PVP 23

Code: 23CE3501

III B.Tech - I Semester - Regular Examinations - NOVEMBER 2025

DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES

(CIVIL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 2 very long answer questions. Answer any 1 Question. Each Question carries 28 Marks.
3. Part-B contains 5 essay answer questions. Answer any 3 questions. Each Question carries 14 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO	Max. Marks
1	Design a reinforced concrete footing for a rectangular column of section 300 mm x 500 mm supporting an axial factored load of 1600 kN. The safe bearing capacity of the soil at site is 200 kN/m^2. Adopt M20 grade concrete and Fe 415 HYSD bars. Sketch the details of reinforcement.	L4	CO3 CO4 CO5	28 M
	OR			
2	Design a two-way slab panel of size 4 m × 3 m simply supported on all sides, subjected to a live load of 4 kN/m². Use M20 concrete and Fe 415 steel. Determine slab thickness, reinforcement, and spacing using IS coefficients.	L4	CO2 CO3 CO5	28 M

PART – B

			BL	CO	Max. Marks
3	a)	Define modular ratio and explain its significance in reinforced concrete design.	L2	CO1 CO4	7 M
	b)	What is the difference between working stress method and limit state method?	L2	CO1 CO4	7 M
4		A simply supported beam with clear span 6000 mm, b=400 mm, d=560 mm carries a limit state load of 175 kN/m (including self-weight, dead load and live load). It is reinforced with 4 bars of 28 mm diameter tension steel (A_{st}=2464 mm^2) which continue right into the support. Take M20 concrete and Fe415 steel. Design the shear reinforcement.	L3	CO2 CO3 CO4	14 M
5		Determine the design procedure for calculation of reinforcement required to withstand Torsion in a beam.	L3	CO2 CO3 CO4	14 M
6		Design a short RCC column to carry an axial load of 1800 kN. It is 3m long, effectively held in position and restrained against rotation at both ends. Use M20 concrete and Fe415.	L4	CO3 CO4 CO5	14 M

7	Design a one-way slab for room of size 4 m × 8 m supported on 300 mm thick masonry wall on both sides of short span. The Live load is 2.5 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the reinforcement details.	L4	CO2 CO3 CO5	14 M