



ELIZADE UNIVERSITY, ILARA – MOKIN

**FACULTY OF ENGINEERING
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
First Semester, 2020/2021**

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HOD'S SIGNATURE

**Course Title: Engineering Geology
Units: 3**

Course Code: CVE 303

Instruction: Attempt any four questions

Time Allowed: 3 hours

Question 1 (15 marks)

- (a) How is igneous rock formed? (5 marks)
- (b) Some commonly occurring processes in mechanical weathering are as follows. Describe each:
(i) wetting and drying (ii) crystallization (iii) mechanical unloading (iv) mechanical loading (10 marks)

Question 2 (15 marks)

- (a) What are the purposes of a dam? (4 marks)
- (b) What is the (i) vadose zone? (ii) phreatic zone? (5 marks)
- (c) How is the performance of a dam decreased by (i) sedimentation? (ii) landslide? (iii) leakage (6 marks)

Question 3 (15 marks)

Minerals are the solid constituents of rocks. Describe the following physical characters:

- (a) colour
(b) lustre
(c) hardness
(d) cleavage
(e) specific gravity (3 marks each)

Question 4 (15 marks)

- (a) Write a short note, illustrating with diagrams, on how the earth's surface has changed from 150 million years ago to the present time. (5 marks)
- (b) Some commonly occurring processes in chemical weathering are as follows. Describe each:
(i) solution (ii) oxidation (iii) reduction (iv) hydration (v) leaching (10 marks)

Question 5 (15 marks)

- (a) Most minerals consist of two basic units: silica tetrahedron and alumina octahedron. Describe these. (6 marks)
- (b) Describe the mineral composition of (i) bentonite (or montmorillonite) (ii) kaolinite (iii) and illite. (3 marks each)

Question 6 (15 Marks)

- (a) What is the difference between mechanical weathering and chemical weathering? Illustrate each with an example. (5 marks)
- (b) Show with diagrams how residual soils can look like in a:
(i) humid igneous rock (ii) arid igneous rock (iii) limestone and sinkhole (iv) sandstone and shale (10 marks)