B.Arch. Fifth Semester (Architecture) (Old)

Structure - V : 5 SA 3

P. Pages : 1

Time : Three Hours

AV - 3236

Max. Marks : 40

Notes : 1. Assume suitable data wherever necessary.
2. Illustrate your answer necessary with the help of neat sketches.
3. 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.
4. Use of calculator is permitted.

1. Design a column section carrying a load of 1250kN. The length of column is 4.5m and it is restrained at both ends. **13**

OR

2. A masonry retaining wall of trapezoidal section is 6m high and 1m wide at the top, retaining soil level with its top find the minimum width of the wall in order tension may not be induced at the base Masonry and soil weigh 23000N and 16000N per cubic meter respectively. The angle of repose of soil is 30° and the back face of the wall is vertical. **13**

3. a) What factors affect the strength of concrete? **4**

b) Define bulking of sand and discuss its effects on the properties of concrete. **6**

c) What is meant by consistency of mix? **3**

OR

4. Design a simply supported rectangular beam with the following data. Span = 7m, Imposed load = 35kN/m concrete MIS & steel, Mild steel. **13**

5. a) What do you understand by over reinforced section and under reinforced section. **4**

b) A rectangular beam 650mm deep overall and 320mm wide is reinforced with 2500mm^2 of steel on tension side an and equal amount on compression side, placed symmetrically with a cover of 50mm: calculate the moment of Resistance of beam Take **10**

$6cbc = 7N/mm^2$ $bst = 190\,N/mm^2$, $m = 13.33$

OR

6. Design a two way supported R. C. roof slab over a room 5.5m × 6.7m in size. Treat the edges of the slab as simply supported and its corners held down. Roof is approachable. Use M15 grade of concrete and mild steel reinforcement. **14**

****