

**III B.Tech II Semester Supplementary Examinations, April/May 2005**  
**FOUNDATION ENGINEERING**  
**(Civil Engineering)**

**Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) Explain clearly 'General shear failure' and 'Local shear failure' and indicate the field situations under which each type of failure occurs.  
(b) Differentiate between
  - i. Shallow foundation and deep foundation,
  - ii. Gross and net bearing capacity,
  - iii. Safe bearing capacity and allowable soil pressure.
2. (a) What are the different methods by which the bearing capacity at a place is determined? Briefly describe the methods.  
(b) Discuss the limitations of SPT. Explain the various corrections that are required to be applied to the observed value of N.
3. (a) What are the assumptions made in conventional method of design of combined footings? Discuss.  
(b) Under what conditions would you choose
  - i. Raft,
  - ii. Strap footing . Explain clearly
4. (a) State the permissible settlements as per Code.  
(b) What is a load test? Discuss how will you estimate the settlement of a footing on sand using the results of a plate load test?
5. (a) How would you estimate the load carrying capacity of a pile in
  - i. cohesionless soils
  - ii. cohesion soils.  
(b) How will you separate skin frictional resistance and point bearing resistance of soil
6. (a) Explain what is meant by passive earth pressure?  
(b) A 6.5m high vertical retaining wall supports a back fill with horizontal upper surface. The top 2.5m of the fill is clay with unit weight  $18 \text{ kN/m}^3$ , (cohesion  $10 \text{ kN/m}^2$  and angle of internal friction  $18^\circ$ ) The bottom 4m of the fill is sand with unit weight  $20 \text{ kN/m}^3$  and angle of internal friction is equal to  $24^\circ$ . Determine the total active earth pressure per meter length of the wall and its point of application after neglecting negative pressure.

7. (a) Explain the Swedish method of slices to analyse the stability? Derive an expression for the factor of safety.
- (b) A long natural slope in an over consolidated Clay ( $C^1 = 10 \text{ kN}/m^2$ ,  $\phi = 25^\circ$ ,  $\gamma_{sat} = 20 \text{ kN}/m^3$ ) is inclined at  $10^\circ$  to the horizontal. The water table is at the surface and the seepage is parallel to the slope. If a plane slip had developed at a depth of 5m below the surface, determine the factor of safety. Take  $\gamma_w = 10 \text{ kN}/m^3$
8. (a) What are the forces acting on a well foundation?
- (b) Enumerate advantage and disadvantages of floating caissons.

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