Assignment/Quiz *(April/2020)*

Subject: Engineering Geology
Pages: 2.

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Duration: 6Days

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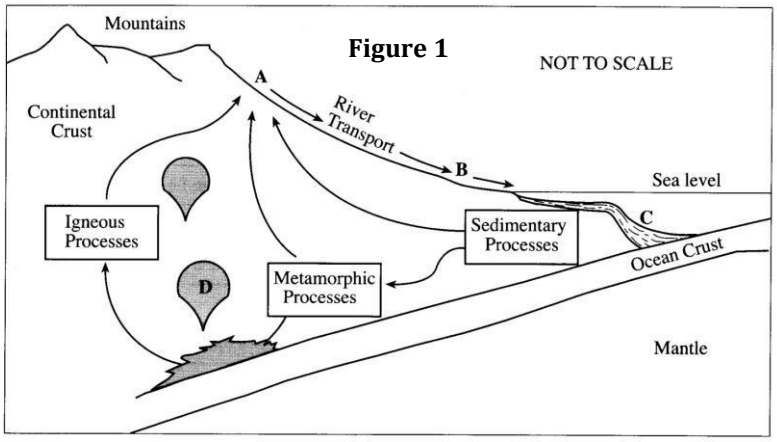
Section: A

A. **Figure 1,** shows part of the Earth's crust and the locations where some Rock Cycle processes take place.



(a) Rock is broken down by frost, rain and sun at **A**. What name is given to this process?

Answer: when the rock is broken by frost, rain and sun the process which take place is called weathering.

(b) How is sediment grains in a river changed during transport from **A** to **B**? State **two** differences in the likely appearance of the grains.

Answer: When sediment is transported and deposited, it leaves clues to the mode of transport and deposition. The mode of transport is by sliding down a slope, the deposits that result are generally chaotic in nature, and show a wide variety of particle sizes.

Differences: 1. Grain products that are tightly pack and sealed should always look and smell fresh. Check the expiration date and storage guidelines on the package.

2. When storing whole grains from bulk bins, use containers with tight-fitting lids and keep in a cool, dry location.

(c) How do loose sediments at **C** become changed into solid rock?

Answer: When particle is transported to the new area they will transformed from loose sediments to solid rock .It is because of compaction and cementation.

(d) Rocks that are deeply buried in the Earth's crust may undergo metamorphism. Describe **two** changes that happen in rocks during metamorphism & explain point **D**?

Answer: 1. During metamorphism rearrangement of mineral crystals will occur.

2. During metamorphism it will cause foliation. These are the changes in rock which will happen during metamorphism.

The point d defines that is magma .when magma comes out in face of lava and when it is cool and solidify it will turn into igneous rock. Further this igneous rock because of weathering its convert into the sedimentary rock. By the heat and pressure

sedimentary rock is convert into metamorphic rock. After this process again metamorphic rock goes on melting in turns which gives again magma. This process is repeated again and again.

B. **Figure 2,** below shows the size and shape of typical sediment particles from the deposit produced.

1. Clay mud
2. rounded pebbles and sand
3. Sloping sand layers
4. Angular boulders

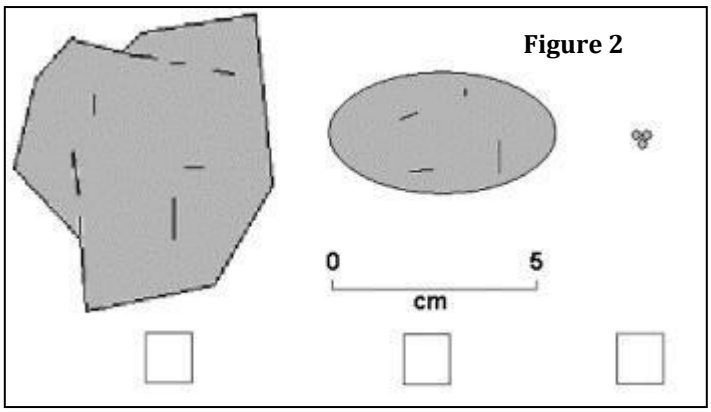


Figure 2

(i) In each box, write down the most likely number from the Deposit produced column in the table above.

