UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: GL 474
COURSE NAME: **APPLIED GEOTECHNICS**
CLASS: **GL** IV TIME: 3 HOURS

Name**:** _____Index Number: _____

SECTION B: Attempt any Three Questions out of the following

Que 1

a) Identify four empirical methods used in the design of flexible pavement
b) Carefully state the factors which affect the design of pavements
c) Given that an applied vertical pressure of 1200 kN/m^2 results in horizontal pressure of 120 kN/m^2 employing California R-Value in the design of the road pavement. Determine the displacement (D) of the stabilometer fluid required to increase the horizontal pressure from 35 kN/m^2 to 700 kN/m^2.

Que 2

a) Distinguish between sampling sensitivity behavior of *in-situ* and laboratory samples
b) The Cone Penetration Test (CPT) has a major advantage of continuous data profiling.
   (i) For what use is the data .
   (ii) What parameter(s) does the sleeve friction often used in correlate

(c) A typical point resistance (q_s) of 112 Ohms has a corresponding sleeve friction (q_c) of 160 Ohms, compute the friction ratio.

Que 3

a) Outline four criteria in which a properly designed dam must satisfy
b) Discuss the treatment processes given to the following dam foundations prior to construction
   (i) Foundation of rock
   (ii) Foundation of cohesive material
   (iii) Foundation of sand and gravels

(c) Indicate the reasons for the construction of a simple dam

Que 4

a) How does shrinkage and swell affect soil
b) What are the basic conditions for the formation of frost heave
c) (i) Discuss the purpose for which piles are emplaced

(ii) A designed concrete pile has a cross section of 56 m^2. If the stress to be imposed on it is 340 kN/m^2, determine the intended load.

***Examiners: M. Affam**/ E. M. Buaba*