SUBJECT CODE:- 298
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(CIVIL) Examination Nov/Dec 2015
Design of Structures- III
(Revised)

[Time: Four Hours] **[Max. Marks: 80]**

"Please check whether you have got the right question paper."

N.B i) Solve any two questions from section A & B each.
ii) Use of IS: 456, IS: 3370, IS: 875 is permitted.
iii) Assume suitable data, if required and state it clearly.

Section A

Q.1 Design an RC trapezoidal combined footing for two columns spaced at 4.2m apart the overall sizes of columns are 450mm×450mm and 550mm×550mm and loads on the them are 1000KN and 1600KN respectively. The width of footing on one side is restricted to 1.4m. SBC of soil is 220KN/m^2. Assume M_{20} and Fe_{415} grades. Draw a neat sketch of the reinforcement. 20

Q.2 a) State the advantages and disadvantages of flat slab construction. 03
b) Design an interior panel of flat slab the dimensions of panel are 4.5m×5.5m diameter of column 450mm. live load intensity is 5KN/m^2 and floor finish of 1KN/m^2. Design the slab panel with drop panel. Use M_{25} & Fe_{415}. Also show reinforcement detailing. 17

Q.3 Design a vertical wall of an RCC cantilever retaining wall supporting an earth embankment 4.25m high the top surface of which is horizontal. Unit weight of earth is 18 KN/m^3 and has an angle of repose of 30^0 and bearing capacity of soil is 260 KN/m^3. Also check the stability of retaining wall. Use M_{25} and Fe_{415} grades. 20

Section-B

Q.4 a) Differentiate between prestressed concrete and reinforced concrete material. 07
b) A circular slab is to be provided for a room circular in plan having a diameter of 8m the live load on the slab is 3KN/m^2. 13

Q.5 A rectangular water tank 3m×3m in plan and of depth 3m supported on a town of 6m height, no of columns are four. The columns are braced at mid-height. The wind pressure on the tank may be taken as 1.5KN/m^2. Assume dead weight of tank =160KN, weight of water in tank =280KN. Assuming M_{25} and Fe_{415} grades. Design the columns are provided of supporting tower. The columns are provided with fixed bottom ends. 20

Q.6 Design the formwork for a column of cross section 300mm×300mm and height of 3m. a plywood of 12mm thickness is available permissible bending stress on 12mm plywood =14N/mm^2. 20
Permissible bending moment =0.2KNm/m
Permissible shear force =6KN permissible deflection $= \frac{span}{360}$
Permissible bending stress for timber =7N/mm^2
E=7700N/mm^2. Mild steel the rod of 16mm diameter is available. Dead load of concrete =26KN/m^3.

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