

Roll No.

Total No. of Pages : 02

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**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  $230 \times 450$  mm, carries an axial load of 1500 kN. The SBC of the soil is  $150 \text{ kN/m}^2$ . Use M 20 concrete and Fe 415 steel.
- Q3. A reinforced concrete column  $500 \times 500$  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  $2.5 \text{ kN/m}^2$ . 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  $4\text{m} \times 6\text{m}$ . 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 :
- Differentiate between isolated footing and combined footing.
  - 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.**