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

M. Tech I Year II Semester Regular Examinations November-2021

DESIGN OF ADVANCED CONCRETE STRUCTURES

(STRUCTURAL ENGINEERING)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

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

OR

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| 2 | a How to do the Estimation of Crack width in Beams by IS456? | L2 | 6M |
| | b Explain the Factors affecting Crack width in beams with neat sketch. | L1 | 6M |

UNIT-II

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| 3 | Determine the thickness and reinforcement for a simply supported transfer girder of length 5.25m is loaded from two columns at 1.75m from each end with 3750kN. The total depth of the beam is 4.2m and width of the support is 520mm. Assume M40 and Fe415 grades. | L3 | 12M |
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| 4 | Draw the detailing of deep beam with neat sketches as per IS 456 – 2000 for different loading conditions | L2 | 12M |
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UNIT-III

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

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| 6 | Design a continuous ribbed slab with 3 equal spans of 5.8 m. the ribs support on the beam with over span is 250 mm x 600 mm. take live load on the slabs is 3 KN/m ² use M20 Grade concrete and Fe415 steel. | L4 | 12M |
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UNIT-IV

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| 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 ² , materials M20 and Fe415 HYSD bars, Column size = 400mm Ø. Sketch the reinforcement details in an interior panel of the flat slab. | L3 | 12M |
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| 8 | a Write in detail about grid floor slab? With functions, characteristics and failure of grid slab? | L1 | 6M |
| | b Write the operational design procedure of the grid floor slab? | L1 | 6M |

UNIT-V

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| 9 | A plain brace concrete wall of dimensions 8m x 5m long and 200mm thick is restrained against rotations at its base and restrained at the base. It has to carry a factored total gravity load of 180kN and factored horizontal load of 8.45kN at the top. Check the safety of the wall. Assume $f_{ck} = 20\text{N/mm}^2$, $f_y = 415\text{N/mm}^2$. | L3 | 12M |
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OR

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| 10 | Design a shear wall subjected to $P_u = 12000\text{kN}$ and $M_u = 11000\text{kN-m}$, the materials used are M30 grade concrete and steel to be 415 N/mm ² and thickness of wall 200mm and length of 6m. Design the shear wall. | L4 | 12M |
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