COURSE CODE: 11M1WCE113   MAX. MARKS: 35

COURSE NAME: **DESIGN OF REINFORCED CONCRETE STRUCTURES**

COURSE CREDITS: 3   MAX. TIME: **2Hrs**

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. **Use of IS 3370 (I to IV) and IS456:2000 are allowed.**

Q1. Design a cantilever retaining wall to retain horizontal earthen embankment of Height 4 m above the ground level. The earthen backfill is having a density of 18 kN/m^3 and angle of internal friction as 30^0.The safe bearing capacity of soil is 180mkN/m^3. The coefficient of friction between soil and concrete is assumed to be 0.45. Use M20 concrete and Fe415 steel.   [CO4, 7]

Q2. Determine the moment of resistance of a R.C.C. Beam 350×550 mm (Effective) and is reinforced with 3 bars of 20mm diameter. The permissible stress in concrete and steel are 7 N/mm^2 and 230 N/mm^2.Take m=13.33.   [CO1, 7]

Q3. Design a circular water tank for a capacity of 400000 liters. Assuming the joint between the tank wall and base is rigid. Use M20 and Fe415. Depth of water is to be 4m including a free board of 200 mm.   [CO3, 7]

Q4. Design a reinforced simply supported circular slab for the following data using yield line theory

    i) Daimeter of slab: 5.5m   iii) floor finish: 1kN/m^2 [CO2, 7]

    ii) Service live load: 4kN/m^2 iv) Grade: M20/Fe415

Q5. Design a square footing of uniform thickness for an axially loaded column of 450×450 mm size. The safe bearing capacity of soil is 190 kN/m^2. Load on column is 850 kN. Use M20 concrete and Fe 415 steel.   [CO5, 7]