

19/20

ENCE231: Engineering Geology (Section 3)

Quiz 3 (Chapter 3 & 5: Igneous Rocks & Weathering)

Instructor: Nidal Atallah



Student Name: anas ghanem

116 18 13

- 1) When magma crystallizes at depth, the rocks formed are referred to as "intrusive" or plutonic. [0.5 points]
- 2) Describe what **Texture** is in Igneous Rocks. [2 points]

Texture: is how rock look and feel and it's based on size and shape and distribution of minerals.

- 3) Name 3 of the 6 textures of Igneous Rocks & indicate the grain size where applicable. [3 point]

aphenitic →  small (fine) grain; Phaneritic → large (coarse) grain  
 porphyritic → long grain & small 

- 4) Extremely fast cooling of magma ("quenching") forms Igneous rocks with which texture. [1 point] glassy texture
- 5) Igneous rocks are classified on the basis of their chemical composition. Name these 4 compositions & indicate the silica content in each. [2.5 points]

Basalt

Contain dark silicate and some of light

- 6) Describe the texture, mineral composition & compositional category of **Basalt**. [1.5 points]

1) aphenitic texture // 2) very dark green - black 3) extrusive rock 4) mafic rock  
 4) Composed primarily from pyroxene and Ca-feldspar and some of olivine and apophite

- 7) How can you visually distinguish Granite from Rhyolite? [1 point]

Basalt ← 5) Major constituent of ocean crust

- 8) Name any 4 mechanical properties/ parameters used to evaluate the engineering properties of a rock. [2 points]

1) sonic speed 2) compressive strength 3) tensile strength 4) specific gravity

- 9) Briefly describe the difference between Mechanical & Chemical Weathering. Also name 1 example for each one. [2]

Mechanical → physical force breaks rock into smaller and smaller <sup>pieces</sup> without change in composition. such as → frost wedging  
 Chemical weathering → unloading

- 10) Briefly explain why Differential Weathering occurs. [1 point]

when different rock characteristics are exposed to weather it's not weather uniformly.

- 11) Name one of the many controls of soil formation. [0.5 point]

parent material // climate

- 12) Engineers & Engineering Geologists use the USCS & AASHTO soil classification systems. What is the basis of these systems? [0.5 points]

- a) Texture
- b) soil grain size
- c) soil composition

- 13) Name 3 of the soil horizons and briefly give the content its content. [2.5 points]

O-horizon → large % of organic material and it's fill with microorganisms

A-horizon → large % of inorganic material and it's have high <sup>mineral</sup> <sub>organic humus</sub> biological activity