

01935

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2010

ET-521(C) : DESIGN DETAILING

Time : 3 hours

Maximum Marks : 70

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

1. Consider a structure in Delhi having plan dimension 15 x 15 m and height of 21 mtrs above ground level. It may be considered to be a ground + 6 storeyed structure with a typical storey - height of 3.0 mtr.
 - (a) Determine the total wind force on the building considering a constant wind pressure of 1.3 kN/m². 7
 - (b) Briefly discuss how seismic force on a building is estimated. 7

2. (a) Suggest a suitable size of an RC beam simply supported over a span 8 mtr. Draw a sketch showing arrangement of reinforcing bars. 7
- (b) Suggest a suitable size of a square concrete column carrying an axial load of 1400 kN. How do you decide spacing of column ties? 7
3. Draw, to a suitable scale, a layout plan of a continuous beam of size 300 x 800 mm over three spans. The two end spans being 8 mtrs while central one is 4 mtrs. 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 20 x 9 m is spanning over four beams equispaced at 3 m c/c and overhanging by 0.75 m on either side. 14
4. Draw a suitable arrangement drawing framework and scaffolding for a beam and slab propping/support. Consider plywood sheeting, timber beams and steel props/scaffolding. Consider slab thickness of 120 mm, beam size of 400 mm width x 1200 mm depth and floor to floor height 4 m. 14
5. (a) Draw a neat sketch of a shear - moment connection between a cantilever bracket from the face of the flange of a column. 7
- (b) Draw a neat sketch of a bolted connection connecting two plates each carrying a tensile force T. 7

6. (a) Draw typical details of a purlin supported on a truss. 7
(b) Indicate the need of wind tracing in steel frames. 7
7. (a) What are the types of earth station ? Draw a neat sketch for any one type. 7
(b) Describe UPS with block diagrams. 7
8. Write short notes on *any four* of the following :
- (a) Air - conditioning 3½x4=14
(b) Refrigeration cycle
(c) Electric arc welding
(d) Typical details of lintel and chajja
(e) Need for voltage regulation
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