

CBCS SCHEME

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18CV44

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.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 IS-10262 – 2019 is permitted.
3. Use of IS-456 is permitted.*

Module-1

- 1 a. Explain the manufacture process of cement by dry process using flow chart. (10 Marks)
b. Explain the constituents of cement with their percentage and functions. (10 Marks)

OR

- 2 a. What is an Admixture? What are the effects of air entrainment and retarders on the properties of concrete? (10 Marks)
b. What are the different types of coarse aggregate tests? Explain any two type of aggregate tests with neat sketch and appropriate formulas used. (10 Marks)

Module-2

- 3 a. Explain two laboratory tests for measurement of workability. (10 Marks)
b. What is the importance of curing in concrete? Briefly discuss any two methods. (10 Marks)

OR

- 4 a. Explain the manufacturing process of concrete. (12 Marks)
b. Explain segregation and bleeding of concrete. (08 Marks)

Module-3

- 5 a. Explain the types of shrinkage in concrete. (08 Marks)
b. Discuss the factors affecting strength of concrete. (12 Marks)

OR

- 6 a. What are the internal and external factors influence the durability of concrete? (10 Marks)
b. Explain the rebound hammer test and ultrasonic pulse velocity test. (10 Marks)

Module-4

- 7 a. Write the steps involved in the methods of mix design. (12 Marks)
b. Explain the concept of mix design. (08 Marks)

OR

- 8 Design a concrete mix for M₄₀
- i) Grade designation : M₄₀
 - ii) Type of cement : PPC
 - iii) Max Nominal size of aggregate 20mm down size
 - iv) Min cement content and max water-cement ratio to be adopted and/or : severe (for reinforced concrete). Exposure conditions as per table 3 and table 5 of IS456.
 - v) Workability : 75mm (slump)
 - vi) Method of concrete placing : chute (non pumpable)
 - vii) Degree of site control : Good
 - viii) Type of aggregate : crushed angular aggregate
 - ix) Maximum cement content not : 450 kg/m³ including fly ash
 - x) Chemical admixture type : super plasticizer – normal
 - xi) Fine aggregate zone : zone 2
- I. Cement : Type of cement : PPC conforming to IS1489 (part 1) specific gravity : 2.88
 - II. Coarse aggregate : specific gravity : 2.74 water absorption : 0.5%
 - III. Fine aggregate : specific gravity : 2.65 water absorption : 1%
 - IV. Chemical admixture : super plasticizer conforming IS9103 specific gravity : 1.145
- (20 Marks)**

Module-5

- 9 a. Explain the test conducted on self compacting concrete. **(12 Marks)**
- b. List the advantages and disadvantages of RMC. **(08 Marks)**

OR

- 10 a. List the types of fibers used in FRC. Discuss properties of FRC and application of FRC. **(12 Marks)**
- b. What is light weight concrete? Discuss the use and advantages of light weight concrete. **(08 Marks)**

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