Registration No.: | | | | | | | | | | |

Total Number of Pages: 02 **Integrated Dual Degree (B.Tech and M.Tech)**
Sub_Code: RCI4D002

4th Semester Regular/Back Examination: 2023-24
SUBJECT: CONCRETE TECHNOLOGY
BRANCH(S): CIVIL,CE
Time: 3 Hour
Max Marks: 100
Q.Code: P539
Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part-I

Q1 **Answer the following questions:** **(2 x 10)**

a) What is the function of alumina in cement?
b) What do you mean by bulking of sand?
c) State the fineness modulus values for fine sand, medium sand, and coarse sand.
d) What are the various factors which affect the workability of concrete?
e) Curing period of PPC concrete is more or OPC concrete is more? Explain.
f) State three properties of hardened concrete.
g) Distinguish between creep of concrete and shrinkage of concrete.
h) What are the various non destructive testing methods used for concrete members?
i) Which IS Code is used for mix design of concrete?
j) State an example of light weight aggregate. What is its application?

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 × 8)**

a) Describe the chemical composition of Portland cement. Distinguish between initial setting time and final setting time of cement.
b) Explain: soundness of aggregate and gap graded aggregate.
c) Distinguish between segregation and bleeding of concrete.
d) How the compressive strength of concrete is determined experimentally?
e) What special care should be considered during concrete manufacture for ensuring good quality mixing water?
f) Explain various curing methods adopted and duration of curing for getting desired strength of concrete.
g) Explain the difference between modulus of elasticity of concrete and dynamic modulus of elasticity of concrete.
h) Explain the various factors which influence the creep of concrete.
i) Explain any two parameters which affect the durability of concrete.

j) Describe the characteristics of high performance concrete.

k) Distinguish between conventional cement concrete and light weight concrete. State the major applications of light weight concrete.

l) Describe the constituents, advantages, and applications of polymer concrete.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Define admixture. What is the purpose of using admixtures in concrete? Distinguish among accelerating admixtures, retarding admixtures, and air entraining admixtures. **(16)**

Q4 State the essential properties of fresh concrete and hardened concrete. Explain any one laboratory method to assess the workability of concrete. **(16)**

Q5 Explain the procedure to find the tensile strength of concrete. **(16)**
Explain the effects of creep and various factors which influence the creep of concrete.

Q6 What do you mean by mix design? Explain BIS method of mix design preparation of concrete. **(16)**