Roll No……..….. **Total No. of Printed Pages: 1**
Total No. of Questions: [09]

B. Tech. Civil Engineering (Semester: 6th)
FOUNDATION ENGINEERING
Subject Code: BCIES1604
Paper ID: 18110742

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.