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Department # BE Civil Engineering  
Section A

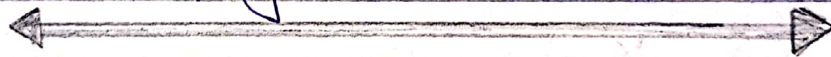
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Subject # Engineering Geology

Q: A Figure 1 show part of the earth's crust and the location where some Rock cycle processes take place.

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

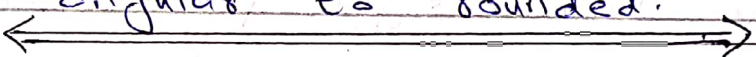
Ans Rock is broken down by Frost, rain and sun at A by the process of Mechanical weathering.



(b) How is sediment grains in a river changed during transport from A to B at A grains

Ans The sediment grain will become rounder in shape and smaller in size during their transport from A to B at A grains

are much larger and more angular, as grain move to B they are slammed against each other and the stream bed breaking off into smaller grains and breaking off their sharp edges, and sediment grains gradually become rounded. so the two difference is that size will be reduce and shape from angular to rounded.



(c) How do loose sediment at C become changed into solid rock.

ANS When particles have been transported to a new area they must be changed from loose sediment into solid rock by the process of Lithification. It begins when rocks are buried & become compacted. The pores of the rock then become filled with cement & certain minerals begin to recrystallize. Sediment is loose material & sedimentary rocks holds together when we pick it up.



(d) Rocks that are deeply buried  
----- Explain point D?

Ans Two changes are:-

① Regional metamorphism:- Changes in enormous quantities of rock over a wide area caused by the extreme pressure from overlying rocks.

② Contact metamorphism:- Changes in rock that is in contact with magma ~~heat~~ of the extreme heat  
OR

One way rock may change during metamorphism is by rearrangement of their mineral crystal.

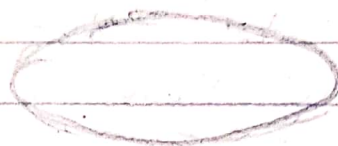
\* Point D:- When massive amount of heat & pressure are applied to an igneous rock, it compacts and becomes a metamorphic rock. The point D show the process from metamorphic rock changes to igneous rock. If rock are buried deep in the earth at high temperature & pressure they form new minerals & textures all without melting. If melting occurs magma is formed.

QB. Fig 2 show the size and shape of typical ----- produced

(i) In each box write down the most ----- above.



4



2



1

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

Ans Sediment size are much larger and more angular. As they move downstream they are slammed against each other and the stream bed breaking off into smaller and break off there sharp edges. Clast gradually become rounded and as water slows sorting the pebbles and cobbles and forming mounds/bar of gravel. If the gravel sits long enough it will undergo chemical weathering consequently sending individual mineral grains further downstream. Clay is so fine it may remain suspended



in the water & carried downstream

however sand may drop out and along the stream  
Q.C Figure 3, shows the structure of a volcano ----- beneath.

(I) What type of volcano is shown in the fig by shape and if eruption is more often ----- fits.

Ans By shape it is a composite volcano. and if eruption is more often it is strato-volcano

II The eruption shown in Fig 3 is producing ----- summit.

(a) Explain how gases trapped in the magma help produced the ash column?

Ans Magma contain trapped, pressurized gases. If the confining pressure of the magma decreases or gas pressure increases, they contents simply blast through to the surface. Volcanoes are like a spewing bottle of soda. when gas bubbles rush soda bottle they wind up carrying at least some of the soda with them.

In the case of volcanoes, escaping gases carry magma up into the air.

The sheer violence of the explosion shreds the rising magma into tiny particles. These pieces of magma then solidify in the

air becoming volcanic ash. Simply that it is produced due to volcanic eruption when dissolved gases in magma expand and escape violently in the atmosphere

(b) Many people around the world live close to volcanoes - - - - risk

(i) Suggest one sign that might indicate if a volcano - - - - erupt.

Ans Rise of magma toward the surface, which generates earthquake.

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

Ans Ash Fall threaten the health of people & livestock.

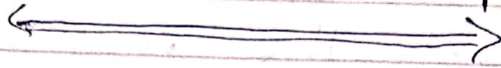
(a) Pose a hazard to flying jet aircraft, damage telecommunication etc.

Q D In the table below are statement - - - - provided.

①	Break down of rock without it being moved	Weathering
②	Wearing away of rock during transport of rock particle	Erosion
③	A process caused by wind, running water & moving ice	Erosion



(i) An effect of plant roots growing in rock joint & fractures: Weathering



(ii) A statue was made from limestone. Rain makes ----- causes this?

Ans Carbonic acid causes this, limestone are affected by chemical weathering when rain-water, which contain a weak carbonic acid reacts with limestone.

(iii) Why igneous rock never contain fossils?

Ans Igneous rock ~~do~~ not contain any fossil. This is because any fossil in the original rock will have melted when the rock melted to form magma. On the other hand igneous rocks are formed by solidification of magma fossils can't be preserved in such a hard and compact rock because fossil die out in the process of their formation. Hence, igneous rock are free of fossils.

(D)

(iv) Granite take much longer to cool deep ----- basalt

Ans Granite is intrusive, its means that the magma was trapped deep in the crust, & probably took a very long time to cool down enough to crystallize into solid rock. This allows the mineral which form plenty of time to grow & result in a coarse-textured rock in which mineral grain are visible.

Basalt forms at the surface where it will harden from lava. because it forms at the surface, it will cool relatively quickly within a few day to a month and as a result, the mineral grains in basalt are fine grained and unvisible.

(v) Describe one process that might be responsible for producing the large ----- of the cliff?

Ans: Formation of scree is the result of physical and chemical weathering and erosion acting on a rock face. Scree formation is commonly



attributed to the formation of ice within mountain rock slopes. During the day water can flow into joints and ~~the~~ discontinuities in the rock wall. If temperature drops enough, for e.g. in evening this water may freeze. Since water expands by 9% when it freezes, it can generate large forces that either create new cracks or wedge blocks into unstable position.

