

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

**M.Tech I Year II Semester Regular & Supplementary Examinations July-2025**

**DESIGN OF ADVANCED CONCRETE STRUCTURES**

(Structural Engineering)

- Note : 1. Student must answer one question from each unit  
2. IS 456-2000 code book is allowed in the exam hall*

**Time: 3 Hours**

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

**Max. Marks: 60**

**UNIT-I**

- |     |  |     |    |    |
|-----|--|-----|----|----|
| 1 a | Advantage and disadvantages of moment redistribution | CO1 | L1 | 6M |
| b   | Explain the conditions for moment redistribution     | CO1 | L2 | 6M |

**OR**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 2 | A beam AB of 6 m span and fixed at the ends, carries an UDL of 40 KN/m at collapse. Draw maximum bending moment diagram as per IS code recommendations for redistribution of moments. | CO1 | L3 | 12M |
|---|---|-----|----|-----|

**UNIT-II**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 3 | Draw the detailing of deep beam with neat sketches as per IS 456 – 2000 for different loading conditions. | CO2 | L2 | 12M |
|---|---|-----|----|-----|

**OR**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 4 | A 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 200KN/m inclusive of its self weight. Design the beam using M20 concrete and Fe415 Grade. | CO2 | L3 | 12M |
|---|---|-----|----|-----|

**UNIT-III**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 5 | A simply supported one way ribbed slab of 5 m span is to be used for 3 KN/m <sup>2</sup> live load. Design the slab using M20 grade concrete and HYSD bars of grade Fe 415. | CO3 | L3 | 12M |
|---|---|-----|----|-----|

**OR**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 6 | Explain the Analysis and Design procedure for ribbed Slabs. | CO3 | L2 | 12M |
|---|---|-----|----|-----|

**UNIT-IV**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 7 | Design the interior panel of the flat slab floor system for a warehouse 24m x 24m divided into panels of 6m x 6m. Live load = 5kN/m <sup>2</sup> , materials M20 and Fe415 HYSD bars, Column size = 400mm Ø. Sketch the reinforcement details in an interior panel of the flat slab. | CO4 | L3 | 12M |
|---|--|-----|----|-----|

**OR**

- |     |  |     |    |    |
|-----|--|-----|----|----|
| 8 a | Write in detail about grid floor slab? With functions, characteristics and failure of grid slab? | CO4 | L1 | 6M |
| b   | write the operational design procedure of the grid floor slab?                                   | CO4 | L1 | 6M |

**UNIT-V**

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|-----|--|-----|----|----|
| 9 a | Explain about the slenderness of the plain-concrete wall as per IS 456-2000. | CO5 | L2 | 6M |
| b   | Write about the eccentricities of vertical loads at right angles to wall.    | CO5 | L1 | 6M |

**OR**

- |    |  |     |    |     |
|----|--|-----|----|-----|
| 10 | Write in detail about general dimensions of rectangular shear walls, vertical and horizontal reinforcements, strength Requirements shear wall. | CO5 | L1 | 12M |
|----|--|-----|----|-----|

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