The figure 2.1 is **Angular boulders.**

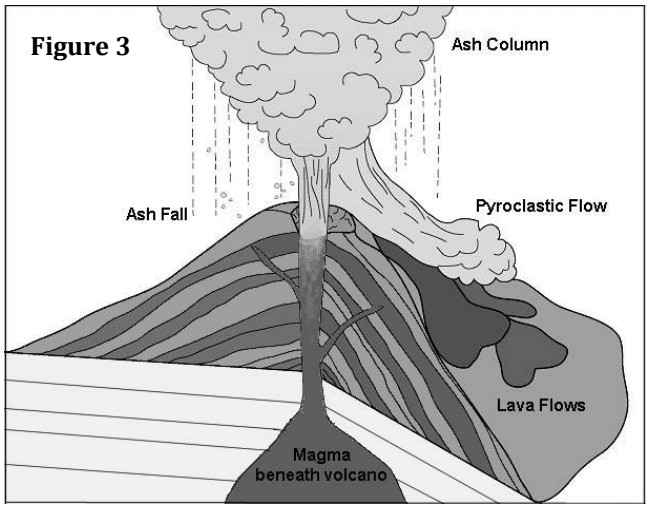
The figure 2.2 is **Clay mud**

The figure 2.3 **Rounded pebbles and sand**

(ii) In your own words, explain how sediment particles change as they are transported downstream by a river?

Answer: Sediment transport is the movement of organic and inorganic particles by water. The greater the flow, the more sediment that will be conveyed. Water flow can be strong enough to suspend particles in the water column as they move downstream, or they push them along the bottom of a waterway. Transported sediment may include mineral matter, chemicals and pollutants, and organic matter.

C. **Figure 3,** shows the structure of a volcano and the rock layers beneath.



(I) what type of volcano is shown in the figure by shape and if eruption is more often, which category it fits?

Answer: Composite volcano.

(II) The eruption shown in Figure 3 is producing an "Ash Column" that rises thousands of meters above the volcano summit.

(a) Explain how gases trapped in the magma help produce the ash column.

Answer: The composition of gases in magma are mostly the water vapors and co2. It is also minor amount of Sulphur ,chlorine and fluorine gases.

(b) Many people around the World live close to volcanoes so, when a volcano erupts, thousands of lives may be at risk.

(i) Suggest ONE sign that might indicate if a volcano is about to erupt.

Answer: It include small earthquakes beneath the volcano, slight inflation, enlargement of the volcano and increases heat and gas from vents on the volcano.

(ii) Suggest TWO dangers that might result from Ash Fall near a volcano.

Answer: **1.** It can cause infectious disease , respiratory illness, burns , injuries ,eye problem and skin irritation.

2. It can cause vehicle accidents related to the slippery. It can also effect plantation and crops.

D. Answer the following questions?

(i) In the table below are statements that refer to either Weathering or Erosion. Complete the table by writing Weathering or Erosion in the spaces provided.

Statement	Weathering OR Erosion
Breakdown of rock without it being moved	Weathering.
Wearing away of rock during transport of rock particles	Erosion.
A process caused by wind, running water and moving ice	Erosion.
An effect of plant roots growing in rock joints and fractures	Weathering.

(ii) A statue was made from limestone. Rain makes limestone weather more quickly than sandstone. What substance in the rainwater causes this?

Answer: the substance in the rain water cause a very common mineral. Limestone is one familiar form of calcium carbonate. Acids in acid rain promote the dissolution of calcium carbonate by reacting with the carbonate anion.

This produces a solution of bicarbonate. Because surface waters are in equilibrium with atmospheric carbon dioxide there is a constant concentration of carbonic acid. so, the presence of limestone and other calcium carbonate rock in lakes and streams helps to maintain a constant pH because the minerals react with the excess acid. However, acid rain eventually cause the buffering capacity of the surface water.

(iii) Why igneous rocks never contain fossils?

Answer: Fossils will not be present in igneous rocks because they are formed from molten material thus destroying anything that remains of the original material structure. There will be no fossils or remnants of any sort of metamorphic or sedimentary rock in an igneous rock due to the nature of these rocks. Fossils are predominantly found in sedimentary rocks. Occasionally fossils can be identified in metamorphic rocks that have not been introduced to sufficient heat/pressure to completely alter the original structure.

(iv) Granite takes much longer to cool deep underground than basalt lava at the Earth's surface. How and why is the size of the crystals in granite different from the size of the crystals in basalt?

Answer: Igneous rocks contain randomly arranged interlocking crystals. The size of the crystals depends on how quickly the molten magma solidified magma that cools slowly will form an igneous rock with large crystals. lava that cools quickly will form an igneous rock with small crystals

(v) Describe one process that might be responsible for producing the large, angular, poorly sorted fragments in the Scree sediment collecting at the bottom of the cliff?

Answer: Scree is a product of rock fall. Frost weathering of cliff together with other weathering processes which leads to the detachment of blocks. When temperatures rise rapidly after a period of sub-zero temperatures and the stones rattle down the corrie headwalls. The blocks fall, bounce and slide until finally coming to rest at the base of the slope. The scree is highly unstable and comprises loosely fit angular blocks.