Dr Sayrav

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- SEP- 2018

B.Tech 7TH Sem/ M.Tech 1ST Sem

COURSE CODE: 11M1WCE113 MAX. MARKS: **15**

COURSE NAME: Design of Reinforced concrete Structures

COURSE CREDITS: 3 MAX. TIME: One Hr

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1. Deduce an equation to find the Collapse load of a reinforced concrete square slab simply supported along all the edges and subjected to udl using yield line theory. **[4, CO2]**

Q2. A RCC beam 300mm×640mm overall depth is reinforced with 4 bars of 20mm diameter. The beam has to carry a superimposed load of 50kN/m, including the self weight of the beam, over an effective span of 4m. Find the actual stresses developed in steel and concrete. The effective cover is 40mm. Take m=13.33. Also find the compressive stress in concrete at 50mm from top of the beam and draw the bending stress diagram. **[3, CO1]**

Q3. Determine the collapse load for a square slab fixed all around the edges with the following data. Also show the location of plastic Hinges with a figure **[4, CO2]**

Size= 5m×5m

Steel provided= 8mm Dia bars @150mm c/c in both directions

Total depth= 130mm

Effective cover= 30mm

Use M20/ Fe415

Q4. Design a simply supported rectangular slab 5m×6m for flexural using yield line theory to carry a superimposed load of $4kN/m^2$. Use M20 and Fe415 steel. $\mu=0.7$ **[4, CO2]**