ACHARYA INSTITUTE OF TECHNOLOGY
MCA
Library
Date
BANGALORE

CBCS SCHEME

USN | | | | | | | | | | |

21CV62

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Concrete Technology

Time: 3 hrs. Max. Marks: 100

Note:* 1. *Answer any FIVE full questions, choosing ONE full question from each module.
2. Use IS-10262 mix design code is allowed.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

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

OR

2 a. What is grading of aggregate? Explain the importance of size, shape and texture with respect to coarse aggregate? **(10 Marks)**
b. List the mineral admixtures used in concrete? Briefly explain about Flyash and GGBS as admixtures. **(10 Marks)**

Module-2

3 a. List the factors that effects workability of concrete. Mention the laboratory tests conducted to measure workability of a concrete. **(10 Marks)**
b. What is the importance of curing in concrete? Briefly discuss ant two methods. **(10 Marks)**

OR

4 a. Explain the process of manufacturing of concrete. **(10 Marks)**
b. Explain good and bad practices of making and using fresh concrete. **(06 Marks)**
c. Explain about (i) Segregation (ii) Bleeding **(04 Marks)**

Module-3

5 a. Explain the effect of chemical admixtures on fresh and hardened properties of concrete. **(10 Marks)**
b. List the different types of chemical admixtures? Explain any two. **(10 Marks)**

OR

6 Design a concrete mix by IS method for M40 Grade Concrete as per IS 10262.

1. Grade – M35
2. Cement – OPC – 43 grade
3. Maximum nominal size of aggregate : 20 mm
4. Minimum cement content : 320 kg/m^3
5. Maximum W/C ratio : 0.45
6. Workability : 100 mm slump
7. Exposure condition : Moderate (for reinforced concrete)
8. Maximum cement content : 450 kg/m^3
9. Method of concrete placing : pumping
10. Type of aggregate : crushed angular
11. Degree of supervision : Good
12. Chemical admixture : super plasticizer

Test data for materials:
(i) Specific gravity of cement : 3.15
(ii) Specific gravity of CA : 2.74
(iii) Specific gravity of FA : 2.74
(iv) Water absorption for, CA : 0.5%; FA : 1.0%
(v) Fine aggregate conforming to grading zone – I of table 4 of IS 383.

Assume other data wherever necessary. **(20 Marks)**

Module-4

7 a. Explain the factors influencing the strength of concrete. **(10 Marks)**

b. Mention various non-destructive testing of concrete. Explain any two methods in brief. **(10 Marks)**

OR

8 a. Explain the testing of hardened concrete. Explain the compressive strength test of concrete as per IS codes. **(10 Marks)**

b. Define the terms:
(i) Water cement ratio (ii) Gel-space ratio (iii) Maturity concept
(iv) Modulus of elasticity (v) Poisson's ratio **(10 Marks)**

Module-5

9 a. What is durability of concrete? Explain the factors influencing durability of concrete. **(10 Marks)**

b. Write short notes on: (i) Shrinkage of concrete (ii) Creep **(10 Marks)**

OR

10 a. What is sulphate attack on concrete? State the methods of controlling sulphate attack. **(10 Marks)**

b. Explain the process of carbonation, freezing and thawing in concrete. **(10 Marks)**

* * * * *