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**SECTION:B PAPER:ENGINEERING GEOLOGY**

**DEPARTMENT:CIVIL ENGINEERING SEMESTER:2**

**A.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:

 Geological Weathring

**(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:

Grains become rounded due to wearing and tearing

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

ANS:
Compaction and lithification.Once particles have been transported to a new area, they must be transformed from a collection of loosesedimentinto new, solidrock.

**(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: Minerological changes and textural changes occur during metamorphism

**EXPLANATION TO POINT D:**

Rocks at point D undergo partial melting. Magma is generated which moves upward and solidified on the way. Result in igneous rocks.

**B:Figure 2, below shows the size and shape of typical sediment particles from the deposit produced.**

**(i) In each box, write down the most likely number from the Deposit produced column in the table above.**

**ANS:**

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

ANS:

 As sediments move in transported agent like river so they collider with bed rock and adjacent edges .also river contain slit clay size particles so the shape of sediments change because of collision and they are polishes thus results in rounded sediments

**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?**

ANS: Cinder Cone Volcano

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

Ans: Clouds of gases and tephra that rises above the volcano causes the Ash column or eruption column or due to sudden release of gases due to pressure forms ash column

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

Ans: An increase in the frequency and intensity of earthquakes might be a sign of volcanic eruption. Foreshocks and tremors

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

Ans:Ashcan threaten the health of people like irritant to eyes and lungs

2: Contaminat water supplies.

D. Answer the following questions?

**(i):ANS**

|  |  |
| --- | --- |
| **Statement** | **Weathring or Erosion** |
| **Breakdown of rock without it being moved** | **Weathring** |
| **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** | **Weathring** |

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

**ANS:**

Rain water contain carbon dioxide that form weak carbonic acid and which dissolve limestone’s as limestone contains Ca.

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

ANS: Because temperature of igneous rocks is very high as they are formed from melt (magma) and when comes to surface so their cooling rate is slow thus fossils melt and that’s why no sign of fossils in igneous rocks. Same is the case with metamorphic 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: Depends on rate of cooling

Slow rate of cooling of granite so coarse grain and large size of crystals.

Fast rate of cooling in basalt result in fast solidification thus fine (small) grain crystals.

**(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: They are also called talus deposits. Erosion is the process that is responsible for producing the large angular poorly sorted fragment in the screen sediment