

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2019

00532

ET-521(C) : DESIGN DETAILING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks. Use of IS : 456 and 800, steel tables and scientific calculator is permitted.

1. A singly reinforced beam whose size is 300 mm × 500 mm (effective depth) is used as a simply supported beam over an effective span of 6 m. The reinforcement consists of 4 bars of 20 mm diameter at an effective cover of 50 mm. M 15 mix and Fe 250 grade steel has been used in the design of this beam. Draw the plan and section of the above beam showing the reinforcement details.

14

2. A reinforced concrete column 6.50 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) Draw a typical plan and sectional elevation of a double riveted double cover butt joint. Take the thickness of the main plates as 12 mm and cover plate as 16 mm. Use 25 mm rivets @ 120 mm pitch. The plates are subjected to axial tensile force.

7

(b) Describe any two methods of welding with the help of neat sketches.

7

4. Show the typical details of reinforcement in the sectional elevation of a square isolated footing supporting a column.

Size of the column = 400 mm × 400 mm

Size of the footing = 1.5 m × 1.5 m

Thickness of toe footing = 250 mm

Show all types of reinforcements to be provided in the column and footing and label them.

14

5. (a) Explain various sources of heat gain in a building. How are they quantitatively estimated? 7
- (b) Draw a typical steel roof truss with ends resting on RC columns. 7
6. (a) Draw a neat drawing showing a bolted connection of beam ISMB 300 to other beam ISMB 450 going in perpendicular direction. 7
- (b) Draw a typical two-legged braced column with base connection to RCC footing. 7
7. (a) What do you mean by Air-conditioning? Discuss the classification of air-conditioning. 7
- (b) What are the factors that contribute to human comfort? Explain effective temperature with respect to human comfort. 7
8. Write short notes on the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Lighting Design
- (b) Monolithic Construction
- (c) Psychrometric Chart
- (d) Water Conditioning
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