SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations Feb-2021
DESIGN & DRAWING OF REINFORCED CONCRETE STRUCTURES
(CIVIL ENGINEERING)

Time: 3 hours

Max.Marks: 60

(USE IS 456-2000 and SP-16 CHARTS)

PART-A

Answer any one question.

1X 24 = 24 Marks

1 Design an isolated footing for a column of size 300 mm × 450 mm subjected to an axial service load of 1200kN. The safe bearing capacity of the soil is 180 kN/m². Use M25 concrete and Fe 415 steel. Draw the cross-section of the footing showing the reinforcement details?

OR

2 Design a circular column with helical reinforcement subjected to 1600 kN. The column has unsupported length of 3.6 m and is effectively held in position at both ends but not restrained against rotation. Use M25 grade concrete and Fe415 steel.Draw the cross-section of the column showing the reinforcement details?

PART-B

Answer any three questions. All carry equal marks.

3 X 12 = 36 Marks

3 Design a rectangle beam for 4 m effective span which is subjected to a dead load of 15 kN/m and a live load of 12 kN/m. Use M 25 mix and Fe 500 grade steel. Adopt limit state method.

4 Determine the shear stress in a 25 cm x 40 cm effective rectangular section if the shear force is 10 kN and torsional moment is 4 kNm at factored loads. Assume M 20 mix and 0.25 % tension steel at the given section. State whether torsional reinforcement is required.

5 Design a cantilever slab for an overhanging of 1.2 m . The imposed load on slab consists of 1 kN/m² of live load and weight of finishing is 800 N/m² . Use M20 concrete and Fe415 steel?

6 Design a rectangular footing of uniform thickness for an axial loaded column of size 300mm x 600 mm. Load on column is 1150 kN. Safe bearing capacity of the soil is 200 kN/m² . Use M20 concrete and Fe 415 Steel.

7 Design a dog legged stair case for an office building in a room measuring 3 m x 6 m clear dimensions. Floor to Floor height is 3.5 m. The building is a public building liable to overcrowding. Stairs are supported on brick wall 230 mm thick at the ends of the landing. Use M20 concrete and Fe415 steel?

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