

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

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

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

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. [8+2+3+3]
2. (a) Briefly outline the plate load test method of determining the safe bearing capacity of soils. What are its limitations?
(b) How is the standard penetration test (SPT) conducted in the field? Explain the method of interpretation of 'N' value to assess the safe bearing capacity. [8+8]
3. (a) Explain the procedure for the selection of a type of foundation?
(b) What is the coefficient of subgrade reaction? On what factors does it depend? [8+8]
4. (a) Write a note on settlements of shallow foundations.
(b) A 30 cm square plate settles by 1.5 cm in a plate load test on a cohesionless soil when the intensity of loading is 200 kN/m^2 . What will be the settlement of a prototype shallow footing 1 m square under the same intensity of loading? [4+12]
5. (a) Differentiate between static and dynamic formulae for determination of load carrying capacity of pile.
(b) What is under reamed pile foundation. Explain the procedure to estimate the load carrying capacity with a sketch. [8+8]
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 kN/m^3 , (cohesion 10 kN/m^2 and angle of internal friction 18°) The bottom 4m of the fill is sand with unit weight 20 kN/m^3 and angle of internal friction is equal to 24° . Determine the total active earth pressure per meter length of the wall and its point of application after neglecting negative pressure. [4+12]

7. (a) Explain the effective stress analysis to analyse the stability of a pure cohesive soil.
- (b) An infinite slope in a sandy soil (with angle of friction of 40°) has a slope of 30° . What is the factor of safety ? If there is seepage what will happen to the above factor of safety. [6+10]
8. (a) What are the forces acting on a well foundation?
- (b) Enumerate advantage and disadvantages of floating caissons. [8+8]

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