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OEAS 110N: Earth Science

Professor Eggleston

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Unit 2 Exam

## Word Analysis:

### Chapter 6: -Question 2: *Vent, crater, conduit, parasitic cone*

A. The structure of a volcano comes in many parts. From underground magma flows upward a volcano through pipe like structures called conduits. As magma is pushed in these pipes it forces a way through at the surface creating a vent for the lava to come out of. As debris falls it creates craters along the volcano which are depressions in the volcano. At the summit there is also a depression like a bowl. After continued activity from a volcano and repetitive flank eruption can eventually create a parasitic cone which is basically another volcano formed on the flank of the bigger one.
B. The odd word out in this chapter is a parasitic cone since it happens later in the volcano's life stage.
C. When it comes to life stages of a volcano and activity, vents, craters. And conduits are all present during the first eruption.
D. Since it takes time and continued activity from a volcano to produce a parasitic cone, it is not like the other words since it does not appear during the early stages of volcanos cycle.

### Chapter 7-Question 3: *Compression, tension, shear, deformation*

A. Rock layers over time stat colliding and causing stress on one another. This stress is expressed in different ways, but the overall change of the rock formation is called a deformation. This is mainly due to tectonic forces and occur naturally. These tectonic forces cause stress and can be categorized by three main types. The first is compression which is the shortening and squeezing together of the rocks. Another is tension stress which stretches and pulls the rock apart. Lastly, there's shear stress which occurs when the rocks slide and tear past one another.
B. In this chapter deformation is the odd word since it describes the physical appearance of the rock and not the type of stress undergone.
C. Rocks undergo tectonic forces which produce different stress on the rocks, and you can observe three main types, compression, tension, and shear stress.
D. As deformation is not a type of stress on the rock rather it's the change in appearance that is labeled deformed.

**Chapter 8-Question 6:** *Slump, rockslide, Solifluction, debris flow*

A. Around the surface of rock formations when a landmass shifts and loses structure it undergoes mass movement. A slump happens when a unit of mass rock starts to slip downward along a curved surface. If it were blocks of bedrock instead the movement would be called a rockslide. However instead of rock if the lose land mass that was slipping had soil and regolith with water then the movement is a debris flow. Lastly solifluction occurs when the soil is highly saturated creating a soggy mass with a downward slope.
B. The odd word in this chapter would be solifluction since it has a slow mass movement compared to the others.
C. When it comes to mass movement there are different speeds at which the landmass can lose structure. Slumps, rockslides, and debris flow all happen at a rapid rate of speed.
D. Solifluctions is a slow process moving a few millimeters a day.

**Chapter 9-Question 7:** *Dendritic, rectangular, radial, trellis*

A. As water is dispersed and creates a water shed there are different types of patterns this runoff can create. The dendritic pattern creates tree branch like paths that can develop over uniform surface materials. A rectangular pattern develops over highly jointed bedrock and creates rectangular shaped water paths. Radial patters are found on volcanic cones or domes and run along the side downward. Lastly trellis patterns are formed over alternating weak and resistant bedrock and have small branches of paths with even smaller paths running off these branches. Shaped more like a square as it creates its path.
B. Out of these words I would say that the radial pattern is the odd word out due to it needing a volcano to form.
C. All the other patterns can form along different types of bedrock on a landscape.
D. Radial patterns occur on isolated volcanos so without one present you would not see this pattern on other bedrock landscapes.

**Chapter 10-Question 9:** *Arêtes, cirques, fiords, till*

A. Glacier erosions has many effects on the land as it undergoes its process. Many landforms are also created by these erosions. Plowing through the land and creating glacier valleys, at the head of one of these valleys you can find an amphitheater-shaped basin which was

produced by frost wedging and plucking. Another landscape formed is one called an aretes which are knife-edge ridges that project up by plucking and frost action. When sea level rises some of these glacial troughs near the inlets of the sea become submerged creating a fiord. These are steep-sided and deep that occur at many high-altitude places. Lastly there are tills which occur as the glacier melts. After it melts it deposits unsorted sediment onto the land.

B. The odd word in this chapter are tills since it's a process that happens due to the glacier melting.
C. Aretes, cirques, and fiords all keep the form of solid ice when creating its landform.
D. Tills are unsorted sediment deposits that are carried by the glacier and dispersed when it melts.

