Q.P. Code: 19CE1017 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year II Semester Regular Examinations October-2020

DESIGN OF ADVANCED CONCRETE STRUCTURES

(Structural Engineering)

Time: 3 hours Max. Marks: 60

Use of IS 456-2000, SP 16 charts and other relevant codes are to be permitted in the examination hall.

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 A beam of AB span 4 mts fixed at one end and freely supported at other end carrying a UDL of 30 KN/m at collapse. Draw maximum BM as per recommendation of code IS 456-2000 for redistribution of moment. **12M**

OR

2 **a** List the advantages and disadvantages of moment redistribution. **6 M**

b Explain moment curvature relation of reinforcement concrete sections. **6 M**

UNIT-II

3 A reinforced concrete deep girder is continuous over span of 10 m apart from center to center. It is 4.6 m deep, 300 mm thick and the supports are columns 900 mm in width. If the girder supports a UDL of180 kN/m, design the reinforcement required, if M20 concrete and Fe415 steel is used. **12 M**

OR

4 Simply supported beam of 250 mm wide and 1500 mm overall depth & 2300 mm clear span is simply supported on 200 mm wide support on either side it carries UDL of 200 kN/m inclusive of its self-weight. Design the beam using M20 concrete and Fe415 Grade. **12 M**

UNIT-III

5 A simply supported one way ribbed slab of 5 m span is to be used for 3 KN/m^3 live load. Design the slab using M20 grade concrete and HYSD bars of grade Fe 415. **12 M**

OR

6 Explain the Analysis and Design procedure for ribbed Slabs. **12 M**

UNIT-IV

7 Design an interior panel of a flat slab of size 5 m X 5 m without providing drop and column head. Size of column is 500 X 500 mm and live load on the panel is 4 kN/m^2. Take floor finishing load as 1 kN/m^2.Use M 20 Concrete and Fe 415 steel. **12 M**

OR

8 A reinforced grid floor is to be design to cover of 16 m x 22 m the spacing of the ribs is mutually perpendicular direction is 2m c/c. live load of floor is 3 kN/m^2 adopt M25 grade concrete and Fe 415 steel assume ends are simply supported analyze the grid floor using IS 456:2000 method and design suitable reinforcement in the grid floor. **12 M**

UNIT-V

9 Design a shear wall subjected to P_u=12000 kN and M_u=11000 kN-m. The materials used are M30 grade concrete and Fe 415 steel and thickness of wall is 200mm and length is 6m. Design the wall by using interaction chart. **12 M**

- Using elastic stress distribution design end portion of height 600mm.
- Assume end zone to resist moment and 500mm X 500mm column at end zone.

OR

10 Briefly explain the classifications of shear wall with neat sketch. **12 M**

*** END ***