

Code No: R100501

ADVANCED FOUNDATION ENGINEERING

Time: 3 hours

Max.Marks:100

Answer any FIVE questions  
All questions carry equal marks

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- 1.a) What is the role of geotechnical engineer in the soil exploration? Explain.  
b) Why tests are conducted in the laboratory and in-situ during soil exploration? Discuss the importance of them. [10+10]
- 2.a) Discuss the advantages and disadvantages of SPT and CPT in soil exploration.  
b) Write the interpretation of soil design parameters from the Pressure Meter Test. [10+10]
3. Discuss the influence of the following parameters on Bearing Capacity of foundation soil:  
a) water table,  
b) width of footing,  
c) eccentric load and  
d) inclined load. [5+5+5+5]
- 4.a) What is settlement of foundation? Discuss the necessity of estimation of settlements of foundations.  
b) What is primary consolidation settlement? Discuss the parameters which govern the primary consolidation settlement. [10+10]
5. Discuss the drawbacks of Schmertmann method and explain how you estimate elastic settlement of finite layers of cohesionless soils using Schmertmann method. [20]
- 6.a) Explain with neat sketches the instances where pile foundations are preferred.  
b) What are the assumptions in Reese and Matlock approach? Discuss how you estimate deflection, soil reaction and bending moment of a laterally loaded pile using Reese and Matlock approach. [10+10]
- 7.a) What is contact pressure? Discuss the contact pressure distribution in the following cases: (i) Rigid footing laid on sand and (ii) Rigid footing laid on clay. Discuss the reason for such distribution of pressure.  
b) Discuss with clear illustrations the formulae of beams on elastic foundations. [10+10]
8. Write the short notes on the following:  
a) Rock Quality Designation  
b) SPT N corrections  
c) Load carrying capacity of pile group in clay considering block failure  
d) Compensated foundation. [5+5+5+5]

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