JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

B.Tech-VIII Semester (CE)

COURSE CODE(CREDITS): 18B11CE515(3) MAX. MARKS: 15

COURSE NAME: DESIGN OF CONCRETE STRUCTURES

COURSE INSTRUCTORS: Dr. Tanmay Gupta MAX. TIME: 1 Hour

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

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

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems. IS 456 code is allowed.

Q.1 Show two reasons why concrete is superior to stone, timber and steel? **[2] [CO1]**

Q.2 What are the main (i) loads, (ii) forces and (iii) effects to be considered while designing the structures? **[3] [CO1]**

Q.3 Define creep coefficient θ of concrete and express the relation between the effective modulus (E_{ce}), short term static modulus (E_c) and creep coefficient (θ) of concrete. **[2] [CO1]**

Q,4 For a singly reinforced concrete beam derive the expression for Compressive (C) and Tensile (T) forces. **[4] [CO2]**

Q,5 Determine the imposed loads and the tensile steel $A_{st,lim}$ of the singly reinforced rectangular beam shown in Figure below of L = 8.0 m simply supported, thickness of brick wall = 300 mm, width b = 300 mm, effective depth d = 550 mm, total depth D = 600 mm, grade of concrete = M 20 and grade of steel = Fe 500. Using direct computation method, **[4] [CO2]**