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ET-521(C)

B.Tech. Civil (Construction Management)

□□45□ **Term-End Examination**

June, 2014

ET-521(C) : DESIGN DETAILING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Use of IS 456, steel table and scientific calculator is permitted. Any missing data may be assumed suitably.*

1. (a) Describe the procedure of calculating earthquake base shear for a building using seismic co-efficient method. 7

(b) Suggest a range of sizes for a square column of concrete which carries an axial load of 1000 kN. 7

2. (a) Draw a neat sketch of a rectangular foundation of size 3 × 4 metres for a square column of size 600 mm × 600 mm considering sloping footing. 7

(b) A continuous slab has three equal spans of 4 metres each. Draw a pattern of BMD for the slab and also deflected shape of the slab qualitatively. Provide a layout of reinforcement in the slab. 7

3. (a) Explain various advantages of limit state approach of design of concrete structures. 7

(b) Explain when a doubly-reinforced concrete beam section is desired to be provided. How is it different from an over-reinforced section ? Discuss briefly. 7

4. (a) Draw a neat sketch showing general detailing pattern of reinforcement in a dog-legged staircase. 7

(b) Two RC columns, each of size 300 mm × 300 mm, are linked with the help of a rigid strap beam of size 400 mm × 800 mm (depth) in a combined footing. The size of the combined footing is 7000 mm (length) × 1600 mm (width). Distance between centre lines of columns is 5000 mm. Thickness of combined footing slab is 300 mm. Draw neat sketches to show the arrangement of columns and strap beam in the combined footing and show detailing of reinforcement for the footing. 7

5. (a) Draw typical reinforcement details of an RC lintel and *Chajja*. 7

(b) Draw a neat sketch of a shear-moment connection between a cantilever bracket from the face of the flange of a column. 7

6. (a) Draw a neat sketch of a cantilever retaining wall with drainage facility. 7

(b) Discuss the philosophy of design of tank wall of a circular water tank. 7

7. (a) Describe open and closed system of water piping. What are the classifications of water piping according to return pipe arrangement ? 7

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

8. Write short notes on any ***two*** of the following : *2×7=14*

(a) Draw sketch of "Typical arrangement of pipe electrode"

(b) General arrangements of typical passenger lift

(c) UPS systems

(d) Working of refrigeration cycle