

**B.Tech. Civil (Construction Management)****Term-End Examination****December, 2012****ET-521(C) : DESIGN DETAILING***Time : 3 hours**Maximum Marks : 70*

*Note : Attempt any five questions. Use of IS 456 and 800 steel table and scientific calculator is permitted. Any missing data may be assumed suitably.*

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1. Consider a structure in Dehradun having plan dimension 18x18 m and height of 18 m above ground level : It may be considered to be a ground +5 storeyed structure with a typical storey-height of 3.0 m.
    - (a) Determine the total wind force on the building considering a constant wind pressure of 1.4 kN/m<sup>2</sup>. 7
    - (b) Describe the procedure of determining seismic face on such a building. 7
  
  2. (a) Assume a suitable size of an RC beam simply supported over a span of 10 m. Draw a neat sketch showing arrangement of reinforcing bars. 7

- (b) Draw typical details of two pile-group with 1.0m diameter piles supporting a column of 600 x 800 mm. 7
3. Draw, to a suitable scale, a layout plan of a beam of size 500 x 800 mm continuous over Four spans : The two end spans are 10 m long while the central one is 4m long. It is constructed monolithically with an RCC slab, 150 mm thick which is one way continuous in the direction, perpendicular to the beam. The slab 22 x 12 mtr is spanning over four beams equispaced at 3 mc/c and over hanging by 0.75 m on either side. 14
4. Draw a suitable formwork and scaffolding for a staircase 1.5 m wide having mid landing at 3 m. It has 20 risers each of 150 mm, 19 treads each of 300 mm and a waist slab of 200 mm thickness in RCC. Use all steel members. Check the base of prop when safe load bearing capacity of compacted ground is 20 kN/m<sup>2</sup> consider 40 mm NB tube for support. 14
5. (a) Draw a neat sketch of a bolted connection connecting two plates, each carrying a tensile force T. Show also a cotter pin through the not assuming the diameter of the pin to be 3 mm for a bolt size of 25 mm. 7

- (b) Draw a neat sketch of shearment connection between a cantilever bracket from the face of the Hauge of column, assuming the column to be a I-Section. 7
6. (a) Draw typical details of Roof-truss supported on steel column. 10
- (b) Draw a typical details of a purlin supporting A.C. sheets. 4
7. (a) What are the types of wiring ? Describe PVC sheathed wiring. 7
- (b) Draw a sketch of industrial or cubicle type panel board and label components. 7
8. Write short notes on *any four* of the following :
- (a) Voltage Regulation 3½x4=14
- (b) UPS with Block diagrams.
- (c) Transformers
- (d) Air conditioning systems
- (e) Refrigeration cycle
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