

B.Arch. Seventh Semester (Architecture Engineering) (CGS)
10061 : Architectural Structure - VI
07 AR 05

P. Pages : 2

Time : Three Hours



AV - 3085

Max. Marks : 80

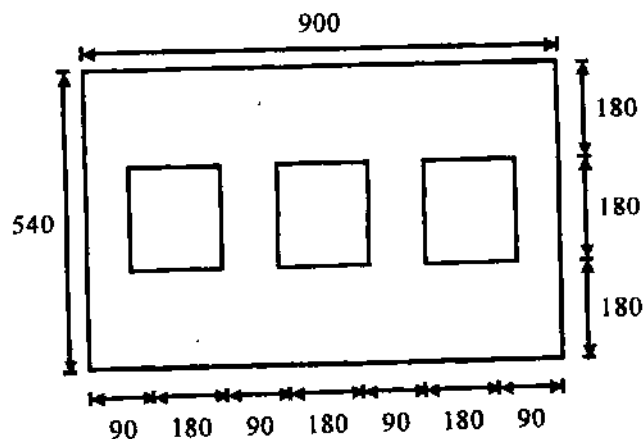
- Notes :
1. All question carry equal marks.
 2. Question No. 3 & 10 from Section A & B is compulsory.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answer necessary with the help of neat sketches.
 6. I.S.I. Hand book for structural Steel section, I.S. Code 800/1962 or 1964, I.S. 456 (Revised) I.S. 875 may be consulted.
 7. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. Design a simply supported slab panel for a hall of clear dimensions $3\text{m} \times 8\text{m}$ supported on 230 mm thick brick wall all round. The slab carries a super imposed load of $2.5\text{kN}/\text{m}^2$ with floor finish as $0.5\text{kN}/\text{m}^2$. Use M20 concrete & Fe415 grade steel. Show Reinforcement details. 14

OR

2. Design a rectangular column footing with following data 14
- a) Column size = $300\text{mm} \times 400\text{mm}$
 - b) Load on column = 1400kN
 - c) Safe bearing capacity of soil = $200\text{kN}/\text{m}^2$
 - d) Use M20 concrete & Fe415 steel.
3. Figure (3) shows the cross - section of a masonry chimney with three flues. If wind pressure of $1400\text{N}/\text{m}^2$ acts normal to the longer side. Calculate stresses on the windward & Leeward sides given that the height of the chimney is 1 mt & the weight of the masonry is $19200\text{N}/\text{m}^3$. 13



All dimension are in millimeter

Figure 3

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4. Explain in short 'The Eccentrically Loaded Footing' & the selection criteria for eccentrically loaded footing. 13

OR

5. Explain the term 'Flat Slab' & the terms associated with flat slab. 13

SECTION – B

6. Discuss in short about repair & rehabilitation of structure. 13

OR

7. State the different types of non – destructive techniques used in construction. 13

8. A single riveted double cover butt joint in a structure is used for connecting two plates 12 mm thick. The diameter of rivets is 24 mm. The permissible stresses are 120 N/mm^2 in tension, 100 N/mm^2 in shear & 200 N/mm^2 in bearing. Calculate necessary pitch & efficiency of the joint. 13

OR

9. Two plates 10 mm thick are jointed by single rivetted lap joint. The diameter of rivet is 16 mm & pitch is 40 mm. If allowable tensile stress is 120 N/mm^2 , Allowable shear stress for rivet is 100 N/mm^2 , Allowable crushing stress for rivet is 160 N/mm^2 . Determine efficiency of lap joint. 13

10. Design a single Angle discontinuous strut to carry a load of 47 kN. The length of strut is 3 m between intersection. The strut is connected by 12 mm thick gusset plate with 14

a) 24 mm ϕ power driven Rivet.

b) 20 mm ϕ hand driven Rivet.
