

Unit 3 – Rocks, Minerals, Soil Twitter Review Questions

U3-1: Which type of rock is most representative of a slow cooling process of molten material? (Be specific)

- Answer: Intrusive Igneous Rock

U3-2: What is true of the mineral/crystal size of igneous rocks that have cooled rapidly? Explain why this is true?

- Answer: Very small; Not enough time to develop the crystals

U3-3: Identify the five (5) important characteristics that make up a mineral.

- Answer: Naturally occurring, inorganic, solid, specific chemical composition, and definite crystalline structure

U3-4: What is the underlying similarity/connection between rocks and minerals?

- Answer: All rocks are made up of minerals

U3-5: Describe the process that causes the cracks/crevices in rocks to widen during frost wedging.

- Answer: Repetitive freezing (expansion) and thawing of water in the crevices

U3-6: Alternate freezing and thawing of soil often leads to which type of mass movement?

- Answer: Creep

U3-7: Identify two (2) sites that are expected to have the most rapid erosion rates?

- Answer: Construction sites & Agricultural farm lands

U3-8: Identify the five (5) factors that influence the rate of soil erosion.

- Answer: Slope; Steepness/Vegetation/Time/Parent Material/Climate

U3-9: A soil's texture is most directly tied to its _____:

- Answer: Particle Size

U3-10: How are rocks classified?

- Answer: How it is formed

U3-11: How are minerals classified? (This question is not asking for the different mineral ID tests)

- Answer: By its chemical composition

U3-12: Identify one human activity that will lead to an increase in soil erosion.

- Answer: Logging ; Clearing land for construction ; Plowing land for farming

U3-13: What is the main purpose of vegetation and roots to soil?

- Answer: Roots of vegetation bind the soil and regolith together

U3-14: NEED TO KNOW: Correct order of soil profile horizons (Ex: Horizon A,O,R, etc)

- Answer: Soil profile horizons

U3-15: What is the relationship between topography AND vegetation to the rate of soil erosion?

- Answer: Steep land with no vegetation will lead to greatest soil erosion

U3-16: What is the difference between an intrusive and extrusive igneous rock?

- Answer: Intrusive – Molten magma hardens beneath Earth's surface ;
Extrusive – Molten magma hardens above Earth's surface

U3-17: What erosive agent (force) is most responsible for erosion in desert areas?

- Answer: Wind

U3-18: What erosive agent (force) is most responsible for erosion in mountain areas?

- Answer: Gravity

U3-19: What factor has the greatest effect/influence on soil formation?

- Answer: Climate

U3-20: NEED TO KNOW: Specific examples of each of the three types of rocks.

- Answer: Igneous – Granite & Obsidian / Sedimentary – Sandstone & Conglomerate / Metamorphic – Gneiss & Quartzite

U3-21: What is the difference between mechanical (physical) weathering and chemical weathering?

- Answer: Mechanical weathering breaks down rock WITHOUT changing its chemical composition, whereas chemical weathering breaks down rock by changing its chemical identity.

U3-22: During which season would you expect erosion to pose the greatest threat and why?

- Answer: Wet Spring before vegetative growth

U3-23: "Mass movements always lead to landslides". Is this statement true or false and explain why.

- Answer: False – Some mass movements may lead to flows, creeps, slumps, and falls.

U3-24: What is true about the water holding capacity of both sand and clay?

- Answer: Sand – Low/Poor ; Clay - High

U3-25: What is true about the aeration of both sand and clay?

- Answer: Sand – High ; Clay – Low/poor

U3-26: What is the name of the most common mineral group, and what elements make up this mineral group?

- Answer: Silicates – Silicon & Oxygen

U3-27: Put in the correct order the necessary steps needed to form sediments and then into sedimentary rocks. (Think rock cycle)

- Answer: Weathering, erosion, deposition, compaction, cementation

U3-28: Gravity is the most influential force behind ____ ____.

- Answer: Mass Movements

U3-29: Which mineral ID test is generally the least reliable and why?

- Answer: Color – External and internal color of mineral may both be different

U3-30: NEED TO KNOW: Be able to use soil texture diagram (triangle) to determine soil texture type given percentages of sand, silt, & clay.

- Answer: Refer to soil texture diagram (triangle)

U3-31: Describe the rate of movement of a creep mass movement.

- Answer: The slowest of all mass movement types. Thus very hard to see/feel. Can identify by the tilt/slant of stationary objects like telephone poles and trees.

U3-32: Identify a property/characteristic of rock layers that allow it to be MOST resistant to weathering.

- Answer: Compacted AND layered soil

U3-33: What must happen to molten magma in order for the formation of igneous rock to occur?

- Answer: Molten magma must cool/crystallize

U3-34: What is the difference between mineral cleavage and mineral fragment?

- Answer: Cleavage – Even, smooth split along flat planes or right angles ; Fracture – Uneven break with no apparent plane of splitting

U3-35: Foliation is a characteristic/property of which rock type?

- Answer: Metamorphic Rock

U3-36: Define porosity AND permeability.

- Answer: Porosity – Percentage of open space/pores in soil ; Permeability – Ability to allow water/nutrients to pass through

U3-37: Describe the porosity of both sand and clay.

- Answer: Sand – High ; Clay - Low

U3-38: Describe the permeability of both sand and clay.

- Answer: Sand – High ; Clay - Low

U3-39: What is the best method (not test) when identifying different types of minerals?

- Answer: Use a combination of mineral ID tests

U3-40: Why is hardness a useful and reliable mineral ID test?

- Answer: Each mineral has a specific hardness value as measured by Moh's Hardness scale

U3-41: Describe the process of frost wedging and its impact on weathering.

- Answer: Water freezes and expands in cracks of rock causing weathering

U3-42: Identify the four (4) major components that make up soil.

- Answer: Mineral nutrients, eroded rock, water, air

U3-43: What is the significance/importance of regolith?

- Answer: Layer of loose, partially weathered rock material that includes soil and sits above bedrock

U3-44: Identify name of soil layer (and its horizon letter) that contains organic matter/nutrients, including leaves that may fall on it.

- Answer: Humus (Horizon O)

U3-45: Why is choosing the appropriate type of soil for farming very important?

- Answer: Soil type/texture will determine the ability to support plant growth

U3-46: What is the relationship (direct or inverse) between particle size and water/nutrient holding capacity and why?

- Answer: Inverse → The larger the particle size, the less water/nutrients that it can hold due to little friction between particles

U3-47: Which soil texture is best in water holding capacity, yet poorest in aeration?

- Answer: Clay

U3-48: What two aspects are used in classifying mass movements?

- Answer: What material type is moved and how it moves

U3-49: Identify three (3) triggers that may lead to mass movements.

- Answer: Earthquakes / Flash floods / Removal of vegetation / Construction / Gravity

U3-50: Why is climate the biggest variable/factor that leads to mass movements?

- Answer: Climate adds weakness to soil and/or removes Earth material (including roots) that may lead to greater mass movement events