**Critical Thinking:**

**Chapter 6-Question 2:** *Intrusive Igneous Bodies*

As a volcano erupts and magma is spilled out from the surface it then cools over previous crustal rock. These preexisting rocks are now what's called intrusions from the earths surface and are studied after they erode. These can form in a various of sizes and shapes for example they can be tabular which is table shaped or massive which is like a blob. You can even describe the direction at which they form, for example they can discordant if the cut across these structures or concordant if the intrude parallel to the area. Even the way the magma flows is dependent on how its going to form its landmass. Sills are horizontal that rises upward finding the weakness between the sediments whereas dikes are when the magma is forcibly injected into fractures. Overall intrusive igneous bodies take many forms and has many processes in which it can create new landforms.

**Chapter 7-Question 3:** *Anticlines and Synclines*

Around convergent plate boundaries are rock formations that bend and create wave like structures called folds. The main two types of folds are anticlines and synclines. When it comes to anticlines, they are upfolding and arching. Since this anticline has a slope on the downwards end as it dips and comes back up would be a syncline. These are downfold movements or troughs, so basically a limb from an anticline is adjacent to a limb of a syncline.

**Chapter 8-Question 6:** *Soil Horizons*

As you dig deeper in the ground the different vertical layer of the dirt is what's known as soil horizons. Each layer has a different material composition and has different effects on the organisms within the biome. The top layer is called the O horizon and consist largely of organic material like plant litter. The next horizon down is the A horizon which is comprised of mineral matter and biological activity is high. These two first layers are called the topsoil. After the A horizon comes the E horizon which has little organic material and mainly has finer particles being washed away by water percolating downward. The next horizon Is the B horizon which is known as the zone of accumulation as much of the wash away particles from the E horizon are deposited here. Lastly there is the C horizon which is made up of partially altered parent material that eventually transforms into soil.

**Chapter 9-Question 8:** *Stream Erosion*

When it rains and the rain drops knock the sediment loose to be carried by ground water eventually being deposited and creating landforms this is what's known as stream erosion. This can happen in three main ways. A dissolved load which is the stream with the sediments carried in the solution. A suspended load which the sediment is carried within the body of flowing water. Lastly there's a bed load which sediments bounce and roll of the bottom floor with the current. The amount at which a stream can carry solid particles can be defined in two categories of capacity which is the maximum load a stream can carry at once, and competence which is the ability top transfer based on size versus quantity.

**Chapter 10-Question 9:** *Glacial Deposits*

While glaciers accumulate and are transported across distances by various methods, it starts to melt which deposits sediments collected as its traveled. These sediments that were transported and dropped at a different location is what's known as a glacial deposit. The broad term for this movement is a glacial drift and has two distinct types: the materials dropped directly from the glacier which is called till, and sediments laid down which is called stratified drift. The till Is the actual rock fragments dropped as the ice melts whereas stratified drift is when the meltwater transports till or other sediments.

**Scientific Literacy:**

Science has many ways of communication to provide information to the public. Before he got into the scientific topic of discussion, I found it to be interesting that many public audiences persistently misunderstand the underlying science which calls for scientist to find better ways of communication. As an audience member I always thought it was my duty to learn and grasp the concept of things I cannot understand whereas this method employs the scientist to communicate in a way that someone without a science background could grasp. Its not just about the science but how we relay the information to others. The next discussion that piqued my interest is the evolution of the sea slug and how it uses gene therapy. By utilizing this method, it takes on plant like characteristics and gets nutrients an energy from the sun. This is a cool theory to think about as if we could do this then going to the beach would be like visiting a restaurant. It also reminds me of the *Turritopsis dohrnii*, as this creature can use cell transdifferation to turn back its cells time clock and revert to a Polyp to create more clones. Being able to study these types of processes and finding a way to utilize this evolution in our bodies would help with many different issues in the world. The next topic that was interesting was viewing the microscopic slides of the slugs. Seeing the evolution and the cells with green chloroplast was neat. It is not like any slides I have seen before and would love to look more into this creature. Overall science is vast and gets very complicated, so it is up both to the scientist and public to put their effort in to understand life and its biological processes.