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Subject : Engineering Geology

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Assignment #01

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A Figure 1

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

Ans The process are called physical weathering

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

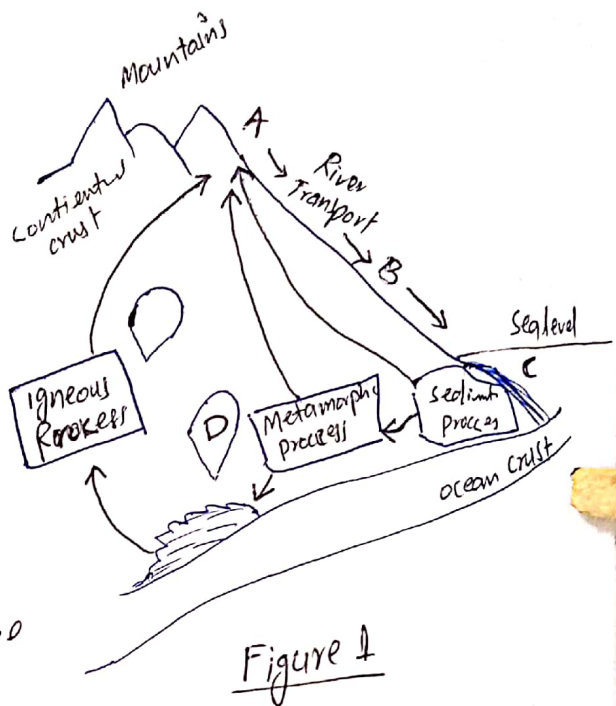
Ans (i) Rounded Fragment  
(ii) Angular Fragment

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

Ans sedimentary rocks are types of rock that are formed by the accumulation or deposition of small particles and subsequent cementation of minerals or organic particles on the floor of oceans or other bodies of water at the earth surface.

(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.

Ans Metamorphism is the addition of heat and pressure to existing rocks, which causes them to change physically or chemically so that they become a new rock. Metamorphic rocks may change so much that they may not resemble the original rock.



Explain point D in figure

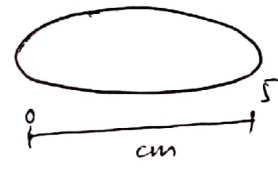
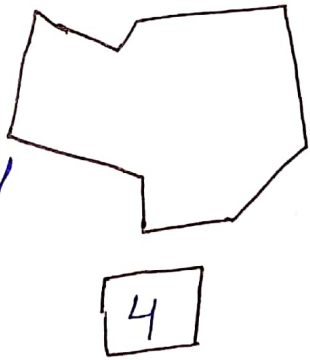
- Point D are the magma which is the initial stage for all types of rock
- ~~magma~~ All types of rocks are made of magma in different condition
- Igneous rocks are made by magma when magma cool & solidifies. If the igneous rock melts it reproduce magma
- All the other type sedimentary rock and Metamorphic rocks are made from magma with different condition
- All rocks are made from each other that is called the rock cycle.

B.

Figure 2,

- 1 = Clay mud
- 2 = Rounded pebbles & sand
- 4 = Angular boulders

(i)



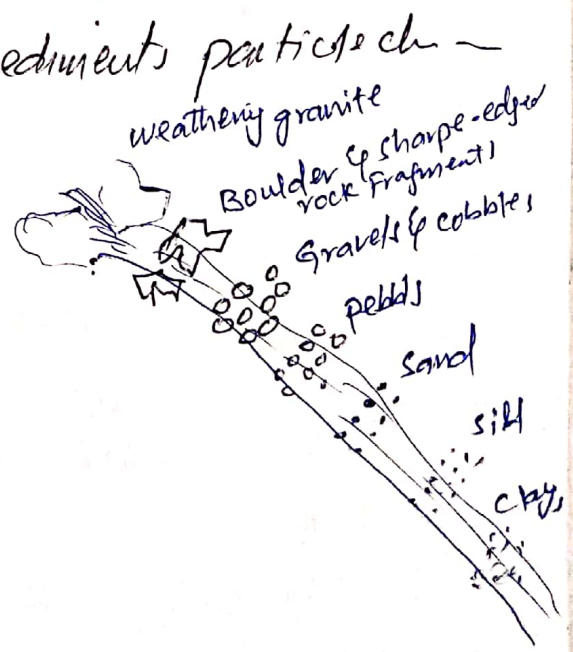
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Figure 2

