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ET-521(C)

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B.Tech. Civil (Construction Management)

Term-End Examination

June, 2013

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** calculator, IS 456 and IS 800. Any missing data may be suitably assumed.*

1. A singly reinforced beam whose size is 350mm × 700mm (overall) is reinforced with 6 – 20 ϕ bars in tension. Clear span of the beam is 6.5m M15 mix and Fe 415 grade steel have been used in the design of the beam. Draw the plan and section of the beam showing reinforcement details. **14**

2. A reinforce concrete column 3m long (effective) and 240mm × 240mm in section is reinforced with 4 bars of 20mm diameter. The column carries 8mm diameter lateral ties @ 180 C/C . Draw a neat sketch (dimensioned) showing longitudinal and transverse reinforcement with the details of their spacing. M-15 mix Fe 250 steel has been used in the design of above column. **14**

3. Draw the plan and section of a simply supported roof slab for a room 8m × 3.5m clear in size. The effective depth of slab is 150mm and overall depth 170mm. 10mm diameter bars @ 150mm C/C have been provided as main reinforcement 6mm MS bars have also been provided as temperature reinforcement. M15 mix and Fe 415 grade steel have been used in the design of above slab. **14**

4. Detail a battened compound column built up of four angles ISA 100 × 100 × 8mm each with batten plates of 150mm × 8mm at 1.25m C/C on all four sides. Effective length of the column is 5m. Sketch full elevation of the column alongwith a horizontal section which includes batten plates. **14**

5. (a) Draw a typical roof truss with ends on RC columns. **7**

   (b) An ISMB 250 beam transfers a reaction of 120 KN and a moment of 25 KNm to its welded connection with the flange of an ISHB 200 column. Give neat dimensioned sketches showing the details of the welded beam-column connection. **7**

6. (a) Why is it necessary to maintain a high power factor ? Explain any one method of improvement in power factor. **7**

   (b) Explain various provisions made in the structures for lift installations. **7**

7. (a) Describe basic properties of a good refrigerant. 7

(b) Explain basic principles of air conditioning with the help of a simple block diagram. 7

8. Write short notes on ***any two*** of the following : 2x7=14

(a) Monolithic construction

(b) Earthquake loads on buildings

(c) Design concepts of RC frames

(d) Methods of welding