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