

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. III Year I Semester Regular Examinations December-2025

DESIGN OF REINFORCED CONCRETE STRUCTURES

(Civil Engineering)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer any one Question: 1 x 28 = 28 Marks)

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| 1 | A T-Beam slab floor of reinforced concrete has a slab 150 mm thick spanning between the T-Beams which are spaced 3 m apart. The beams have a clear span of 10 m and the end bearing are 450 mm thick walls. The live load on the floor is 4 kN/m ² . Using M20 grade concrete and Fe 415 HYSD bars, Design one of the Intermediate T-beams. Sketch the reinforcement details. | CO2 | L4 | 28M |
| 2 | Design and draw the reinforcement details of a two-way slab for a room 5.5 m x 4 m clear in size. If the super imposed load is 5 kN/m ² . Use M25 concrete and Fe 415 steel. Edges of simply supported – corners not held down. | CO3 | L4 | 28M |

PART-B

(Answer any three Questions: 03 x 14 = 42 Marks)

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| 3 | A Reinforced concrete beam 200 mm wide and 500 mm effective depth is reinforced with 3 nos of 16 mm diameter bars. Find the moment of resistance of the beam by using working stress method. Use M20 grade of Concrete and mild steel reinforcement. | CO1 | L4 | 14M |
| 4 | An R.C.C. beam 230 mm wide and 450 mm deep is reinforced with 4 bars of 16 mm diameter having shear force 60 kN. Design the shear reinforcement. If the grade of concrete and steel used is M20 and Fe 415. | CO2 | L4 | 14M |
| 5 | Describe the step-by-step procedure involved in the design of a one way slab and two way slab according to IS 456-2000. | CO3 | L3 | 14M |
| 6 | Design the short axially loaded rectangular column to support a load of 875 kN. One side of the column is restricted to 300 mm. Use M25 concrete and Fe 415 steel. | CO4 | L4 | 14M |
| 7 | A reinforced concrete wall 250 mm thick carries a load of 500 kN/m inclusive of its self weight. Design a reinforced concrete footing on soil having safe bearing capacity of 160 kN/m ² . Use M20 concrete and Fe 415 steel. | CO4 | L4 | 14M |

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