



ELIZADE UNIVERSITY, ILARA-MOKIN

ONDO STATE

FACULTY: BASIC AND APPLIED SCIENCES

DEPARTMENT: PHYSICAL AND CHEMICAL SCIENCES

FIRST SEMESTER EXAMINATIONS

2018/2019 ACADEMIC SESSION

COURSE CODE: AGY 403

COURSE TITLE: ENGINEERING GEOLOGY

DURATION: 2 ½ Hours

HOD's SIGNATURE

A rectangular box containing a handwritten signature in red ink, which appears to be 'Olatunji'. The signature is written in a cursive style.

TOTAL MARKS: 60

INSTRUCTIONS: ANSWER FOUR (4) QUESTIONS IN ALL.

1.
 - (a) Discuss the importance of Engineering Geology.
 - (b) Define the following Atterberg limits:
 - (i) Liquid limit
 - (ii) Plasticity index
 - (iii) Plastic limit
 - (iv) Shrinkage limit
2.
 - (a) What is site investigation?
 - (b) Comment briefly on the primary objectives of site investigation.
 - (c) Discuss the procedures involved in engineering geological site investigation.
3.
 - (a) What is permeability?
 - (b) Discuss the factors affecting the permeability of soils.
 - (c) Discuss a laboratory permeability test procedure.
4. A saturated soil sample has a moisture content of 29% and a saturated unit weight of 19.22 KN/m^3 . Determine the:
 - (i) dry unit weight
 - (ii) void ratio
 - (iii) specific gravity of the soil particles
 - (iv) bulk unit weight of the soil when it has a degree of saturation of 90%, assuming there is no change in void ratio as a result of change in moisture content.
5.
 - (a) What are discontinuities?
 - (b) Explain their characteristics.
 - (c) Differentiate between the mechanism of compaction and consolidation in soil compressibility.
6. In laboratory experiment to determine the effective diameter of a soil, 485.44 g of the dry soil was taken for mechanical analysis. The results obtained after 12 minutes with sieve shaker are:

Sieve size (mm)	4.75	2.36	1.18	0.85	0.425	0.30	0.15	0.075	pan
Mass retained (g)	95.50	41.50	43.25	28.00	62.75	32.00	51.75	26.50	104.19

- (a) Plot the grain size distribution curve for the soil.
- (b) Determine
 - (i) effective diameter, and
 - (ii) uniformity coefficient of the soil.