JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- December 2018

B.Tech 5th Semester

COURSE CODE: 10B11CE512   MAX. MARKS: 35

COURSE NAME: Design of Concrete Structures

COURSE CREDITS: 04   MAX. TIME: 2Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. **Use of IS 456: 2000 is allowed.** *Assumed data if needed should be clearly mentioned.*

Q1. Derive the general expression for Euler's buckling theory.   (7)

Q2. Design a short circular column 6 m long to carry an axial load of 250 kN, if both ends of the column are fully restrained. Use helical reinforcement   (6)

Q3. Design an reinforced concrete square column of 500 mm side to carry an ultimate load of 2000 kN at an eccentricity of 180 mm. Use M20 and Fe 415 seel.   (6)

Q4. Design a short column subjected to an axial load of 1200 kN. Moment in one direction is 60 kNm and moment in other direction is 40 kNm.   (6)

Q5. Design a dog legged staircase for an office building in a room measuring 3.0 m x 6.0 m (clear dimensions). Floor to floor height is 3.5 m. The building is a public building liable to overcrowding. Stairs are supported on brick walls 230 mm thick at the end of landings. Use M20 and Fe 415 steel.   (10)