Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (Civil Engg.) (2016 Onwards) (Sem.-1)

ADVANCED STRUCTURAL DESIGN

Subject Code : MTCE-205

M.Code : 74241

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.
3. Assume suitable data if required and state it clearly.

Q1. What are the recommendations of IS 456 regarding redistribution of moment in the design of statically indeterminate structures employing working stress and limit state method? (20)

Q2. Suggest suitable dimensions and draw the pressure distribution diagram for a counterfort retaining wall of height 6m above G.L. Also design the stem portion. The soil is having SBC 160 kN/m2 with internal friction angle 30°. Density of soil is 16kN/m3. Spacing of counterfort is 3m c/c. (20)

Q3. a) Advantages and disadvantages of flat slab. (10)

b) What are the methods available for yield line analysis for slab? (10)

Q4. Design a two way slab 4m × 5m clear in size supported on 300 mm thick walls on all four sides and corners not held down. The live load on slab is 4 kN/m2. Use M20 concrete and Fe 415 steel. (20)

Q5. Write short notes on :

a) Grid floor systems (10)

b) Direct design method for slab systems. (10)

Q6. A concrete beam has 300 mm width and 700 mm effective depth, effective cover 50 mm, reinforced with 5 nos. 20 mm dia. at tension side and 2 nos. 20 mm dia. at compression side. Use M20 concrete and Fe 415 steel. Determine moment of resistance. (20)

Q7. A rectangular slab 5m × 6m is simply supported and is isotropically reinforced with 10 mm dia. @ 200 mm c/c both ways at an average depth of 100 mm. The overall depth of slab = 130 mm. Estimate safe permissible load on the slab using yield line theory. Use M20 and Fe 415. (20)

Q8. a) Redistribution of moments in continuous beams. (7)

b) Discuss IS code provisions for design of deep beams and explain the parameters influencing the design of deep beams. (7)

c) Limitations of yield line theory. (6)

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.