

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- Dec- 2017

B.Tech V Semester

COURSE CODE: 10B11CE512

MAX. MARKS: 35

COURSE NAME: Design of Concrete Structures

COURSE CREDITS: 4

MAX. TIME: 2 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Use of IS456:2000 is allowed. Data if required should be suitably assumed.

- Q1. Design a simply supported one way slab on masonry wall to carry a live load of 4kN/m^2 . Clear span is 3m. Use M20/ Fe415. (5)
- Q2. Design a RCC slab for a roof $5\text{m}\times 6\text{m}$. Slab is simply supported on all the four edges with corners held down and live load of 3kN/m^2 (inclusive of floor finish). Use M20/Fe415. (5)
- Q3. Stating assumptions deduce an equation to find the moment of resistance of a singly reinforced RCC beam. Draw the figure neatly and clearly. (5)
- Q4. Differentiate between balanced, under reinforced and over reinforced section. Which of them would you prefer as a structural engineer in the design and why? (5)
- Q5. Determine the bending capacity M_u for a column of size $300\text{mm}\times 500\text{mm}$ which is reinforced with 6 bars of 20mm diameter arranged on two sides of the column and subjected to an axial load of 800kN. Use M20/Fe415. Take $d' = 50\text{mm}$. (5)
- Q6. Deduce an equation to find the development length if τ_{bd} is the design bond stress in limit state method. (5)
- Q7. A rectangular beam of $250\text{mm}\times 500\text{mm}$ effective depth is provided with tension steel of 5 bars of 28mm diameter and compression steel of 2 bars of 25mm diameter. The effective cover to the compression steel being 50mm. Calculate the ultimate capacity of the section. Use M20/ Fe250. (5)

