(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 8550   Roll No.

B. Arch.

(SEM. VI) EXAMINATION, 2006-07
ARCHITECTURAL STRUCTURES - VI

Time : 3 Hours]   *[Total Marks : 50*

Note :   (1)   Attempt **all** questions.

(2)   In case of numerical problems assume suitable **data** wherever not provided.

(3)   Use of IS-456 2000 is permitted

(4)   Be precise in your answer.

1.   Attempt any **three** parts of the following :   4×3=12

(a)   State how cement sets and gains its strength. Why water is essential for setting of cement?

(b)   Derive expression for the position of neutral axis and moment of resistance of balanced rectangular section.

(c)   What is the difference between anchorage Bond and Flexural Bond?

(d)   Explain application of Elastic Theory for Beams.

2. Attempt any **three** parts of the following : 4×3=12

   (a) Explain stress-strain relationship for concrete with Neat sketches.

   (b) The cross section of a single reinforced concrete beam is 300 mm wide and 400 mm deep, The reinforcement bars consists of 4-16 mm diameter. If the stresses in concrete and steel do not exceed 5 N/mm^2 and 140 N/mm$^{2.}$ Determine the moment of resistance of the section.

   (c) Explain curtailment of Tension reinforcement in flexural members.

   (d) What do you understand by Bar Bending Schedule ?

3. Attempt **two** parts of the following :
   Part A is compulsory.

   (a) Design a rectangular beam simply supported   **8**
       over a clear span of 6 meter. If superimposed load is 30 kN/M and support width is 50 cm. each. Use M-20 concrete and Tor steel. Use limit state method.

   (b) What is stability requirement of a retaining   **4**
       wall?

   (c) Explain arrangement of Transverse   **4**
       Reinforcement for Axially loaded columns.

4. Attempt any **one** part of the following :   14×1=14

   (a) Design a R.C. Slab for a room 4m × 5m from inside. The slab carries a live load of 2000 N/M^2 and is finished with 20 mm. thick granolithic topping. Take σ_{cbc} – 5 N/mm^2, σ_{st} = 140 N/mm^2 m=19. The slab is simply supported at all four edges, with corner free to left.

   (b) A 4 meter high column held in position ends and restrained against rotation at one end. Its diameter is restricted to 40 cm. Calculate the reinforcement if it is required to carry a factored axial load of 1500 kN use M-20 concrete and Fc 250 grade steel.

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