Code No: P18CET11

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL-2023
DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES
(CE Branch)

Time: 3 hours   Max. Marks: 60

Use of IS: 456 – 2000 and SP 16 (Charts and Tables) are permitted.
Use M20 concrete and Fe415 grade steel unless otherwise stated.
Missing data if any may suitably be assumed.

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (1X24=24M)

Q.No.	Questions	Marks	CO	KL
1	Design a two-way slab for an office floor to suit the following data: Size of floor = 6.3 m x 4.5 m Live load = 10 kN/m^2 Floor finish = 1 kN/m^2 Edge conditions: Simply supported on all four sides Assume the exposure condition to be moderate Use grade of steel as Fe415 Draw the detailing diagram for the two way slab.	[24M]	3	6
	(or)			
2	Design the longitudinal reinforcement and lateral ties in a short column 400 mm x 400 mm subjected to an ultimate axial load of 1600 kN together with ultimate moments of 100 kNm and 70 kNm about the major and minor axis respectively. The reinforcements are distributed equally on all four sides. Adopt M20 and Fe415 materials. Draw the detailing diagram for the longitudinal reinforcement and lateral ties of the column.	[24M]	4	6

PART-B

Answer any Three Questions in Part-B (3X12=36M)

Q.No.		Questions	Marks	CO	KL
3	a)	Discuss the assumptions in limit state design.	[6M]	1	2
	b)	Explain the following terms: (i) Characteristic loads (ii) Characteristic strength (iii) Partial load and safety factors	[6M]	1	2
4		Discuss the concept of bond, anchorage and development length with neat sketches as per IS code provisions.	[12M]	2	2
5		Design the interior span of a continuous one-way slab for a textile factory. The length of the floor along the longer direction is 12 m and the beams are spaced at 3 m centre to centre. Take M20 concrete and Fe415 steel.	[12M]	3	3
6		Design a circular column with helical reinforcement of 400 mm diameter and 4 m in length to carry a factored load of 1000 KN. The column is hinged at both ends. Use concrete M25 and steel Fe415.	[12M]	4	3
7		A solid footing has to transfer a dead load of 600 kN and an imposed load of 400 kN from the column of size 500 mm x 300 mm. Design a rectangular footing for an SBC of 200 kN/m^2. Use M30 grade of concrete and Fe415 grade steel.	[12M]	5	3

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