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

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(CE) (2011 Onwards) (Sem.–6)

DESIGN OF CONCRETE STRUCTURES-II

Subject Code : BTCE-601

M.Code : 71082

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION 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.**
4. **IS 456-2000, IS3370 and design aid SP 16 are permitted in examination.**

SECTION-A

Q1. Answer briefly :

a) List the different types of stairs.

b) Describe the assumptions for the design of strap footing.

c) Write the functions of lateral ties in a column.

d) Define the effective length.

e) Explain about intermediate and end moments in continuous beam.

f) In case of curved beams, the support sections are designed for maximum negative bending moment and shear. Give your comments.

g) Show plan and elevation of cantilever retaining wall.

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

i) In what ways, circular water tank is preferred over rectangular water tank?

j) What are various forces which are considered for the design of dome?

SECTION B

Q2. Design a footing for a rectangular column 230 × 450 mm, carries an axial load of 1500 kN. The SBC of the soil is 150 kN/m^2. Use M 20 concrete and Fe 415 steel.

Q3. A reinforced concrete column 500 × 500 mm is subjected to a factored axial load 1500 kN and factored moment of 150 kN-m. Determine the reinforcement for the column. Use M20 concrete and Fe 415 steel.

Q4. Write the basic assumptions made in design of continuous beam.

Q5. Design a conical dome for hall 12 m in diameter. Rise of dome is 4 m. Live load on the dome may be taken as 2.5 kN/m^2. Use M25 concrete and Fe 415 steel.

Q6. Why counterforts are provided in a retaining wall? Draw a counterfort retaining wall and mark its components.

SECTION-C

Q7. A staircase of 1.2 m width for an office building consists of each step built into wall with a bearing of 110 mm along the flight with tread = 250 mm and rise = 200 mm. Design the staircase and sketch layout of reinforcement. Use M20 concrete and Fe 415 steel.

Q8. Design a rectangular water tank resting on ground having base area of 4m × 6m. The height of water tank is 3.75 m and keep a free board of 0.15m. Use M25 concrete and Fe 415 steel. Assume appropriate data and clearly state the assumptions.

Q9. Write short note on :

a) Differentiate between isolated footing and combined footing.

b. Explain the basic assumptions made for design of short axially loaded compression members.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.