CBCS SCHEME

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

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.

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 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 M_{40}

i) Grade designation : M_{40}
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/m^3 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)**

* * * * *