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

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (Civil) (Sem.–6)

DESIGN OF CONCRETE STRUCTURES–II

Subject Code : CE-310

Paper ID : [A0622]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1. Answer briefly :

a) What are the assumption in design of strap footing?

b) When a shear key is provided in a reinforced concrete retaining wall?

c) Name structural elements of an Intz type water tank.

d) What are the various forces which are considered for designing domes?

e) What is the reason of torsion in beam?

f) What is the shape of shear stress diagram in a reinforced concrete beam section?

g) What are the functions of foundation in building?

h) Show plan and elevation of cantilever retaining wall.

i) Theoretically, Is it necessary to continue all the steel in a reinforced column into a footing? What are the criteria to be considered?

j) How can you find the self weight of rectangular water tank?

SECTION-B

Q2. Design a suitable footing for a 500 mm × 500 mm square column transferring 100 kN axial load and a moment of 35 kN-m. The safe bearing capacity of soil is 190 kN/m^2. Use M20 concrete and Fe 415 steel. Adopt limit state design method.

Q3. Design a rectangular water tank on the ground having size 10m × 4 m × 5 m. Use M30 concrete and Fe 416 steel.

Q4. A conical dome has a base diameter of 8m. It carries a distributed load of 5KN/m^2. The height of the dome is 4m. Design also a ring beam. Use M25 concrete and grade of steel is Fe500.

Q5. Explain the methods of designing vertical stem, toe slab and heel slab of a T-shaped cantilever retaining wall. What will be the changes in the design if counterforts are provided at rectangular interval towards the side of backfill?

Q6. A circular curved beam with a radius of 5 m supported on equally spaced six columns, and carrying a uniformly distributed load of 3KN/m? {Including its own weight}. Determine the shear force and bending moment distribution.

SECTION-C

Q7. How the beams curved in plan differ from other beams? Derive the equation for Bending Moment, Twisting Moment and Shear Force for a beam circular in plan and supported on columns. Take suitable number of columns.

Q8. The circular water tank has an internal diameter is 10m. The maximum depth of the tank is 5m. The wall of the tank is restrained at the base. The tank is rest on the ground. Design a water tank. Assume any missing data.

Q9. Design a cantilever retaining wall to the following requirement.

Overall height of the wall = 4m

Superimposed load from the traffic = 15 KN/m^2

Angle of repose = 30 degree

Width of the base slab = 4m

Toe projection = 650mm

Use M20 grade of concrete and Fe500 steel.