

SCHOOL OF PLANNING AND ARCHITECTURE, VIJAYAWADA
SEMESTER END EXAMINATIONS (REGULAR), MAY-2016

B. ARCH, II YEAR, IV SEMESTER

THEORY OF STRUCTURES (TS-4)

Maximum Marks – 100

Time – 3.00 Hours

a) Answer any Four out of 1 to 7 questions.

b) Question No.8 is compulsory and answer any four out of six sub questions.

c) I.S 456-2000 Code book allowed.

- Q1. a) Define grade of concrete, write types of grades of concrete and state their permissible stress in bending compression and direct compression. (15M)
- b) Determine the modular ratio of concrete for M25 grade concrete. (5M)
- Q2. Name the various types of sections in a singly reinforced rectangular beam based on quantity of steel. How do you identify each in working stress method. Explain with your own example. (20M)
- Q3. a) Design a rectangular RCC beam of simply supported at both ends, over a clear span of 3000mm. If the superimposed load 10kN/m and support width is 300mm each using M15 grade concrete & Fe 415 grade steel. (15M)
- b) Draw the details of reinforcement & mention each item in L.S & C.S. (5M)
- Q4. a) Design the reinforcement for short axially loaded square column of size 300mm x 300mm to support a load of 800KN use M20 grade concrete & Fe 415 grade steel. (15M)
- b) Draw its cross section & longitudinal section details. (5M)
- Q5. Find the neutral axis and ultimate moment of resistance of singly reinforced rectangular beam 230x500mm, reinforced with 5 bars of 20mm diameter with an effective cover of 50mm given M20 grade concrete and Fe415 grade steel. Draw the details of C.S and L.S (20M)

P.T.O

- Q6 a) Design a simply supported RCC slab for a roof of a hall size 4m x 10m supported 230mm thick wall on all four sides. Assume a live load 4kN/m^2 and floor finish 1kN/m^2 acting on it. Use grade of concrete and steel M25, Fe415 respectively. (15M)
- b) Draw the reinforcement detailing of slab neatly to the dimensions. (5M)
- Q7. a) Design simply supported RCC slab of library hall 6m x 5m. it carries live load of 8kN/m^2 excluding floor finish. Assume M25 grade concrete and Fe 415 grade steel. (10M)
- b) Draw the reinforcement detailing of the above slab neatly. (10M)
- Q8. Answer any four of the following: (4x5=20M)
- Explain workability of concrete with suitable experiment.
 - Write design requirement of columns.
 - Derive expression for neutral axis factor.
 - Explain doubly reinforced beam necessity with neat sketch.
 - Write short notes on consistency test on cement.
 - Distinguish between one way and two way slabs. How they are analysed, for determining B.M and SF under uniformly distributed loads.
