

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Tech-1st Semester (SE)

COURSE CODE (CREDITS): 11M1WCE113(3)

MAX. MARKS: 25

COURSE NAME: DESIGN OF REINFORCED CONCRETE STRUCTURES

COURSE INSTRUCTORS: Mr. Kaushal Kumar

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Questions	CO	Mark
Q1	Describe the role of supplementary cementitious materials (SCMs) in enhancing the durability of concrete.	CO-1	5
Q2	Determine the moment of resistance of the T-beam with A_{st} as (4 - #25 and 2- #20). $b_f = 1000$ mm, $D_f = 100$ mm, $b_w = 300$ mm, cover = 50 mm and $d = 450$ mm. Use M 20 and Fe 415.	CO-2	5
Q3	A beam with $b = 350$ mm and $d = 550$ mm is subjected to a factored shear force of 400 kN. The beam is reinforced with 4-#32 as tension steel. Two bars are symmetrically bent at ends at 45 deg. Concrete Grade M25 and steel Grade = Fe415. Design the shear reinforcement.	CO-2, CO-3	5
Q4	Discuss bond in reinforced concrete, mechanism for force transfer through bond? Explain with neat diagram the anchorage/development length and its uses in RCC.	CO-3	5
Q5	Design a Floor slab 7 x 5 m ,clear dimensions supported all four sides by 230 mm wide beams. Slab is subjected to LL = 4kN/m ² , Floor Finish = 1kN/m ² . M20, Fe415. Corners are held down.	CO-4	5