

GUJARAT TECHNOLOGICAL UNIVERSITY
B.ARCH. - SEMESTER-IV EXAMINATION – WINTER 2015

Subject Code: 1045003
Subject Name: Structure IV
Time: 2:30pm to 4:30pm
Instructions:

Date: 14/12/2015

Total Marks: 50

1. **Attempt all questions.**
2. **Make suitable sketches wherever necessary.**
3. **No other material than IS 456 is allowed.**

- Q.1 (A)** State Minimum steel required for a column size 500 X 600 mm. **02**
(B) Give limits of reinforcement size for Mild Steel (Plain bars), Deformed steel bars, TMT bars. **03**
(C) Give minimum grades of concrete for Different exposure conditions. **05**
(D) Explain Clear cover, Effective cover, Clear span and Effective span with neat figure **05**
- Q.2 (A)** Explain various types of Slabs with neat sketches. **05**
(B) Simply Supported 5 m effective beam has effective cross section 230 X 550 mm is reinforced with 4 number of 16 mm dia. Find total limit state load carried by the beam if Fe 415 steel and M20 grade of concrete is used. **10**
- OR**
- (B)** Design a rectangular beam having 250 mm width as per IS 456 – 2000. The beam is simply supported on effective span of 4.5m. The UD Load including self weight is 20 kN/m. Sketch the detailing of the designed beam. Take M20 grade concrete and Fe – 415 steel. Take partial safety factor = 1.5 for load. **10**
- Q.3 (A)** Explain various types of deep footings with neat sketches. **10**
- OR**
- (A)** Design a square footing for isolated column 500 mm X 500 mm size carrying an Axial load of 1600 KN. SBC of soil is 200 KN/m². Take M20 grade concrete and Fe – 415 steel. Check for shear is not required. **10**
- Q.4 (A)** Explain the structural classification of Stair Cases with neat sketches. **10**
- OR**
- (A)** Design a square RCC short column subjected to axial load of 600,000 N. Take M20 grade concrete and Fe – 500 steel. Draw reinforcement details. Provide 1% steel. Take partial safety factor = 1.5 for load. **10**
