

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Tech-I Semester (CE-Structural Engineering)

COURSE CODE(CREDITS): 11M1WCE113 (3)

MAX. MARKS: 15

COURSE NAME: DESIGN OF REINFORCED CONCRETE STRUCTURES

COURSE INSTRUCTORS: MR. KAUSHAL KUMAR

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

- Q1.** Describe the importance of compatibility between steel and concrete in RCC. How do their similar thermal expansion properties and the bond between them contribute to the durability and strength of RCC structures? [3 Marks]
- Q2.** Describe the process and significance of mix proportioning in concrete production. How does it affect the final properties of RCC, such as strength, durability, and resistance to environmental factors? [3 Marks]
- Q3.** Explain the stages of hydration, the chemical reactions involved, and the formation of hydration products such as C-S-H, calcium hydroxide, and ettringite. Discuss the impact of these products on the mechanical properties of concrete, including strength and durability. [3 Marks]
- Q4.** Provide a detailed overview of different chemical and mineral admixtures used to modify concrete properties, such as superplasticizers, air-entraining agents, and fly ash. Discuss how these admixtures improve workability, strength, durability, and resistance to environmental conditions. [3 Marks]
- Q5.** Briefly explain the different mechanisms of deterioration in concrete and how they impact structural performance. [3 Marks]

End of Paper