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Total number of pages:[2]

Total number of questions:06

B.Tech. || CE || 5th Sem

Design of Concrete Structure-I

Subject Code:BTCE-502A

Paper ID:

Time allowed: 3 Hrs

Max Marks: 60

Important Instructions:

- All questions are compulsory
- Assume any missing data
- Use of IS: 456-2000 and SP16 is allowed

PART A (2×10)

Q. 1. Short-Answer Questions:

- Define the terms Segregation and bleeding.
- Name the various tests required to find the workability of concrete.
- Define the assumptions of L.S.M as per IS:456-2000.
- Why the development length is required in the construction of any Structure?
- Differentiate between one way and two way slab.
- How long column is different from short column as per IS:456-2000?
- What is minimum steel requirement for two way slab as per BIS?
- How would you calculate loads by ultimate method according to BIS:875?
- Explain limit state of collapse in flexure.
- Define Target strength and Modulus of rupture.

PART B (8×5)

Q. 2 How would you define strength of concrete? What is the role of compaction in achieving the strength of concrete? CO1

OR

What are the various types of concrete and Explain any three of them in detail.

CO1

Q. 3. Write are the objectives and methods of Analysis and design of concrete as per IS:456-2000. CO2

OR

Differentiate the design philosophies of WSM and LSM.

CO2

Q. 4. Write the different steps to find moment of resistance of Doubly Reinforced Beam.

CO3

OR

A RCC beam has an effective depth of 500mm and breadth of 350mm. It contains 4-25mm bars. If $\sigma_{ck}=15\text{N/mm}^2$ and $\sigma_y=250\text{N/mm}^2$. Calculate the shear reinforcement needed for a factored shear force of 350kN.

CO3

Q.5. Write the design procedure for a Flat Slab.

CO4

OR

Design a slab for a room 5.5m x 4.0m clear in size if the superimposed load is 5kN/m^2 with edges simply supported/corners not held down. Use M20 mix and Fe415 grade steel.

CO4

Q. 6. Explain in detail the Assumptions and design steps for slender column along with two checks.

CO5

OR

Design a circular short column to carry an axial working load of 120kN. Assume $e_{min} < 0.05D$. Use M20 and Hysd reinforcement.

CO5