

Code: CE6T1

III B.Tech-II Semester–Regular/Supplementary Examinations–March 2018

**DESIGN AND DRAWING OF CONCRETE STRUCTURES – II
(CIVIL ENGINEERING)**

**Note: Use of IS 456-2000 & IS: 1343 - 1980 and IS 1893
(Part-1) - 2002 are allowed**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1. a) What are the forces acting on the Retaining wall?
- b) Write short notes on isolated footing with neat sketch?
- c) What are the limitations in the direct design method of flat slab?
- d) What are assumptions made in the analysis of earth quake design of buildings?
- e) Explain the following
 - i) soft storey
 - ii) storey drift
- f) What are the advantages of pre stressed concrete?
- g) What are the materials required for pre stressing concrete?
- h) Write short notes on freyssinet system with neat sketch?
 - i) Write short notes about loss of pre stress due to anchorage slip?
 - j) Explain about bent tendons provided in pre stressed concrete?
- k) What are the types of flexural failures in pres stressed concrete members?

PART – B

Answer any *THREE* questions. All questions carry equal marks.

3 x 16 = 48 M

2. Design a reinforced concrete combined rectangular footings for two columns A and B located 3.60 M apart. The sizes of the columns are 400mm x400mm and 600mm x 600mm, and the loads on them are 1000KN and 1500KN respectively. The projection of the footing parallel to the length of the footing beyond the axis of the column A is limited to 590MM. The safe bearing capacity of the soil is 280KN/M². Use M₂₀ grade concrete and Fe₄₁₅ grade steel. 16 M

3. Design an interior panel of a flat slab for a live load of 4KN /M². This slab is provided with a floor finish weighing 1KN/M². The panels are 6M x 6M. Drops shall be provided. Use M₂₀ grade concrete and Fe₄₁₅ HYSD bars. 16 M

4. a) What is prestressed concrete? Write about pre tensioning and post tensioning? 8 M

- b) What are the characteristics of high tensile steel and high strength concrete? 8 M

5. a) Explain about various types of devices used for tensioning steel in pre stressed concrete? 6 M

b) Explain about various anchorages systems are used in pre tensioning and post tensioning of prestressed concrete with neat sketches? 10 M

6. a) Explain about concept of load balancing ? 6 M

b) A prestressed concrete beam of rectangular cross section 200 mm wide x 600 mm deep supports a live load of 8 KN/M. spanning over 8 M. Find the effective pre stressing force in the parabolic cable having an eccentricity of 80 mm at the centre of span and concentric at the supports for the following loading conditions. 10 M

i) If the bending effect of the stressing force is nullified by the imposed load for the mid span section (neglecting self weight of the beam).

ii) If the resultant stress due to self weight, live load, and pre stressing force is zero at the soffit of the beam at centre of span section. Take density of concrete is 24KN/M^3 .