

Q.P. Code: 18CE1017

R18

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

M.Tech I year II Semester Supplementary Examinations Nov/Dec 2019  
DESIGN OF ADVANCED CONCRETE STRUCTURES

(Structural Engineering)

Time: 3 hour

Max. Marks:60

(Answer all Five Units 5×12=60 Marks)

UNIT I

- 1 a Explain moment curvature relation of reinforcement concrete sections 6M  
b What are the different options available to a designer with regard to control of cracking in flexural members 6M

OR

- 2 A simply supported T-beam span of 5 m is subjected to a moment of 85 KN/m at mid span. The section of beam is as shown in figure. Calculate the crack width at corner A, directly under tension reinforcement B & the center tension face C. the materials are M20 grade concrete and Fe415 steel. 12M

UNIT II

- 3 A simply supported deep beam 200 mm wide x 1800 mm overall depth and 2750 mm clear span is simply supported on 250 mm wide supports on either sides. It carries a characteristic UDL of 260KN/m inclusive of its self weight. Design and details the beam. The materials are M20 Grade concrete and HYSD reinforced of grade Fe415. 12M

OR

- 4 Explain the procedure for continuous deep beam and draw the reinforcement details. 12M

UNIT III

- 5 Design the interior panel of a flat-slab floor system for a ware house 24m divided into panels of 6mX6m. Loading class = 5KN/m<sup>2</sup>, Materials : M20 grade concrete, Fe 415 HYSD bars, Column size =400 mm diameter. 12M

OR

- 6 A flat plate with 7.5\*7.5m panels on 500\*500mm columns has a slab thickness of 180 mm, designed for a total load of 9.0 KN/m<sup>2</sup>. Check the safety of slab in shear and also find the stirrups for reinforcing in the slab. Use M25 and Fe415. 12M

UNIT IV

- 7 Write short notes on: 12M  
a. Shear effect in two-way slab with beams. b. Flat slabs with opening.  
c. ACI guidelines for shear calculations. d. Strengthening of columns for shear and torsion.

OR

- 8 A simply supported one way ribbed slab of 5m span is to be used for 3 KN/m<sup>2</sup> live load. Design the slab using M20 grade concrete and Fe 415 HYSD bars. . [12M] 12M  
Ribs are spaced at 450mm c/c.  
The thickness of topping as 60 mm.  
Width of rib as 120mm.  
Over all depth is 300mm.

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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. **12M**
- Using interaction chart.
  - 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 Design a shear wall of length 5.0 m and thickness 250 mm subjected to the forces given below and the wall is a high wall with the following loadings. Use M25 and Fe415 **12M**

S.No	Loading	Axial Load (KN)	Shear Force (KN)	Bending Moment (KN-m)
1	DL + LL	1950	500	20
2	Seismic Load	200	4500	80

\*\*\*END\*\*\*