M.E. First Semester (Civil Engineering (Geotechnical Engineering)) (Full Time) (C.G.S.- New)

13044 : Advanced Foundation Engineering : 1 SFGE 3

P. Pages : 2

Time : Three Hours

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AW - 3644

Max. Marks : 80

Notes :
1. All question carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Solve **any five** questions.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

1. Attempt the following.

a) Explain in detail spacing of boring and depth of exploration along with I.S. Recommendations. **8**

b) List the various methods of subsoil exploration mention which factors are important while selecting the method of subsoil exploration. Also state the choice of method of subsoil exploration with respect to type of soil. **8**

2. Attempt the following.

a) Explain the dilatancy and overburden correction for standard penetration test. In what way SPT is useful in foundation design. **8**

b) What is geophysical method of subsoil exploration? Explain various geophysical methods used for subsoil exploration. **8**

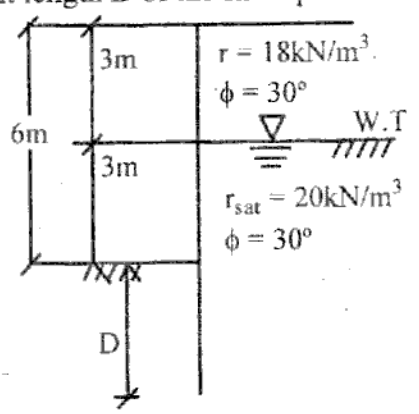
3. Attempt the following.

a) Enlist various types of raft foundation with their suitability. Explain bearing capacity of raft foundation on sand and clays. **8**

b) Explain the BIS method for determination of net ultimate bearing capacity with suggested equations. Also discuss various factors with their suggested values. **8**

4. Attempt **any two** of the following.

a) Compute the embedment length D of the sheet pile wall shown in fig.



b) Explain different types of Anchors with suitable sketches. **8**

c) Explain procedure for determining the coefficient of subgrade reaction with suitable sketch. Also state the effect of depth of subgrade reaction. **8**

5. Attempt **any two** of the following.

a) A steel pipe pile of 62cm outside diameter with 2.5cm wall thickness is driven in to saturated cohesive soil to a depth of 20m. The undrained cohesive strength of soil is $86kN/m^2$. Calculate the ultimate lateral resistance of pile by Broom's method with load applied at ground level. (Assume suitable data necessary).

b) What is batter pile? Explain any one theory to analyze the batter pile foundation with respect to vertical & lateral loads. **8**

c) Explain procedure for calculating negative skin friction on single and group pile. Also sate situations where NSF is anticipated. **8**

6. Attempt **any two** of the following.

a) State components of well foundation along with their functions, Explain in detail the sinking of well. **8**

b) Explain in detail IRC method for analysis of well foundation. **8**

c) State the factors which responsible for failure of cofferdam and explain any one method of designing cellular cofferdam. **8**

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