No. of Printed Pages : 3

ET-521(C)

00624

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2011

ET-521(C) : DESIGN DETAILING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any five** questions. All questions carry - equal marks. Candidates are allowed to use IS 456, IS800 and calculator. Any missing data may be suitably used.*

---

1. A doubly reinforced beam whose size is limited to 250 mm × 500 mm overall is reinforced with $5-25\ \phi$ bars in tension and $5-12\ \phi$ bars in compression each at a clear cover of 25 mm. The effective span of the beam is 4 m. M15 mix and Fe 415 grade steel has been used in the design of above beam. Draw the plan and section of the above beam showing the reinforcement details. **14**

2. A reinforced concrete column 6.5 m long (effective) and 320 mm in diameter is reinforced with 8 bars of 14 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 - 25 mix and Fe-250 grade steel has been used in the design of above column. **14**

3. (a) Describe the various methods of welding with the help of a neat sketch. **7**

   (b) Draw a typical two - legged braced column with base connection to RCC footing. **7**

4. Define the following : **7x2**

   (a) Actual Power
   (b) Apparent Power
   (c) Reactive Power
   (d) Power factor
   (e) Diversity factor
   (f) Tariff
   (g) Connected load

5. (a) Draw a neat sketch to show a column and beam joint. Also sketch the detailing of reinforcement conceptually. **7**

   (b) Draw a neat drawing showing a bolted connection of beam ISMB 300 to other beam ISMB 450 going in perpendicular direction. **7**

6. Draw the plan and section of a square foundation of size 3.5 m × 3.5 m. The overall depth of the foundation is 600 mm. 10 mm diameter bars @ 100 mm c/c have been provided as reinforcement in both the directions. The column is 400 mm square containing 20 mm bars as the longitudinal steel. You can use 8 nos. 16 mm diameter bars as dowels. **14**

7. (a) What do you mean by Air - conditioning ? Discuss the classifications of air - conditioning. **7**

   (b) Draw the schematic diagram for a shell and tube condenser. Also explain its working. **7**

8. Write short notes on the following :- **4x3½=14**

   (a) Rising Mains

   (b) Voltage Regulation

   (c) Phychometric Chart

   (d) Water Conditioning