Printed Pages : 3   **AR–803**

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

PAPER ID : 8556   Roll No. | | | | | | | | | |

B. Arch.

(SEM. VIII) EXAMINATION, 2006-07

ARCHITECTURAL STRUCTURE - VIII

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-800-1984, Steel Table is permitted.

(4)   Be precise in your answer.

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

(a)   Distinguish between Rankine's theory and Coulomb's theory.

(b)   Find efficiencies of a single riveted Lap joint for 8 mm. plates with 16 mm diameter rivets at a pitch of 50 mm c/c.

(c)   Write design steps of the lacing and battening for compression member.

(d)   Define the following :

(i)   Log Angle

(ii)   Tenhion splice

V-8556]   1   **[Contd...**

2. Attempt any **three** parts of the following;   4×3=12
   Part d is compulsory.

   (a) What do you understand by economical spacing of roof truss?

   (b) Explain the effects of size of footing for the ultimate bearing capacity.

   (c) Explain the following :

      (i) Degree of saturation

      (ii) Water content

      (iii) Coarse grained soil

      (iv) Specific gravity

   (d) Determine the tensile strength of a roof trees diagonal 100 mm × 75 mm × 100 mm connected to the gusset plate by 5 mm fillet weld.

3. Attempt any **two** parts of the following :   8
   Part A is **compulsory**.

   (a) Compute the intensities of active and passive earth pressure at depth of a 0 mtr in dry cohesionless sand with an angle of internal friction of 30° and unit weight of 10 kN/m³. What will be the intensifier of active and passive earth pressure of the water table rises to the ground level? Take saturated unit weight of sand 22 kN/m³.

   (b) Write design steps of laterally unsupported beam.

   (c) What is efficiency of pile group and define negative skin friction.

V-8556]   2   [Contd...

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

    (a) A riveted plate circular is simply supported over an effective span in 16 mtr. It carries a u.d.l of 80 kN/m in addition to its self weight and two concentrated loads of 400 kN each at 4 mtr from the either support. Design the following :

        (i) Economical depth

        (ii) Design of web

        (iii) Design of flanges.

    (b) (i) Write modes of failure of Flexural   **4+10** Members.

        (ii) A simply supported beam has an objective span of 7 m and carries 9.u.d.l. of 50 kN/m

        (iii) Taking f_y = 250 N/mm^2 and

$$E = 2 \times 10^5 \, N/mm^2.$$ Design the beam if it is laterally supported.

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