JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- December 2017

B.Tech 7th Sem/ M.Tech 1st Semester

COURSE CODE: 11M1WCE113   MAX. MARKS: **35**

COURSE NAME: DESIGN OF REINFORCED CONCRETE STRUCTURES

COURSE CREDITS: 03   MAX. TIME: **2HRS**

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. **IS 3370:2009 (Part 2 and Part 4) is allowed**

Q1. Explain with figures different types of retaining walls. Explain different types of forces acting on a cantilever retaining wall.   **(5)**

Q2. Discuss the stability analysis of a cantilever retaining wall. Draw neat and leveled figures in each of the cases.   **(6)**

Q3. Design a cantilever retaining wall to retain horizontal earthen embankment of height 4m above the ground level. The earthen backfill is having density of $18kN/m^3$ and angle of internal friction as 30°. The safe bearing capacity of the soil is $180kN/m^3$. The coefficient of friction between the soil and the concrete is assumed to be 0.40. Use M40/Fe415 steel.   **(7)**

Q4. A rectangular beam of width 350mm is subjected to a udl of 15kN/m over an effective span of 8m. Determine the depth required for the beam and also calculate the area of tensile reinforcement required. Use M20/Fe250. Use working stress method.   **(5)**

Q5. Using yield line theory design a simply supported square slab of side 4m to support a service load of $4kN/m^2$. Use M20/Fe415.   **(5)**

Q6. Design the wall of a circular water tank of 7m diameter and height 4m.The tank is fixed at the base and resting on the ground. Sketch the details. Use M30/Fe415.   **(7)**