

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION-2025

PhD II Semester (CE)

COURSE CODE (CREDITS): 24P1WCE232 (3)

MAX. MARKS: 15

COURSE NAME: Characterization of Materials

COURSE INSTRUCTORS: Dr. Saurav

MAX. TIME: 1 Hour

*Note: (a) All questions are compulsory.*

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

Q.No	Question	CO	Marks
Q1	Describe the significance of material characterization in analyzing the structure-performance relationship of construction materials. Give an example of a technique used for this analysis.	1	3
Q2	Explain the function of X-ray diffraction (XRD) in assessing concrete degradation. How does XRD assist in detecting Thaumasite formation in deteriorated concrete?	2	3
Q3.	Describe the function of calcium silicate hydrate (C-S-H) in cement hydration and its importance in the development of concrete strength.	1	3
Q4.	What is the interfacial transition zone (ITZ) in concrete, and why is it considered the weakest link in concrete structures?	2	3
Q5.	Define asphalt concrete and explain how aggregate gradation influences its performance?	2	3