(ii) in your own words explain how sediments particles change —

• In the diagram shows that rocks are going down ward in this downward motion in the river which they collide with each other or the collide to the surface which may cause to decrease the size of the fragment and change into the small sediments





(3)

- So first the rocks are breaking due to the weathering effects which change the rocks to Boulder & sharp-edged rock fragments
- These rock fragments are further change to Gravels & cobbles
- These gravel are further change to pebble
- These pebble are further change to sand
- After all sand are gradually converted to silt
- And the last silt are further converted to clays
- This all process are occur due to motion in rivers and collided with each other.

C Figure 3

① what type of volcano is shown in figure by shape & if eruption is more often which category it fits

Ans . Type of volcano by shape are "compositiv volcano"  
. category = "Active volcano"

④① (a) Explain how gases trapped in the magma help produce the ash column.

Ans - An eruption volcano will release gases and heat into the atmosphere. the largest portion of gases released into the atmosphere is water vapors.  
- The sudden release of pressure causes the gases in the magma to suddenly forth and create volcanic ash & pumice

(4)

which is then ejected through the volcanic vent to create the signature eruption column commonly associated with explosion eruption. The size & duration of the column depend on volume of magma being released & how much pressure the magma was under.

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

(i) one sign that indicates volcano is about to erupt.

- Ans. Small earth quake beneath the volcano
- slight inflation or swelling of the volcano
  - Increased emission of heat & gas ~~from~~ ~~vent~~

(ii) Dangers that might indicate Ash Fall near a volcano.

- Ans. like airborne particulate from dust storm,
- Forest Fire
  - Air Pollution

D Answer the following questions?

- (i)
- Breakdown of Rock without it being moved → weathering
  - wearing away of rock during transport of Rock particulate → Erosion
  - A process caused by wind, running water and moving ice → Erosion
  - An effect of plant roots growing in Rock joints & fractures → weathering



(5)

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

Ans) Rainwater is naturally slightly acidic because of carbon dioxide from the air dissolves in it. That dilute carbon dioxide ~~and~~ attacks on limestone that's why limestone weathers more quickly.

(iii) Why do igneous rocks never contain fossils?

Ans) If the magma cools slowly, large crystals form in the rock. They are intrusive igneous rocks because they form magma underground. Unlike sedimentary rocks, igneous rocks do not contain any fossils, this is because any fossils 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.-----

Ans) If magma cools quickly, for example when basalt lava erupts from a volcano, then many crystals form very quickly. These lava are exposed to the atmosphere which takes short time for crystal formation. And the crystals of granite are large because they have more time to grow to larger size which are not exposed to the atmosphere.

(6)

(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?

Ans Formation of scree or sediment collecting at the bottom of the cliff is the result of physical and chemical weathering and erosion acting on a rock face.

The predominant processes that degrade a rock slope depend largely on the regional climate (temperature, amount of rainfall etc)

- Biotic process
- chemical weathering by mineral hydration, dissolution and salt deposition
- Physical weathering by ice
- Thermal stresses

Thermal stresses :- is stress created by any changes in temp to a material. these stresses can lead to fracture or plastic deformation on the heaty.

Thermal expansion or contraction and thermal shocks are things that can cause thermal stresses.

in general high the temp, the higher the level of stress that can occur.

thermal shock can result from a rapid change in temp, resulting in cracking.