

**CE 281 INTRODUCTION TO GEOTECHNICAL ENGINEERING
EXAM # 1**

Name: _____

QUESTION 1 (30%)

True or False

- a. Sedimentary rocks are formed at or near the surface of the earth.
- b. Granite is an intrusive and acidic igneous rock.
- c. Quartz has a trigonal system of crystallization.
- d. Apatite is a silicate mineral.
- e. Feldspars are the most abundant constituents of the igneous rocks.
- f. Mica is a non-silicate mineral.
- g. Streak is a more constant property of minerals than color.
- h. Sandstones can be formed in many ways and can be classified as clastic sandstone, chemical sandstone, and organic sandstone.
- i. Limestone consists primarily of calcite.
- j. Stratification is the most characteristic feature of igneous rocks.

QUESTION 2 (40%)

a. What are the four conditions for a chemical substance to be called a mineral?

b. What is the difference between cleavage and fracture properties of a mineral?

c. What is Illite? Draw its block?

d. Define igneous rock? Name two common igneous rocks?

- e. How do we distinguish between limestone and dolomite?
- f. The classification of igneous rocks depends on two main criteria. What are they?
- g. What are the two basic crystalline units that form the clay minerals?
- h. Define the specific gravity of a mineral? what is the range of the values of specific gravity for most minerals?

QUESTION 3 (30%)

Select the Most Appropriate Answer for Each Question

1. The ability of rock to split very easily on bedding planes is called:
 - a. Fissility.
 - b. Abrasion.
 - c. Lithification.
2. The most abundant sedimentary rock is:
 - a. Shale.
 - b. Limestone.
 - c. Sandstone.
3. Octahedral sheet with the metallic atom is mainly magnesium is called:
 - a. Gibbsite.
 - b. Kaolinite.
 - c. Brucite.
4. Fossils are usually found in:
 - a. Igneous rocks.
 - b. Sedimentary rocks.
 - c. Metamorphic rocks.
5. Basic igneous rocks have a silica percentage of:
 - a. Less than 45%.
 - b. Between 45% and 55%.
 - c. Between 55% and 65%.
6. The rock formed by the accumulation of plant materials is called:
 - a. Kaolinite.
 - b. Coal.
 - c. Coquina.