

# PAPER: ENGINEERING GEOLOGY

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## QUESTIONS/ANSWER:

Q:1; 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?

Ans: The name given to this process is Geological Weathering.

Weathering is the breakdown of rocks at the Earth's surface, by action of rainwater, extremes of temperature, and political activity.

Example:

Wind and water causes small pieces of rock to break off at the side of a mountain, ice wedging and plant roots etc.

[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: Sediments transport occurs in natural system where the particles are clastic rocks (Sand, Gravel, Boulders etc.) The fluid is air, water or ice and the force are resting.

The prolonged transport of sediment by water and wind current effect the particles ways are:

- \*Reduction in particles size.
- \*Rounding of originally angular fragments.
- \*The greater the distance of transport, the smaller and more rounded the grains.

**[C] How do loose sediments at C become changed into solid rock?**

- \* The loose sediments into solid rock by the process of cementation and lithification.

**[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?**

- \* Rock density increases and metamorphic fabric develop with increasing grade of metamorphism. And at point D with increased temperature molten rocks rise up in the form of plutons due to decreased density,

**(B). Figure [2].**

Below shows the size and shape of typical sediment particles from the deposit produced.

1. Clay mud: BOX 3

2. rounded pebbles and sand: BOX 2

3. Sloping sand layers:

4. Angular boulders: BOX 1

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

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

\*At the start of the river the particles size is large and Angular shape as the particles goes downstream it would break and form smaller and the particles travel the more will be rounded.

(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?

Composite one (as it has the branch pipes)

**(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.**

\* Gas trapped in the magma cause the volcano to built pressure and is released with great violence when reaches the vent.

**[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.**

Hot gases and smoke come out that might indicate a volcano is about to erupt.

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

Acid rain and lahar is dangers that might result Ash fall near a volcano.

**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:

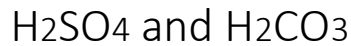
Erosion

\*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?

**ANS:** weathering of limestone is effected by chemical when rainwater, which contain make carbon acid react with limestone to dissolve.



**(iii) Why igneous rocks never contain fossils?**

**ANS:** As the igneous rocks made on high temperature condition so fossil is deposit on high P-T condition. So no fossil is deposit in igneous rocks.

**(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:** Basalt from at surface and cool quickly as melt mineral grain in basalt are fine grand which granite is formel and take longer time to cool – At rapid cooling produce small crystals and at slower cooling.

**(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:**

Land sliding is the one process.

Thank you