JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

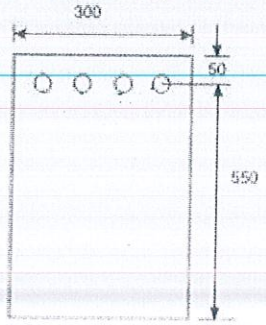
B.Tech-V Semester (CE)

COURSE CODE (CREDITS): 18B11CE515(4) MAX. MARKS: 25

COURSE NAME: Design of Concrete Structures

COURSE INSTRUCTORS: Dr. Tanmay Gupta 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. IS 456:2000 is allowed*

Q.No	Question	CO	Marks
Q.1	At the limit state of collapse, an RC beam is subjected to flexural moment 200 kNm, shear force 20 kN, and torsional moment of 9 kNm. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25mm. Calculate its equivalent nominal shear stress ?	CO-5	3
Q.2	Evaluate the development length in compression for a 20 mm diameter deformed bar of grade Fe 415 embedded in concrete of grade M 25, whose design bond stress is 1.40 N/mm^2	CO-3	3
Q.3	Find out the effective width of the simply supported flanged beam with D_f = 100 mm, l_0 = 12000 mm, b_w = 350 mm having d = 500 mm, Fe 415 steel grade and M 20 grade?	CO-2	2
Q.4	Prove that the doubly reinforced rectangular RCC beam section having d = 600 mm, reinforced with 6-25 T at bottom and 4-20 T at top, b = 350 mm, d' = 60 mm, Fe 415 steel grade and M 20 grade is over reinforced.	CO-2	4
Q.5	Determine the tensile steel of the cantilever beam shown below subjected to service-imposed load of 11.5 kN/m using M 20 and Fe 415, span 4m. Calculate short- and long-term deflections and check the requirements of IS 456 regarding the deflection. 	CO-3	9
Q.6	Explain in detail with diagram four different cases of flanged beams (write all formulations too)? Why it is essential to categorize in order to solve flanged beams?	CO-2	4