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Section A

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Subject Engineering Geology.

QA) Figure 1 shows part of the earth's crust and the location where some Rock cycle process take place.

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

Ans. Rock is broken down by frost rain and sun this process is called ~~weathering and erosion~~. Mechanical 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?

Ans. It is change due to the flow of water it is also called sediment load.

1) Bed load particles travel with flow by sliding or bouncing along the bottom.

2) If the water flow is strong enough to pick sediment particles, it become part of suspend load.

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

It is change doe to a process called "Lithification" it means stone. it is a combination of two processes.

- 1) Com paction.
- 2) Cementation.

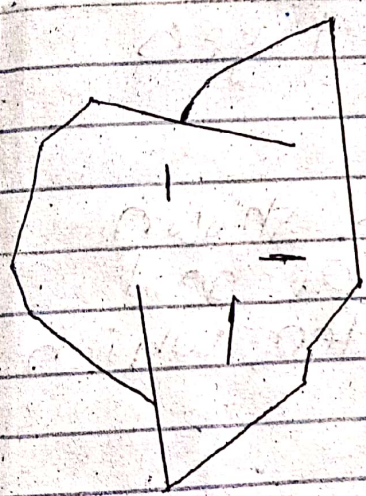
D) Rocks that are deeply buried in Earth's crust may under go metamorphism. Describe two changes that happen in rocks during metamorphism & explain point D?

- 1) It is created by physical or chemical alteration by heat and pressure of an existing igneous
- 2) OR a sedimentary material into a denser form.

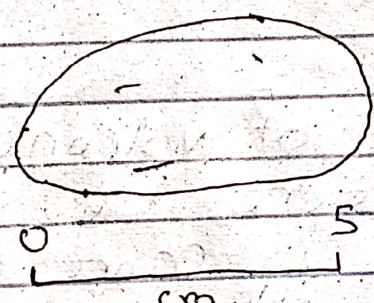
In the D point the Metamorphic rock changes again to magma & form igneous.

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



4



cm

2



1

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

The sediment particles transport due to the flow of water. If the particle slides or bounce along the bottom some are very small having (0.00195mm in diameter) so these molecules stay afloat. And when the water flow is fast so it create a upward current that makes these particle move faster and add faster.

C Figure 3

Shows that 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.

It is a composite volcano and if eruption is more often it will convert to stratovolcano. These both are same but it has a smoother, lower profile than composite volcano.

(ii)

(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.

It is produced due to volcanic eruption when dissolved gases in magma expand and escape violently in the atmosphere. The force of gas shatters the magma and propels it into the atmosphere.

(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.

Rise of magma toward the surface, which generates earthquakes.

(b) Suggest Two dangers that might result from Ash fall near a volcano.

1) It can threaten the health of people and livestock.

2) It can damage electronics and machinery & telecommunications.

(D) Answer the following Question

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

	Statement	Weathering or Erosion
1	Break down of Rock without being removed	Weathering
2	Wearing of rock during transport of Rock particles.	Erosion
3	A process caused by wind, running water and moving ice	Weathering
4	An effect of plant roots growing in rock joints & fractures	Erosion.

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

Carbonic acid is the substance in the rain water that causes this.

(iii) Why do igneous rocks never contain fossils?

Because any fossil in the original rock will have melted when the magma formed.

(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 crystal in basalt?

The difference is between silica content and their rates. If magma cools quickly,

For example

When basalt lava erupts from volcano, then many crystals form very quickly, & the resulting rock is fine-grained, with crystals usually less than 1mm in size.

Crystals have more time to grow large size

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

As a result of freeze-thaw weathering water seeps into cracks in the rock, expanding when it freezes and seeping in deeper when it melts, gradually splitting the rock apart. Those fragments are removed by gravity and fall onto the scree slopes beneath.

