

**B.Tech. Civil (Construction Management)****Term-End Examination****June, 2008****ET-521(C) : DESIGN DETAILING**

Time : 3 hours

Maximum Marks : 70

**Notes :**

- Attempt any five questions.
- Use of IS : 456, IS : 800, Steel table and scientific calculator is permitted.
- Any missing data may be assumed suitably.
- Main stress is on the detailing part, however, design (if any) may be done using approximate methods.

1. (a) Determine total dead load on a 150 mm thick RC slab considering :
- (i) Floor finish of a plain concrete screed of 50 mm thickness
  - (ii) Soffit plaster of 20 mm thickness 3
- (b) Determine the minimum area of reinforcement for a slab of 125 mm thickness. Indicate a suitable diameter of bar and its spacing using
- (i) Mild steel reinforcement
  - (ii) Steel of Fe 415 grade 4

- (c) Draw a neat sketch of a rectangular RC footing of size  $3 \times 3$  m for a square column of size  $450 \times 450$  mm considering
- (i) Sloping footing
  - (ii) Flat footing
- 7
2. (a) Draw a neat sketch of a dog-legged staircase of  $3.5 \times 5$  m plan-dimension and details of a flight from plinth level to midlanding level including reinforcement detailing in the staircase slab which is longitudinally supported over cross beams.
- 10
- (b) How can brittle concrete be converted into a ductile material? Explain with sketches.
- 4
3. (a) Draw a neat sketch of a suitable formwork and scaffolding for a staircase 1.5 metre wide having midlanding at 3 m. It has 20 rises each of 180 mm and 19 treads each of 300 mm and a RCC waist slab of 250 mm thickness. Timber members are to be used. Check the base of prop when safe load bearing capacity of compacted ground is  $20 \text{ kN/m}^2$ .
- 10
- (b) Write the role of supervisor for supervision of formwork and staging work.
- 4
4. (a) Draw a neat sketch of a shear-moment connection between a cantilever bracket from the face of a flange of a steel column.
- 3

- (b) Write notes, with neat sketches, on the fabrication aspects of a steel
- (i) riveted connection 4
  - (ii) bolted connection 7
- (c) Describe various methods of steel welding. 7
5. (a) Draw a neat sketch of typical details of a roof truss supported on a steel column. 9
- (b) Draw a neat sketch of typical details of an adjustable ridge at a ridge-line of truss. 5
6. (a) What are the types of wiring? Describe PVC sheathed and metal sheathed wiring. 5
- (b) What are various types of earth stations? Draw a neat sketch of any one type. 5
- (c) Explain the basic principle of air-conditioning with the help of a simple block diagram. 4
7. Write short notes on any *four* of the following. Provide neat sketches to elaborate.  $4 \times 3 \frac{1}{2}$
- (i) Function of a duct system
  - (ii) Central chilled water system
  - (iii) Star and delta connection
  - (iv) Open web girder
  - (v) Inspection and testing of form materials
  - (vi) Monolithic construction

