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B.E / B.Tech (Part Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

**CIVIL ENGINEERING
V-Semester**

**PTCE 337/PTCE383/PTCE9353 DESIGN OF REINFORCED CEMENT CONCRETE AND
MASONRY STRUCTURES**

(Regulation 2002/2005/2009)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Distinguish between working stress and limit state method of design of RCC structures.
2. What are design loads?
3. List the failures of reinforced concrete beams.
4. What are torsional stresses in beams?
5. Distinguish between one way and two way slabs.
6. Write the advantages of spiral staircase.
7. How do you classify the columns based upon its loading conditions?
8. Bearing capacity of soil-explain.
9. Write the advantages of masonry structures
10. List the defects in masonry structures.

Part – B (5 x 16 = 80 marks)

11. Design a rectangular beam section of 300mm wide and 500mm effective depth subjected to moment of 100 kN.m. Consider the concrete of grade M25 and steel of grade Fe 415.
12. a) Design a T-beam section of 1500 width of flange, 100mm depth of flange and 250 mm width of web which is subjected to an ultimate moments of 250 kN.m. Consider concrete of grade M20 and steel of grade Fe 415.
(OR)
b) Explain the procedure for serviceability requirement of limit state of deflection for the calculation of short term deflection.
13. a) A simply supported slab of clear spans of 4m by 10m is subjected to a live load of 2 kN/m². Design a one way slab. Consider the concrete of grade M20 and steel of grade Fe 415.
(OR)
b) Design of a simply supported two-way slab with restrained corners of clear spans of 3.5m and 4.5 m is subjected to a live load of 3 kN/m². Design the slab with the following data:
Live load of slab 3 kN/m²; Grade of concrete-M20; Grade of steel-Fe415.

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14. a) Design a rectangular column section subjected to an axial load of 750 kN and uniaxial moment of 75 kN.m. Consider concrete of grade M30 and steel of grade Fe415.

(OR)

- b) Design of eccentrically loaded footing of a RCC wall of 200mm thick, carries a live load of 100 kN/m and dead load of 180 kN/m. The wall is resting on a slab of 3.2m with at a distance of 1.25m from one face of the slab. This makes the wall eccentric with respect to the slab CG. Design a RCC foundation slab. Safe bearing capacity of the soil=150 kN/m².

15. a) Design a footing for 250 mm thick masonry wall which supports a load of 150 kN/m and moment of 15 kN.m/m at service state. Consider the following:

Unit weight of soil-20 kN/m³

Angle of repose for soil-30°

Allowable bearing capacity of soil-150 kN/m²

Concrete grade of M20 and steel of grade: Fe 415.

(OR)

- b) (i). Explain the design steps of dog-legged staircase (10)
(ii). Explain the importance of curtailment of reinforcement in flexural members (6)