

B.Arch. Fifth Semester (Architecture) (CGS)
10039 : Architectural Structure - IV
05 AR 03

P. Pages : 2

Time : Three Hours



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Max. Marks : 80

- Notes :
1. All question carry equal marks.
 2. Answer **three** question from Section A and **three** question from Section B.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Diagrams and chemical equations should be given wherever necessary.
 6. Illustrate your answer necessary with the help of neat sketches.
 7. 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.
 8. Use of pen Blue/Black ink/refill only for writing the answer book.

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 & 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) Transportation & Handling of concrete. **2**
 - b) Placing of concrete. **2**
 - c) Compaction. **2**
 - d) Cutting. **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 of torsion. **14**

OR

6. Write down the Indian standard recommendations [As per IS 456 : 2000] for 'Concrete Mix Proportioning'. **14**

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SECTION – B

7. a) What are the assumptions made in limit state method of collapse for flexure? 7
b) What is under reinforced & balanced section? 6

OR

8. a) Find the steel required if a beam [230 mm × 600 mm] carries a moment of 300 kN – m. 7
Use M 25 grade concrete & Fe 500 steel.
b) Write down the advantages of limit state method & working stress method. 6
9. Design a simply supported slab panel for a hall of clear dimensions 3m × 8m supported on 230 mm thick brick wall all round. The slab carries a super imposed load of 2.5 kN / m^2 with floor finish as 0.5 kN / m^2 . Use M 20 concrete & Fe 415 steel. Show reinforcement details. 14

OR

10. Design a T – beam from the following data. 14
Effective Span = 6 m
Spacing of beams = 3.3 m c/c.
Thickness of slab = 100 mm.
Width of web = 300 mm
Live Load = 3 kN / m^2
Floor Finish = 0.75 kN / m^2 .
11. Design a column footing in a [G + I] structure with column size 400 × 600 mm. The axial load on column is 1500 kN. The safe bearing capacity of soil is 180 kN / m^2 . Use M20 grade concrete & Fe 500 Steel. 13

OR

12. Design a dog – legged staircase for the building with the given data : 13
1] Ht. between floor = 3.1 m.
2] Riser = 0.150 m.
3] Trade = 0.250 m
4] Width of landing = 1.0 m
5] Live Load = 3 kN / m^2
6] Floor Finish = 0.5 kN / m^2
7] Use M 20 & Fe 415. Assume that the landing of stair case to be supported on 230 mm brick wall.
