AR – 2475

Sixth Semester B. Arch. Examination

STRUCTURE – VI

6 SA 3

P. Pages : 2

Time : Three Hours] [Max. Marks : 40

Note : (1) Due credit will be given to neatness and adequate dimensions.
(2) Assume suitable data wherever necessary.
(3) Illustrate your answer wherever necessary with the help of neat sketches.
(4) I. S. I. Hand Book for structural Steel section, I. S. Code 800/1962 or 1964, I. S. 456 (Revised) I. S. 875 may be consulted.
(5) Use pen of Blue/Black ink/refill only for writing the answer book.

1. Design a square footing to carry a column load of 1000 kN from a 40 cm square tied column containing 20 mm bars as the longitudinal steel. The bearing capacity of soil is 100 kN/m^2.
Use $f_{ck} = 25$ N/mm^2, $f_y = 415$ N/mm^2 and load factor = 1·5. 14

OR

2. (a) Design a short column, square in section to carry an axial load of 2500 kN using Fe 415 grade and M 20 mix. 7

(b) Design a simply supported 'T' beam. Use the following data :
Span = 6 m.
Spacing of beam = 3.5 m c/c.
Slab thickness = 150 mm.
Imposed Load = 5 kN/m^2.
Use M 20 mix and Fe 415 grade steel. 7

3. Design vertical walls of R. C. C. cylindrical water tank resting on the ground. The joint between floor and wall of the tank is to be rigid.
Capacity of tank = 2 lakh liters.
Use concrete M 20 and Fe 415 steel. 13

OR

4. Design the vertical wall of R. C. C. cylindrical water tank of capacity 3,50,000 Liters. The joint between the side walls and base slab may be assumed to be flexible. Good soil for the tank foundation is available 0·9 m below ground level. Use concrete M 20 and Fe 415 steel. 13

5. (a) Explain architectural planning of earthquake resistance structure. 6

   (b) Write short notes on :—

   (1) Centre of gravity.

   (2) Ductility. 7

OR

6. (a) Explain in detail importance of bonds in case of load bearing buildings. 7

   (b) Write short notes on :—

   (1) Strength.

   (2) Stiffness. 6