

**B.Tech. Civil (Construction Management)**

**Term-End Examination**

00947

**December, 2017**

**ET-521(C) : DESIGN DETAILING**

*Time : 3 hours*

*Maximum Marks : 70*

**Note :** *Attempt any five questions. All questions carry equal marks. Candidates are allowed to use IS 456, IS 800 and scientific calculator.*

1. A singly reinforced beam whose size is 250 mm × 500 mm overall is reinforced with 3 – 24  $\phi$  bars in tension. The effective span of the beam is 5 m. M-15 mix and Fe-250 grade steel has been used in the design of the above beam. Draw the plan and section of the above beam showing the reinforcement details.

14

2. A reinforced concrete column 6.0 m long (effective length) and 300 mm in diameter is reinforced with 8 bars of 16 mm. The column carries 5 mm diameter lateral ties as lateral reinforcement. Draw a neat dimensioned sketch showing longitudinal and transverse reinforcements with details of their spacing. M-20 mix and Fe-250 grade steel has been used in the design of the above column.

14

3. (a) Describe the various methods of welding with the help of a neat sketch. 7
- (b) Draw a roof truss with monitor for industries installing oven/burner. 7
4. Draw a neat sketch showing the reinforcement details of two-pile group with 500 mm reinforced concrete piles supporting a 400 mm diameter reinforced concrete column. 14
5. (a) Draw a neat sketch of a built-up column of two I-sections and show typical lacing details. 7
- (b) Draw details of the bearing stiffeners of a solid web plate girder 1500 mm total depth and having 500 mm × 25 mm flange plates. The connections are riveted. 7
6. (a) Describe provisions of rising mains in high rise buildings. 7
- (b) Discuss the various inputs required to estimate the total electrical power for a building. 7
7. (a) Explain the need for a compressor in an air-conditioning system. 7
- (b) Discuss the various factors that contribute to human comfort. 7

8. Write short notes on the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Psychrometric Chart
  - (b) Refrigeration Cycle
  - (c) Design Concepts of RC Frame
  - (d) Diversity Factor
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