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 battenning for compression member.
   (d) Define the following :
       (i) Log Angle
       (ii) Tenhion splice

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2. Attempt any **three** parts of the following: \[4 \times 3 = 12\]
   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 : \[ 14 \times 1 = 14 \]

(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 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 \( f_y = 250 \text{ N/mm}^2 \) and \( E = 2 \times 10^6 \text{ N/mm}^2 \). Design the beam if it is laterally supported.