

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
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|---|-------------------------|
| 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 ³ |
| 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 ³ |
| 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)
