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Date: 18<sup>th</sup> April 2020

## " Figure 1 "

### Answer (a)

When rock is broken down by frost, rain and sun, such process is known as physical weathering.

### Answer (b)

When a sediment grains transports from one place to another place in river erosion occurs in this sediment and also two type of changes occur in the sediment. The first is the size changed as the sediment collides with other particles its ~~and~~ size decreases. And the second is the shape change when it collides with the other particles its sharp edges tends to round.

### Answer (c)

The loose sediments at the ocean become changed into the solid rock due to cementation or lithification. Cementation is the changing of sediment into rock by filling spaces around the sediments with chemical precipitates of minerals, binding the sediment and forming solid rock. Calcite and silica are common minerals that cement the sediments together.

### Answer (d)

Metamorphism is the change of minerals or geologic texture in the preexisting rocks. Two changes happen in rocks during metamorphism i.e. contact metamorphism and regional metamorphism. Contact metamorphism occurs in hot magma transforms rock that it contacts, while regional metamorphism transforms

Large areas of existing rocks under the tremendous heat and pressure created by tectonic forces.

## "Figure 2"

### Answer (i)

- The first one is "angular boulders"
- The second one is "rounded pebbles and sand"
- The third one is "Clay mud"

### Answer (ii)

Consider a sediment particle i.e. boulder, when it moves downstream a river, collision between the load and other particles or the bed and banks wears down the angular corners of the sediment through a process called attrition and hence size change occurs in the sediment particle and it gets smaller due to collision also its shape gets rounded due to collision with other particles.

### Figure 3

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

This figure shows it is a composite volcano and if eruption is more often, this eruption fits in a very violent category.

### Part (II)

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

2. Volcanic ash consists of fragments of rock, minerals and volcanic gases, created during volcanic eruptions and measuring less than 2 mm in diameter. The term volcanic ash is also often loosely used to refer to all explosive eruption products, including particles larger than 2 mm. Volcanic

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eruptions when dissolved gases in magma expand and escape violently into the atmosphere. The force of the gases shatters the magma and propels it into the atmosphere where it solidifies into fragments of volcanic rock and glass.

Ans (b) → Suggestion of Signs:  
Signs may include small earthquakes beneath the volcano, slight inflation or swelling.

→ Suggestion of Dangers:  
Ash fall near a volcano can threaten the health of people and livestock and a hazard to flying jet aircrafts.

(D) Answer The Following Questions:

Answer (i)

- Breakdown of rock without it being moved is called "weathering"
- Wearing away of rock during transport of rock particles is called "Erosion"
- A process caused by wind, running water and moving ice is called "Erosion"
- An effect of plant roots growing in rock joints and fractures is called "weathering"

Answer (ii)

Rain water is naturally, slightly acidic because carbon dioxide from the air dissolves in it, Minerals in rocks may react with the rain water, causing the limestone more quickly due to



Chemical attack. On the other hand sandstone is a sedimentary rock that is highly resistant to weathering. That is why rain makes limestone weather more quickly than sandstone.

### Answer (iii)

Igneous rocks do not contain any fossils. This is because any fossils in the original rock will have melted when the rock melted to form magma. Igneous rocks are formed by the solidification of magma and fossils can not be preserved in such a hard and compact rock. Hence igneous rocks are free of fossils.

### Answer (iv)

The size of the crystals in granite dippers from the size of the crystals in basalt is mainly because of the difference in silica content. Basalt have about 55% silica ( $SiO_2$ ) while granite have 73% silica. The size of the crystals also depends on how quickly magma or lava cooled to formed it. And as we know the granite being intrusive solidifies slowly and basalt being intrusive solidifies quickly, hence their size of crystals dippers.

### Answer (v)

Ice erosion might be the process that is responsible for producing the large, angular, poorly, ~~set~~ sorted fragments in the scree sediment collecting at the bottom of the cliff. Gullies can

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Transport almost any size sediment easily and when ice flow slows down or stops, the sediment is not deposited, due to the density of the ice. As the result sediment deposited directly by ice when it melts are usually very poorly sorted.