

# CBCS SCHEME



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21CV62

## Sixth Semester B.E. Degree Examination, June/July 2024 Concrete Technology

Time: 3 hrs.

Max. Marks: 100

**Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Use of Code book IS – 10262 – 2019 is permitted.

### Module-1

- 1 a. Explain the constituents of cement with their percentage and their function. (08 Marks)
- b. List out Bogues compounds  $C_2S$ ,  $C_3S$ ,  $C_3A$  and  $C_2AF$ . Explain their contribution towards gaining of strength of cement. (08 Marks)
- c. Describe the process of hydration of cement. (04 Marks)

OR

- 2 a. Explain the manufacturing process of cement by dry process along with the flow chart. (08 Marks)
- b. List the types of cement and briefly explain the properties and application of any four types of cement. (08 Marks)
- c. Explain the importance of size, shape and texture of aggregate. (04 Marks)

### Module-2

- 3 a. Explain the factors affecting the workability of fresh concrete. (10 Marks)
- b. Mention various stages involved in manufacturing of discuss any three. (10 Marks)

OR

- 4 a. Define workability. How do you measure the workability of the concrete by slump cone apparatus with a neat sketch? (10 Marks)
- b. Why curing is needed? Explain different methods of curing of concrete in detail. (10 Marks)

### Module-3

- 5 a. Define admixture. Briefly explain the classification of admixture. (10 Marks)
- b. Explain the effect of superplasticizer and accelerators on the properties of fresh and hardened concrete. (10 Marks)

OR

- 6 Design a concrete mix for grade M25
- |   |                         |
|---|-------------------------|
| a. Grade designation                    | : M25                   |
| b. Type of cement                       | : OPC 43 grade          |
| c. Maximum nominal size of aggregate    | : 20mm down             |
| d. Minimum cement content               | : 300kg/m <sup>3</sup>  |
| e. Water cement ratio                   | : 0.5                   |
| f. Workability                          | : 75mm slump            |
| g. No chemical admixture                |                         |
| h. Fine aggregate                       | : Zone . II             |
| i. Exposure condition                   | : Moderate              |
| j. Method of concrete placing           | : Manual                |
| k. Maximum cement content               | : 450 kg/m <sup>3</sup> |
| l. Specific gravity of cement           | : 3.15                  |
| m. Specific gravity of coarse aggregate | : 2.80                  |
| n. Water absorption of coarse aggregate | : 1%                    |
| o. Free surface moisture                | : Nil                   |
| p. Specific gravity of fine aggregate   | : 2.65                  |
| q. Water absorption of fine aggregate   | : 2%                    |
| r. Free surface moisture                | : 2%.                   |

(20 Marks)

**Module-4**

- 7 a. Explain the factors influencing the strength of concrete. (10 Marks)
- b. What is maturity of concrete? Explain its significance in gaining the strength of concrete. (10 Marks)

OR

- 8 a. Explain the factors affecting modulus of elasticity of concrete. (10 Marks)
- b. Explain flexural strength and split tensile strength lists on concrete. (10 Marks)

**Module-5**

- 9 a. What is durability of concrete? What are the factors affecting durability of concrete. (10 Marks)
- b. Define shrinkage and creep of concrete. Discuss about the factors affecting shrinkage of concrete. (10 Marks)

OR

- 10 a. Explain in brief chloride and sulphate attack on concrete and its affect on durability of concrete. (10 Marks)
- b. Explain the process of carbonation, freezing and thawing in concrete. (10 Marks)

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