

AU – 2692

Fifth Semester B. Arch. (CGS) Examination

ARCHITECTURAL STRUCTURE - IV

Paper – 5 AR 03

(USC – 10039)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
- (2) All questions carry equal marks.
- (3) Answer **Three** questions from Section A and **Three** questions from Section B.
- (4) Due credit will be given to neatness and adequate dimensions.
- (5) Assume suitable data wherever necessary.
- (6) Diagrams and Chemical equations should be given wherever necessary.
- (7) Illustrate your answer wherever necessary with the help of neat sketches.
- (8) I. S. I. Hand book for structural steel section I. S. Code 800/1962 or 1964, I. S. 456 (Revised) I. S. 875 may be consulted.

SECTION A

1. State the classification and composition of cement. Also write down the recommendations given in IS 456 : 2000. 13

OR

2. Why the formwork is designed ? How the formwork is cleaned and treated before use ? What do you mean by stripping time ? 13
3. What do you mean by characteristic strength of steel reinforcement ? Also write down the characteristic strengths of different types / grades of steel reinforcement. 13

OR

4. Write short notes on :

(a) Transporting and Handling of concrete.

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| (b) Placing of Concrete. | 2 |
| (c) Compaction. | 2 |
| (d) Curing. | 2 |
| (e) Construction Joints. | 2 |
| (f) Durability of concrete with respect to honeycomb free. | 3 |
5. State the Indian standard recommendations (As per IS : 456 : 2000) on Design for Torsion. 14

OR

6. Write down the Indian standard recommendations (As per IS : 456 : 2000) for "Concrete Mix Proportioning." 14

SECTION B

7. Explain :-
- | | |
|--|---|
| (i) Limit state of collapse. | 4 |
| (ii) Limit state of serviceability. | 4 |
| (iii) Characteristic strength of concrete and steel. | 3 |
| (iv) Partial safety factor for loads. | 3 |

OR

8. (i) Find M.R. of singly reinforced concrete beam of 200 mm width and 400 mm effective depth, reinforced with 4 bars of 16 mm ϕ of Fe 415 steel. Use M 20 concrete. Use I.S. code method. Redesign the beam if necessary. 7
- (ii) Design a balanced singly reinforced concrete beam section for an applied moment of 60 kN-m. The width of beam is limited to 175 mm. Use M 20 concrete and Fe 415 steel. 7

9. Design the reinforcement for a reinforced concrete beam 300 mm wide and 400 mm deep of grade M 20, to resist on ultimate moment 150 kN·m. Using mild steel bars of Grade Fe 250 cover = 50 mm and 35 mm respectively.

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OR

10. Design R.C. Slab for room measuring 4 m × 5 m from inside. Assume live load 2 kN / m² and F.F. = 1 kN/m². Use M 20 grade concrete and Fe 415 steel. The slab is simply supported on all four edges, with corners free to lift.

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11. Design a rectangular isolated footing of uniform thickness for R.C. column bearing a vertical load of 600 kN and having a base size of 400 mm × 600 mm. The S.B.C. of soil may be taken as 120 kN/m². Use M 20 concrete and Fe 415 steel.

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OR

12. Design a dog-legged stair for a building in which the vertical distance between floors is 3.6 m. The stair hall measures 2.5 m × 5 m. The live load may be taken as 2500 N/m². Use M 20 grade concrete and Fe 415 steel.

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