12/10/13.

Roll No. | | | | | | | | | | |

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

CIVIL ENGINEERING

Sixth Semester

CE383 Design of Reinforced concrete and Masonry Structures/
CE9353 Design of Reinforced Cement Concrete
Common to Tamil and English medium
(Regulation 2004/2008)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What are the advantages of ultimate method over elastic method?
2. What do you mean by an uncracked section?
3. When do you go for flanged beams?
4. When is shear reinforcement necessary?
5. Explain the importance of development length
6. State the differences between one way slab and two way slab.
7. What are the critical sections for one way and two way shear in the design of footings?
8. Explain the failure modes of long columns and short columns under compression.
9. What are the different types of footings?
10. What are shear walls?

Part – B (5 x 16 = 80 marks)

11. (i) Explain the concept of limit state method. (8)
(ii) A one way slab has effective span 3.6m and is 150mm thick. The live load expected on it is 3kN / m^2. Determine
a) Design moment
b) Design shear (8)

12. a) Design a R.C beam to carry a load of 8kN/m inclusive of its own weight on an effective span of 8m.Keep the breadth to be 2/3rd of the effective depth. The permissible stresses in concrete and steel are not to exceed 5N/mm^2 and 140N/mm^2 respectively. Take m=20.

(OR)

b) A rectangular beam is to be simply supported on supports of 230mm width. The clear span of the beam is 8m. The beam is to have a width of 300mm. The characteristic super imposed load is 12 kN/m. Using M20 concrete and Fe 415 steel, Design a beam.

13. a) A T – beam has the following data: width of the flange = 600 mm; breadth of beam = 200 mm. Effective depth = 450 mm; thickness of flange = 90 mm; applied moment = 100 kNm. Design the beam using M20 concrete and Fe415 grade steel. Use Limit state method.

(OR)

b) A simply supported one way slab of 4m span carries a live load of 3 N/m^2 and the load of floor finish as 1.25 kN/m^2. The slab, having a total depth of 150mm is reinforced with 8mm Φ bars @ 100mm c/c at a nominal cover of 20 mm. Assuming a permanent load equal to dead load plus 20% of live load, compute the total maximum deflection and check it as per code requirements. Use M20 concrete and Fe 415 steel.

14. a) Design a continuous RC slab for a hall 5.0 m X 12.5 m. The slab is supported on RCC beams, each 240 mm wide which are monolithic. The ends of the slab are supported on walls, 300 mm wide. Design the slab for a live load of 2 kN/m^2. Assume the weight of floor finishing equal to 1.5 kN/m^2. Use M20 concrete and Fe415 grade steel. Use Limit state method.

(OR)

b) Design a rectangular column of 5m unsupported length, restrained in position and direction at both the ends, to carry an axial load of 1000 kN. Use M20 concrete and Fe 415 steel.

15. a) Design a rectangular isolated footing of uniform thickness for RC column bearing a vertical load of 600 kN and having a base size of 450 mm X 600 mm. The safe bearing capacity of the soil may be taken as 120 kN/m^2. Use M20 concrete and Fe415 grade steel. Use Limit state method

(OR)

b) What are the loads you will consider for the design of masonry walls? Explain the step by step procedure for design of masonry walls.