

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- Oct- 2017
B.Tech V Semester

COURSE CODE: 10B11CE512

MAX. MARKS: 25

COURSE NAME: Design of Concrete Structures

COURSE CREDITS: 4

MAX. TIME: 1.5 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.

Q1. An isolated T-beam simply supported has a flanged width of 2400mm and flange thickness of 120mm. The effective span of the beam is 3.6m. The effective depth of beam is 580mm and its width is 300mm. It is reinforced with 8-20mm diameter Fe415 bars. Determine the moment of resistance of the section. Use M20 concrete. (4)

Q2. A rectangular section of effective size 300mm×500mm is used as a simply supported beam of effective span 7m. Determine the maximum udl that can be applied on the beam if maximum percentage of steel is to be provided only on tension side. Use M20 and Fe415. Determine the amount of steel to be provided. (4)

Q3. Design the shear reinforcement for a RC cantilever beam as shown the Fig. 1 below carrying UDL of 80kN/m (including its own weight). Use M20/Fe415. Assume effective cover=50mm (5)

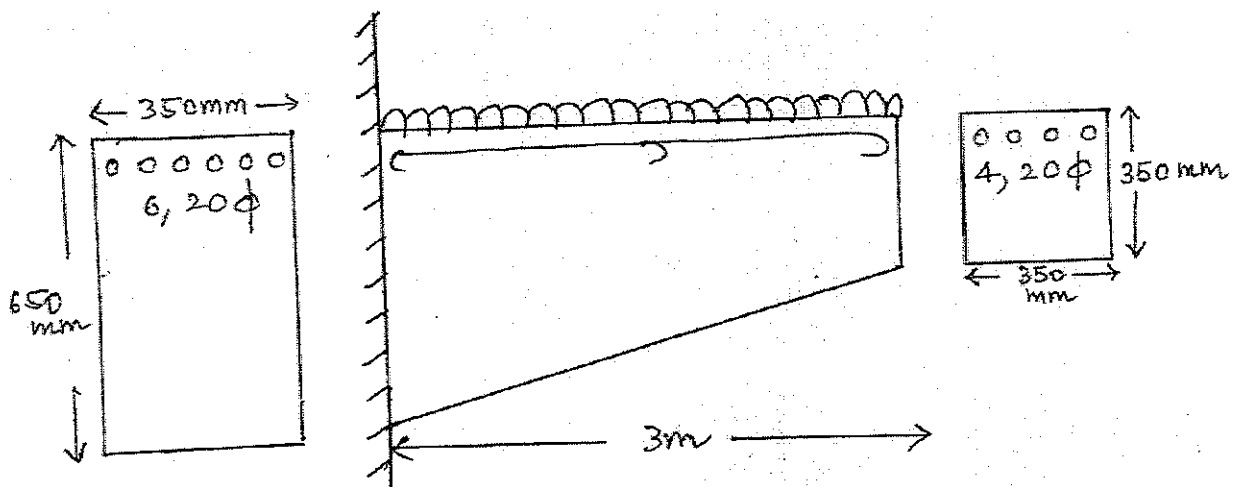


Fig. 1

Q4. Design a circular column of diameter 400mm subjected to a load of 1200kN. The column is having spiral ties. The column is 3m long and is effectively held in position at both ends but not restrained against rotation. Use M25/Fe415. (5)

Q5. A RCC short column of size 400mm×500mm is carrying an ultimate load of 3000kN. Design the column using M25/Fe415 steel. (4)

Q6. Prove that for axially loaded short column with rectangular ties $D \geq 0.12 L$ where L is the unsupported length (3)