

**SUBJECT CODE NO:- P-80**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**B.E.(CIVIL) Examination May/June 2017**  
**Design of Structures- III**  
**(Revised)**

[Time: Four Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Attempt any two question from section A and B each
  - ii) use of IS; 456, IS; 3370 is allowed
  - iii) Assume suitable data, if necessary, state it Clearly

**Section A**

- Q.1 Design on interior panel of flat slab 5m x 6m with a drop for a live load of 5 kN / m<sup>2</sup> show the reinforcement details by neat sketch 20
- Q.2 Design a rectangular combined footing for two columns C and D located at 4.5 m apart. Column c is of size 450 mm x 450mm arraying load 1200 kN and column D is of size 550 mm x 550mm carrying load of 1500 kN. The projection of the footing parallel to the length of footing beyond axis of column 'C' is restricted to 12 m SBC of soil is 225 kN/m<sup>2</sup> use of M<sub>20</sub> and Fe<sub>415</sub> grades 20
- Q.3 a) Explain the following terms in connection with retaining wall 02
- i) Angle of repose
  - ii) Angle of internal friction
  - iii) Active and passive earth pressure
  - iv) Factor of safety against sliding
- b) A counter fort retaining wall 7.5 m high above G. L.is to be designed to retain a soil backfill inclined at 25°, 18 Density of earth is 16 kN / m<sup>3</sup> and its angle of repose is 30° Hard strata having SBC of 250 kN / m<sup>2</sup> is available at 1.3 m below ground level .counterforts are provided at 3.2 m c/c. Design the heel slab and counterforts

**Section B**

- Q.4 a) Design a circular slab for a room of 7 m effective diameter with fixed edges. Total superimposed load on the slab is 6 kN / m<sup>2</sup>. use M<sub>20</sub> and fe<sub>500</sub> grades . Show the reinforcement details 10
- b) Explain in detail the 'Magnet- Blaton system of prestressing using neat sketches. 10
- Q.5 Design a circular water tank of capacity 2, 00,000 liters the depth of tank is limited to 3.2 m. The joint between the wall and base slab is flexible. The base slab rests on the ground. Use IS code method. Show reinforcement detailing .use M<sub>35</sub> and Fc<sub>500</sub> grades. 20
- Q.6 a) Design the formwork for a column of size 350mm x 350mm, having a height of 3m. It is proposed to pour the entire concrete in one stage 14
- b) Explain the necessity of high grade steel and concrete in prestress concrete construction 06