

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

B.Tech-V Semester Civil

COURSE CODE (CREDITS): 18B11CE515

MAX. MARKS: 15

COURSE NAME: DESIGN OF CONCRETE STRUCTURES

COURSE INSTRUCTORS: Dr. TANMAY GUPTA

MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets. Utilization of code IS 456 is allowed.

Q1. Explain with neat diagram the governing equation for design of doubly reinforced simply supported beam? When are such beams needed? [2+1] [CO2]

Q2. For simply supported singly reinforced beams derive the expression for $(X_{u,max}/d)$ & $P_{t,lim}$ also write their values for when concrete used is M20 and while steel is Fe500. [2+1] [CO2]

Q3. A rectangular beam having width of 200 mm, effective depth 400 mm, M20 concrete and Fe415 steel, find the steel required to carry factored moment of 120kN.m [3] [CO2]

Q.4 Write a short note on following:

- (a) Objectives of design of concrete structures
- (b) Characteristic load and Characteristic Strength
- (c) Limit State Method of Design
- (d) Draw stress-strain curve of concrete showing Initial tangent modulus & Secant modulus
- (e) Justify the need to do the redistribution of moments in statically indeterminate structures
- (f) Common steps to design reinforced concrete structure by any method.

[6] [CO1]