

## B. Tech Degree VII Semester (Supplementary) Examination, June 2008

### CE 702 A/B DESIGN OF STRUCTURES III (2002 Scheme)

Time : 3 Hours

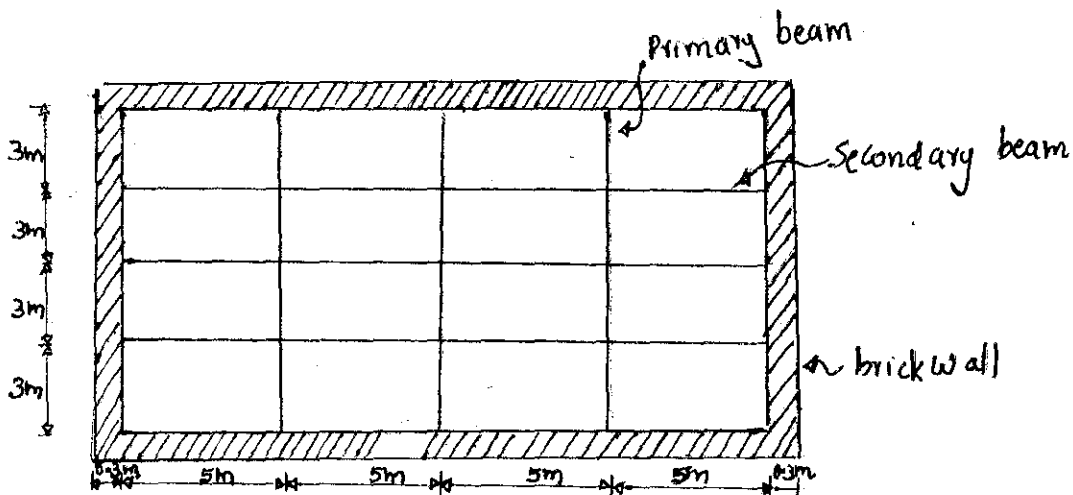
Maximum Marks : 100

(Use of IS 800, SP:16, IS: 804, IS: 7553, IS :801, IS :811, SP- 6(1))

Steel Tables are permitted

Assume missing data, if any suitably)

- I. The floor of a drawing hall is supported by main beams and secondary beams as shown in the figure. The secondary beams to be connected to the web of the main beams. The floor consists of 100mm thick R.C.C slab. Live load on the floor is  $4\text{kN/m}^2$ . Unit weight of R.C.C slab is  $25\text{kN/m}^3$ . Design the primary and secondary beams. Also design the beam connections. (40)



OR

- II. Design a simply supported plate girder spanning 25m and carrying a uniformly distributed load of  $300\text{kN/m}$ . Also design the end bearing stiffeners and the necessary intermediate stiffeners. (40)

- III. Design a built-up column 10m long to carry an axial load of  $750\text{kN}$ . The column is restrained in position but not in the direction at both ends. Provide single lacing system with riveted connections. Adopt 2 channels placed back to back. Also design the base plate and pedestal. SBC of soil is  $150\text{kN/m}^2$ . (30)

OR

- IV. The sliding end of a roof truss rests on 450mm brick wall through a concrete bearing pad. The maximum normal reaction on the bearing is  $125\text{kN}$ . The principal rafter is inclined at  $30^\circ$  to the main tie which is horizontal. If the panel length of the principal rafter is 1.38m, design the rafter, the tie and the sliding joint. Also design the anchor bolt for a pull of  $7.5\text{kN}$ . (30)

- V. A self supporting steel chimney has 100m height and the top diameter is 3m. Design the thickness of the steel plates at 30m and 60m from top, if the wind pressure is  $2\text{kN/m}^2$ . Also design the base plate, lugs and anchor bolts. (30)

OR

- VI. Design an elevated cylindrical water tank with hemispherical bottom for 240000 litres capacity with circular girders supported on 8 number of columns. The roof and staging of the tank need not be designed. (30)

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