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Total No. of Questions: [09]

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B. Tech. Civil Engineering (Semester: 6th)
FOUNDATION ENGINEERING
Subject Code: BCIES1622
Paper ID: 19110727

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. Differentiate between representative and non-representative sample.
- b. What are the conditions where a pile foundation is more suitable than a shallow foundation?
- c. Discuss the limitations of Plate Load Test.
- d. What are the assumptions in Coulomb's theory?
- e. What do you understand by scour depth?
- f. What are the various factors that affect the sample disturbance? How are these effects minimised.
- g. What are the different types of earth pressure? Give examples.
- h. Discuss various types of loads that are to be considered in the design of foundations.
- i. What do you mean by net safe bearing capacity?
- j. What is negative skin friction?

Section – B

(5 marks each)

- Q2. What do you understand by site investigation? What are the different purposes for which site investigations are done?
- Q3. Discuss the effect of water table on the bearing capacity of the soil.
- Q4. Derive an expression for the vertical stress at a point due to point load using Boussinesq's theory.
- Q5. Discuss the situations where a well foundation is more suitable than the other types of foundations.
- Q6. What are the advantages and disadvantages of pneumatic caissons over open caissons?

Section – C

(10 marks each)

- Q7. Discuss standard penetration test. What are the various corrections? What is the importance of this test in geotechnical engineering?
- Q8. What are the assumptions made in the derivation of Terzaghi's bearing capacity theory. Also derive Terzaghi's bearing capacity equation.
- Q9. Discuss in detail various geophysical methods used for sub-surface investigations. Also discuss their limitations and uses.