No. of Printed Pages : 3

BICE-024

01202

DIPLOMA IN CIVIL ENGINEERING (DCLEVI) / ADVANCED LEVEL CERTIFICATE IN CIVIL ENGINEERING (ACCLEVI)

Term-End Examination

December, 2011

BICE-024 : SOIL MECHANICS AND FOUNDATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **any five** questions, question No.**1** is **compulsory.** All questions carry **equal** marks.*

1. (a) Ratio of the volume of voids to the total volume of soil mass is called its_____. **2x7=14**

(b) Dutch cone penetration test is used to determine the _____ of piles in cohessionless soil.

(c) Maximum pressure which the soil can carry safely without risk of shear failure is called _____ .

(d) When depth is equal to or greater than width it is called _____ foundation.

(e) The property of a porous material which permits the passage or seepage of water through its inter connecting voids is called _____.

(f) _____ pressure, is the pressure transmitted from particles through their point of contact through the soil mass above the plane of interest.

(g) Process by which soil particles are artificially rearranged and packed together into closer state is called _____.

2. (a) A soil sample has a porosity of 40 percent, the specific gravity of soil is 2.70. Calculate : **7x2=14**

(i) Void Ratio

(ii) dry density

(b) Write four stages of consistency that are used to describe the state of a clayey soil. Also list Atterberg's Limits and explain them in brief.

3. (a) Give the principles of effective stress, and also the importance of effective stress in engineering problems. **7x2=14**

(b) Explain permeability and state its importance, and also give factors affecting permeability.

4. (a) Write Darcy's Law. What are the factors contributing to shear strength of soil and also give examples of shear failure in soils ?

(b) Explain Triaxial shear test in brief and also write its significance. **7x2=14**

5. (a) Explain field compaction method and mention equipment used in this method. Also state the factors affecting compaction.

(b) Define compaction, optimum moisture content maximum dry density and their importance. **7x2=14**

Also mention maximum dry density relations for typical soils with different compactive efforts.

6. (a) What are the methods of site exploration ? Explain boring method in brief. **7x2=14**

(b) Write Short Notes on :

Disturbed and Undisturbed sampling. Also explain in brief representative sample and selection of type of sample.

7. (a) Explain plate load test and discuss the interpretation of its results, and also its limitation. **7x2=14**

(b) Explain Shallow and Deep foundation and what are the factors affecting depth of shallow foundation and deep foundation ?