No. of Printed Pages : 3 **BICE-024**

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

Term-End Examination

June, 2013

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. Write True (or) False 14

(a) Flow index is the slope of the flow curve.

(b) According to Darcy's law, $Q = \left(\frac{A \times h}{L}\right)$

(c) Quick test made for soils samples from clayey soil.

(d) Maximum wet density is obtained by Proctor's Compaction test.

(e) SPT means standard penetration test

(f) The value of Critical hydraulic gradient

$$h_c = \frac{G + 1}{1 + e}$$

(g) Uniformity coefficient of a soil is defined as

$D60/D10$.

2. (a) A soil sample has a water content of 32 % and specific gravity of solids is 2.70. Its unit weight is 1.52 gm/cc. Determine its,

(i) void ratio (ii) porosity **7x2=14**

(b) Enumerate different systems for the engineering classification of soils ?

3. (a) Discuss in brief the basic principles of design of an earth dam. **7x2=14**

(b) State the assumptions of Torzaghi's theory of one dimensional consolidation.

4. (a) Classify the shear tests according to the drainage condition. **7x2=14**

(b) Explain what do you understand by uniformity co-efficient and sensitivity of soils.

5. What will be the potential penetration of square RC piles per blow which must be obtained in driving the piles with 2 tonnes steam hammer falling through 1 metre. Allowable load is 20 tonnes ? **14**

6. (a) What are the different types of rollers that are used for compaction work in the field ?

(b) What is optimum moisture content ? Explain it with the O.M.C curve. **7x2=14**

7. (a) Explain the term sampling and discuss the methods of soil sampling. 7x2=14

(b) How quality control is done in the field while doing soil exploration of soils ?

8. Write short notes on *any two* : 7x2=14

(a) Soil classification and Identifications

(b) Effective stress and Total stress

(c) Dynamic Cone Penetration test