

SEVENTH SEMESTER B. TECH DEGREE EXAMINATION

13.704.2 ADVANCED DESIGN OF REINFORCED

CONCRETE STRUCTURES

MODEL QUESTION PAPER

Time :3 hrs

Max. marks 100

PART A

Answer all questions

1. Discuss the design philosophies of concrete
2. Explain interaction curve for design of columns
3. Explain long term deflection in reinforced concrete sections
4. Explain a ribbed slab with sketches
5. Explain yield line analysis of slabs. **(4x 5 = 20 marks)**

PART B

(Answer any one full question from each module.)

Module - I

6. a. Draw the stress strain curve for concrete given by IS 456 and derive the stress block parameters (12)
b. Explain the limit state of serviceability (8)
7. a. Explain stress strain characteristics of concrete under biaxial and triaxial state of stress (14)
b. Discuss confinement of concrete (6)

Module- II

8. Design a biaxially eccentrically loaded column section 300 x500 mm carrying an axial load of 1500 kN. Eccentricity with respect to major axis is 60 mm and with respect to minor axis is 40 mm. Use M20 and Fe 415. (20)
9. A simply supported beam spanning over 8 m is of rectangular section with

a width of 300 mm and overall depth 600 mm. The beam is reinforced with 4 bars of 25 mm diameter on the tension side at an effective depth of 550 mm. 2 bars of 12 mm diameter are provided on the compression side. The beam is subjected to a service load moment of 140 kNm at the centre of span section. Estimate the maximum probable crack width at the location of maximum moment. (20)

Module III

10. Explain the principle of shear wall analysis (7)
Discuss the interaction between structural frame and shear wall (5)
Discuss the classification of shear walls (8)
11. Design a corbel to support a gantry girder reaction of 350 kN at service condition acting at distance of 225mm from the face of a 350mm X 350mm column. Use M20 and Fe415 (20)

Module 1V

12. Design a simply supported deep beam for the following data:
Effective Span = 5.6m
Overall depth = 3.6m
Width of support = 0.5m
Width of beam = 0.25m
Total load on the beam including self wt is 1900 kN
Use M20 and Fe 415 (20)
13. Design a pile cap for a group of two piles of 300 mm diameter spaced 1.5 m apart. The columns transmit a factored load of 1200 kN and is of size 500x 500 mm. Use M20 and Fe415 (20)