

Seat No: _____

Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
Diploma Engineering, Mid semester Examination

Semester: 5th
Subject Code: 03605301
Subject Name: Design of Concrete Structure

Date: (05/08/2022)
Time: (1hr: 30min)
Total Marks: 40

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

Q.1 Answer any six out of Ten. (2 Marks Each) (12)

1. Give partial safety factor for Concrete & Steel.
2. Define limit state and state different types of limit state.
3. Find Design Strength in Compression for M25 & M30 Grade of Concrete.
4. Define Characteristics Strength & Characteristics Load
5. Give minimum number of bars and minimum diameter of longitudinal bar in square column.
6. State maximum distance between bars of main steel and distribution steel in slab
7. State equation of minimum eccentricity in column.
8. State span/depth ratio for different beams for span up to 10 m.
9. What is value of stress in Steel bar:
10. Find Flexural Strength of Concrete M25 & M30 Grade of Concrete.

Q.2 A) Calculate Effective Span For simply supported Beam As clear span 4.0mt & Effective Depth 150mm. (03)

OR

- A) Determine development length for 20 mm diameter bar, Fe-415 steel in compression and Concrete M-25 grade. (03)
- B) Draw an Acceptable Stress-Strain Curve for Concrete in Limit State. (03)

OR

- B) Importance of Reinforcement in R.C.C. structures (03)
- C) Define Clear Cover & Effective Cover with sketch. (04)

OR

- C) Enlist Types of Slabs & Explain Any one in detail (04)
- D) What are the criteria of Check for Cracking in slab. (04)

Q.3 A) Draw Sketch of Reinforcement Details for Doubly Reinforced Beam with notations. (03)

OR

- A) Draw Sketch of Reinforcement Details for one way simply supported slab with notations. (03)
- B) Design a simply supported slab for a clear room size 3 m X 7 m. The slab is resting on 300mm thick brick wall. Take live load as 3 kN/m² and floor finish as 0.8 kN/m². Find **ONLY** moment resist by slab. Use M20 grade concrete and Fe415 grade steel. (03)

OR

- B) Design a simply supported slab for a clear room size 3.5 m X 7.5 m. The slab is resting on 300mm thick brick wall. Take live load as 3.5 kN/m² and floor finish as 1.0 kN/m². Find **ONLY** moment resist by slab. Use M20 grade concrete and Fe415 grade steel. (03)

- C) Find out Main Steel & Distribution Steel for Q.3 B (04)

OR

- C) Find out Main Steel & Distribution Steel for Q.3 B of OR (04)

- D) Write Difference Between One Way Slab & Two-Way Slab. (04)

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