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15CV72

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021

Design of RCC and Steel Structures

Time: 3 hrs.

Max. Marks: 80

- Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Use of IS456-2000 and SP16, IS800, -steel tables is permitted.

Module-1

- 1 Design RCC rectangular combined footings for two columns which are 3.6m apart carrying a load of 1000kN and 1500kN. Sizes of column are 400mm × 400mm and 600 × 600mm. Width of footing is 1.8m SBC of soil is 280 kN/m². M20 concrete and Fe415 steel is used. Assume beam and slab type combined footing sketch the details of Reinforcement. (40 Marks)

OR

- 2 RCC hall 10m wide 20m long is provided with portal frame 4m c/c. Frame are fixed at bottom. Heights of columns are 16.5m. Live load = 1.5 kN/m² SBC = 120 kN/m². Design the slabs, portal Frame, column and footing using M20 concrete and Fe 415 steel. Sketch details of reinforcement. (40 Marks)

Module-2

- 3 Design a plate girder for an effective span 14m. Load on the girder consist of UDL 45 kN/m in addition to two point loads each of magnitude 400kN placed at a distance of 3m, on either side of mid span point of girder, Design Mid span cross section curtailment of flange, Intermediate stiffness and end bearing stiffness. Draw sketch showing detail of longitudinal section cross section at mid span and support and plan of girder. (40 Marks)

OR

- 4 Design a gantry girder for a span 25m column spacing = 8m, Wheel base = 3.5m, Crane capacity = 200kN, Weight of crane bridge = 150 kN, Weight of trolley crab = 75kN, Min hook distance = 1m, Weight of rail = 0.3 kN/m, height of rail = 105mm. Draw suitable sketch showing details of cross section, Longitudinal section and plan. (40 Marks)

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