Q.P. Code: 16CE119 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Regular & Supplementary Examinations Nov/Dec 2019

DESIGN & DRAWING OF REINFORCED CONCRETE STRUCTURES

(Civil Engineering)

Time: 3 hours Max. Marks: 60

PART – A

Answer any one question. 1X 24 = 24 Marks

1) Design a simply supported roof slab for a room 7.5m X 3.5 m clear in size. The slab is carrying an imposed load of 4 KN/m^2. Use M- 30 grade concrete and Fe-415 grade HYSD bars. Sketch the reinforcement in detailed.

(OR)

2) Design a column of size 400 mm X 600 mm, subjected to a factored axial load of 2000 KN. The column has unsupported length of 3.0 m and is braced against side sway in both directions. Use M- 20 grade concrete and Fe-415 grade HYSD bars. Draw the reinforcement in detailed.

PART-B

Answer any three questions. All carry equal marks. 3 X 12 = 36 Marks

3) Design a rectangular beam from the method of limit state of collapse to resist the bending moment equal to 80 KN-m, using M-30 grade concrete and Fe-415 grade steel .Overall depth to breadth ratio may be assumed as 1.7

4) A reinforced concrete beam of rectangular section 300 mm wide is reinforced with 20 mm diameter at an effective depth of 600 mm. The beam has to resist a factored shear force of 450 KN at section. Assume M-20 grade concrete and Fe-415 HYSD bars, design vertical stirrups for the section.

5) Design a cantilever slab for an overhanging of 1.5 m. The imposed load on slab consists of 2 KN/mm^2 of live load and weight of finishing is 800 N/mm^2. Use M-25 grade concrete and Fe-415 HYSD bars.

6) Design a short column of size 300 mm X 600 mm subjected to an axial load P_u = 1000 KN and biaxial bending moment as follows. M_{ux} =160 KN-, M_{uy} = 140 KN-m, use M-20 grade concrete and Fe-415 HYSD bars.

7) Design a rectangular footing for a column of size 300 mm X 300 mm subjected to an axial service load of 1400 KN. The safe bearing capacity of the soil is 190 KN/mm^2. Use M-20 grade concrete and Fe-415 HYSD bars.

END