

(1)

Date: \_\_\_/\_\_\_/20\_\_\_

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Subject : Engineering Geology.

Section : "B" Department : "Civil".

Ques A:- Figure 1, show 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?

Ans: The name given to this process is physical-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: when the sediment grains flow in the river it ~~undergoes~~ undergoes two main changes.

i) reduction in particle size due to breaking up.  
ii) rounding the originally angular fragments due to collision etc.

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

Ans: Cementation is the changing of Sediments into rock by filling space around the Sediments with chemical precipitates of minerals. Binding the loose Sediments and forming solid rocks. Calcite and Silica are common minerals that cement the Sediments together.



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(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 means change in form.

metamorphism rocks may be formed by simply being deep beneath the earth crust surface subjected to high temperature and great pressure of rock layer above it. metamorphism is the change of minerals or geologic texture (distinct arrangement of minerals) in pre-existing rocks. (Protoliths) with protolith melting into liquid magma (a solid state change. The change occurs primarily due to heat, pressure & introduction of chemically active fluids.

Contact metamorphic rocks are formed when the pre existing rocks comes in contact with magma and changes.

Regional metamorphism is when the existing rocks are transformed in large area by tremendous heat and pressure created by tectonic force.

And point "D" shows the process that when the heat is so high and due to extreme pressure from burial when the newly formed metamorphic rock continues to heat it eventually melt and becomes molten magma. when it cools it form an igneous rock.

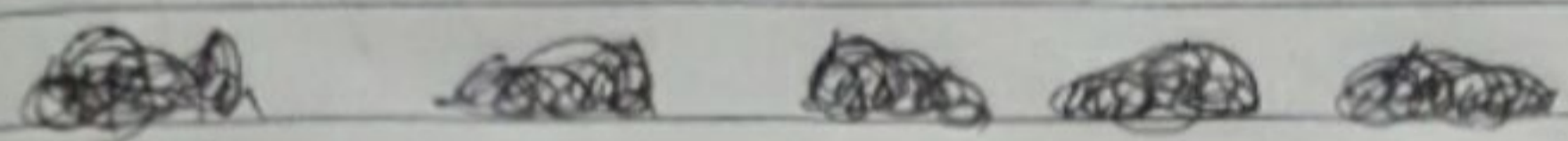


Figure 2,

Ques below show the size and shape of typical sediment particles from the deposit produced.

- (1) (i) clay mud (2) rounded pebbles and sands.
- (3) Sloping sand layers (4) Angular boulders.

- Ans: (1) [4] Angular boulders.  
 (2) [2] rounded pebbles & sand.  
 (3) [1] clay mud.



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

Ans: When the sediment particles flow in the river the changes that occur in the sediment particle depends upon the flow of water in river & size of the sediment particle. If the size of sediment particle is large and the flow of water is high then it will break into more smaller pieces and flow with more speed it may get attached to some thing or stops at a calm place like lake, pond etc. and if the sediment particles is small and strong then it collides with other rocks and become rounded in shape due to smaller surface area the sediment does not break entirely to small pieces and kept on moving i.e. the distance of flowing water greater will be its rounded shape.

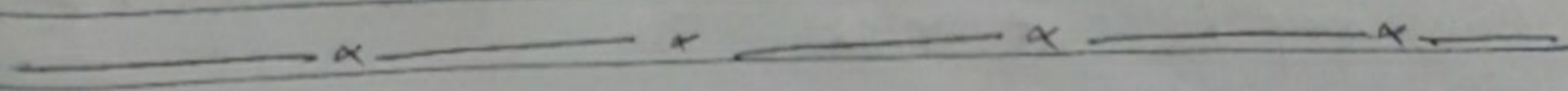




Figure 3:

Qno C Shows the structure of a volcano and the <sup>rock</sup> layers beneath.

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

Ans: The volcano shown in the figure is Composite volcano and the category it fits is explosive or central.

(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?

Ans: magma contain dissolved gases. which provide the driving forces that cause most volcanic eruption. As magma rises towards the surface and pressure decreases. gases are ~~released~~ released from liquid portion of the magma (melt). and continue to travel upward and are eventually ~~released~~ released into the atmosphere which on reacting with particles of atmosphere produce ash column with particles of atmosphere produce ash column.

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



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

(2) Suggest two dangers that might result from Ash fall near a volcano.

Ans: (i) minor Shakes (the increase in the frequency and intensity of felt earthquakes).

(ii) volcano ash contain tiny jagged particles of rocks and natural glass blasted into the air by volcano.

The earth quakes that come due to eruption of volcano is hazardous to live stock and human life.

Qno 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.

(i) Break down of rock without it being moved. weathering.

(ii) wearing away of rock during transport of rock particles. Erosion.

(iii) A process caused by wind, running water and moving ice. Erosion.

(iv) An effect of plant roots growing in rock joints and fractures. ~~weathering~~ weathering.



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(ii) A Statue was made from limestone, Rain makes limestone weather more quickly than Sandstone. what substance in the rain water causes this?

Ans: The rain makes limestone weather more quickly than sandstone because the chemical attack on limestone by rain that is naturally acidic (containing dissolved carbon dioxide) and compound calcite. while sandstone causes their ~~serious~~ serious to break up over time and become sand and clay particles.

(iii) Why igneous rocks never contain fossils?

Ans: Igneous rocks never contain fossils because any fossils in the original rocks will have melted when the rock melted to form magma.

(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?

Ans: Igneous rocks are formed by the crystallization of magma. The difference between granite and basalt crystal size is due to silica content and their rates of cooling.

→ Basalt contains 53%  $\text{SiO}_2$ .

→ Granite contains 73%  $\text{SiO}_2$ .

intrusive slowly cooled inside the ~~crust~~ crust.



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(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<sup>o</sup> Formation of scree sediments is the result of physical and chemical

weathering and erosion acting on rock face.

causing scree sediments fallings from

mountains, cliffs etc. In my ~~opinion~~

opinion one process that might be responsible

for producing the large, angular poorly sorted

fragments in the scree sediment collection

at the bottom of the cliff is erosion.

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The End  
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