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

Total Number of Pages: 02

Course: B.TECH
Sub_Code: RCI4D002

4th Semester Back Examination: 2024-25
SUBJECT: CONCRETE TECHNOLOGY
BRANCH(S): CIVIL
Time: 3 Hours
Max Marks: 100
Q.Code: S236

Answer Question No.1 (Part-I) 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) State the initial and final setting time of OPC.
b) State the difference between 43 grade cement and 53 grade cement.
c) What are the various parameters which control the strength of concrete?
d) Which test is conducted to measure the workability of concrete in laboratory?
e) Write three different tests conducted for hardened concrete.
f) What is the purpose of curing of concrete?
g) What is the difference between normal mix concrete and ready mix concrete?
h) In polymer concrete, explain whether cement is used or not.
i) Write the name of the IS Code which is referred for preparation of mix design of concrete.
j) Creep of concrete is a short term effect or long term effect? Briefly explain.

Part-II

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

a) Explain the chemical composition of cement. What do you mean by hydration of cement?
b) How can you ensure proper quality control of concrete in a work site?
c) What are the different types of admixtures used in concrete? What are the important reasons of using admixtures?
d) Explain the sieve analysis and gradation curve for fine aggregates.
e) Explain Abram's law used for hardened concrete.
f) Distinguish between fresh concrete and hardened concrete. State different properties of fresh concrete and hardened concrete.
g) How the tensile strength of concrete is determined in a laboratory? Explain.
h) Differentiate between specific gravity and bulk density of aggregates. What is adsorption of coarse aggregates?
i) Define workability of concrete. Explain the effect of time and temperature on the workability of concrete.
j) Explain various factors influencing creep and the effects of creep.
k) Differentiate between cellular concrete, no fines concrete and high density concrete.
l) Describe the application of high performance concrete.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four) **(16 x 2)**

Q3	What are the factors which promote shrinkage of concrete? What precautions should be taken to reduce it? Describe the mixing and placing procedure of self-compacting concrete.	**(16)**
Q4	Explain the workability behavior, mechanical and physical properties of fibre reinforced concrete with specific examples.	**(16)**
Q5	What are the advantages of conducting NDT of concrete? Explain any two methods of non-destructive tests conducted for concrete.	**(16)**
Q6	Describe the IS recommended guidelines for mix design of concrete.	**(16)**