

Roll No.

23423

M.E./M. Tech. 2nd Semester (STRU DGN)

Examination – June, 2013

DESIGN OF STRUCTURES-II

Paper : MTSD 203

Time : Three hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any five questions. All questions carry equal marks.

Use of IS : 456 is allowed.

Assume suitable data whenever necessary.

1. (a) A slab of total depth 150 mm is designed for two way action over 5 m × 6 m. The reinforcement in short span consists of 12 mm at 240 mm spacing and that in the long span is 12 mm at 320 mm spacing. Check whether these satisfy IS 456 empirical rules for crack control. 15
- (b) What are major factors that effects deflection and how do these affect deflection in beams ? 5

2. Draw the design bending moment diagram of the beam clamped at both ends and carrying ultimate uniformly distributed load of 24 kN/m with full redistribution of 30 percent as per Is 456 : 200. 20
3. Design a interior panel of a flat slab, 6 m × 6 m, for a live load of 7 kN/m. Use M 15 concrete and provide two way reinforcement. 20
4. An R.C.C. section 200 × 400 mm is subjected to a characteristics load twisting moment of 2.5 kNm and a transverse shear of 600 kN. Assuming the use of grade 25 concrete Fe 415 steel, determine the reinforcement required according to IS 456. 20
5. A staircase has the following dimensions : waist W = 75 mm; nosing N = 25 mm; rise R = 175 mm; going G = 225 mm. the live load expected to 2kN/m². Calculate the factored load and effective depths for design if the staircase is spanning (a) transversely and (b) Longitudinally. 20
6. Explain the two theories usually assumed, showing as to how the column load is carried to the piles through pile caps. Under what condition would you use each of the theories ? If it is prescribed that the depth of the pile cap should be minimum, which of the theories will be applicable ? 20

7. A circular water tank of capacity 200000 liters. The depth of tank is limited to 3 m from inside. If the joint between the wall and base slab is to be made rigid. The base slab rests on the ground. 20
8. Explain the following terms : 20
- (a) Intze tank,
 - (b) Corbels,
 - (c) Type of staircases,
 - (d) Ribbed beam.
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