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

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, MAY 2019

V Semester

CIVIL ENGINEERING

CE 8501 DESIGN OF REINFORCED CEMENT CONCRETE AND MASONRY STRUCTURES

(Regulation 2012)

USE OF IS456-2000 IS PERMITTED

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

PART-A (10 x 2 = 20 Marks)

1. State the different limit states considered in the design.
2. Sketch the stress strain distribution for RCC beam in WSM.
3. Give the minimum requirement of shear reinforcement.
4. Explain equilibrium torsion.
5. Differentiate one way and two way slabs.
6. What are the factors affecting the shear resistance of reinforced concrete member without shear reinforcement?
7. What are braced and unbraced columns?
8. State any two assumptions involved with the limit state design of compression members.
9. Name any four loads to be considered in design of masonry wall.
10. Give the formula for finding the design axial strength of a wall..

Part – B (5 x 16 = 80 marks)

11. Design a masonry wall of a 2 storeyed building at ground level for the following data.

    The wall is an intermediate wall (load from both ends). Ground floor height is 3.6 m and first floor height is 3.2 m. The wall supports a RC slab of 120 mm thickness. The span of slab on one side is 4 m and on the other side is 3.5 m. The live load on roof slab is 0.75 kN/m^2 and the finish load is 2.25 kN/m^2. The live load on floor slab is 3 kN/m^2 and finish load is 1 kN/m^2.

12. a) A reinforced concrete beam of width 300 mm and depth 350 mm is reinforced with 3 numbers of 12 mm diameter bars. Determine the ultimate moment of resistance of the section using Working Stress method. Adopt M20 and Fe415.

OR

b) A reinforced concrete beam of size 250 mm X 320 mm (effective) is reinforced with 4 numbers of 16 mm diameter. The materials used are M20 and fe415. Find the stresses induced in the section when the beam is subjected to a bending moment of 32 kNm. Use WSM.

13. a) A reinforced concrete beam of width 300 mm is reinforced with 4 numbers of 16 mm diameter bars on the tension side at an effective depth of 500 mm. Determine the ultimate moment of resistance of the section using M20 and Fe415.Use LSM.

OR

b) Design a flanged beam to resist a ultimate bending moment of 400 kNm using M20 and Fe415.Take flange width as 1200 mm, thickness of flange as 250 mm and web width as 250 mm. Use LSM.

14. a) A slab for a hall is supported by intermediate beams of 300 mm wide spaced at 3.8 m centre to centre. The span of the beam is 9 m. The slab is simply resting on masonry wall at the ends (simply supported). The slab is subjected to a live load of 4 kN/m^2, finished load of 1 kN/m^2. Assume load due to partition as 0.8 kN/m^2. Design the slab using M20 and fe415.

OR

b) Design the two way slab for a hall of inner dimension 4 mx6 m. The slab is simply resting on 230 mm thick brick wall along the four sides . the live load on the slab is 4 kN/m^2. The load due to finishses and partitions taken as 1.2 kN/m^2. Use M20 and fe415..

15. a) Design a reinforced concrete footing for a masonry wall of 230 mm to support a working load of 200 kN/m (including self weight). Assume SBC of soil as 175 kN/m^2. Use M20 and Fe415.

OR

b) A reinforced concrete short column of rectangular dimension 350 mm x 500 mm in size. Determine the reinforcement required for the column to support a axial load of 1500 kN with an ultimate moment of 100 kNm about X axis and 80 KNm about y axis. Take unsupported length about both axis as 5 m. Use M20 and fe415.