MID TERM ASSIGNMENT PAPER

SUBJECT: ENGINEERING GEOLOGY **INSTRUCTOR: ENGR. IMTIAZ KHAN**

ID: 16083 SECTION: A **SEMESTER: SPRING FALL 2020**

MODULE: 2ND SEMESTER **DURATION: 6 DAYS**

A: FIGURE 1, Shows part of the earth's crust and the locations where some rock cycle processes take place.(figure in question sheet).

(a). Rock is broken down by frost, rain and 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 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. Depending on the size of sediments, during the water flow the large sediments will fall through the flow while the smaller sediments will move with the flow from A to B. The two differences are change in size and shape of the grains.

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

ANS. The loose sediments at C become changed into a solid rock by the process of sedimentation. It happens when the loose sediments are squeezed together by the weight of overlying sediments on top of them which is called compaction.

(d). Rocks that are deeply buried in the earth's crust may undergo metamorphism. Describe two changes that happen in rocks during metamorphism and explain point D?

ANS. Physical change occurs due to extreme heat and pressure and chemical change occurs when the crystals rearrange themselves during extreme conditions. At point D, due to extreme heat and pressure the metamorphic rocks may convert into magma.

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

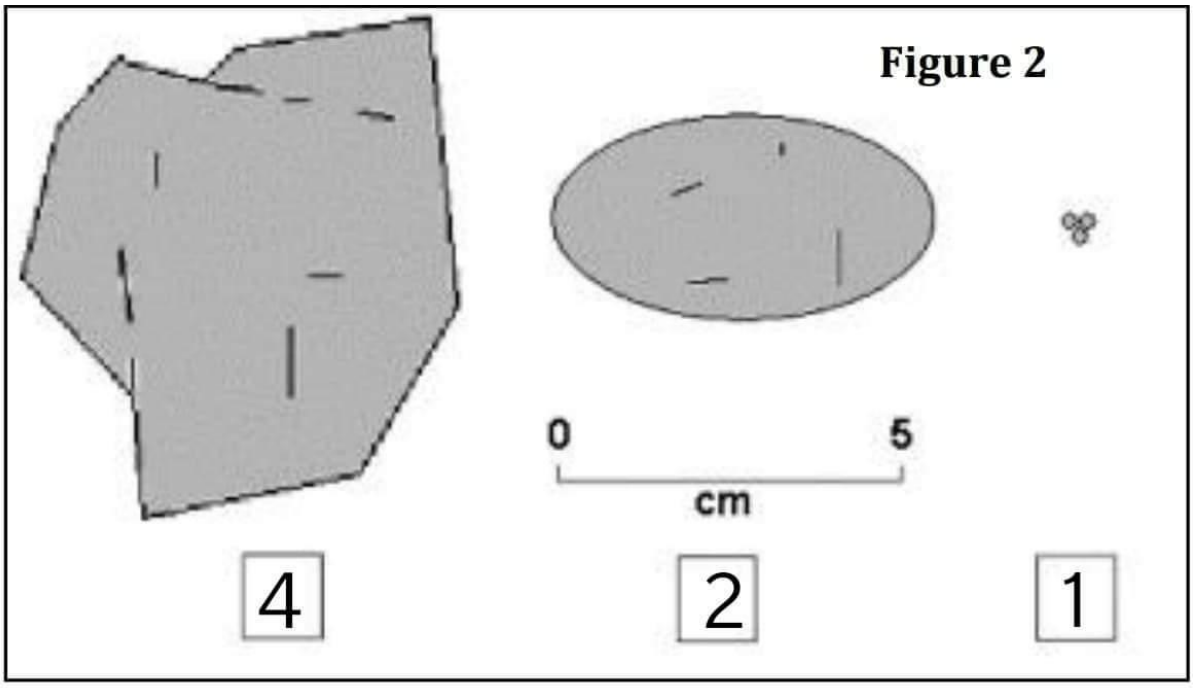
1. Clay mud

2. Rounded pebbles and sand

3. Sloping sand layers

4. Angular boulders

Q. In each box, write down the most likely number from the deposit produced column in the table above.



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

ANS. When sediments flow downstream by a river, they change in size and shape due to erosion caused by water flow but the intensity of erosion depends on the force of water flow and surface area of sediments and so the sediments of larger size takes much time to change physically as compared to smaller sized sediments.

C. FIGURE, shows the structure of a volcano and the rock layers beneath.

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

ANS. Composite volcano is shown the figure and it is an active volcano.

(2). The eruption shown in the figure 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. The sudden release of pressure causes the gases in the magma to suddenly create volcanic ash which is then ejected through the volcanic vent to create eruption column (ash column).

(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.**

ANS.

ii. **Suggest two dangers that might result from ash fall near a volcano.**

ANS. Volcanic ash is heavy which may collapse the roofs of houses, killing and injuring people. It can cause the engines of vehicles or aircrafts to stall which poses threat to life.

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. The substance in rainwater that causes this is called carbonic acid.

iii. **Why igneous rocks never contain fossils?**

ANS. Igneous rocks do not contain any fossils, this is because any fossils in the original rock 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. Basalt is an extrusive igneous rock, meaning it has cooled at or near the surface, resulting in rapid cooling and the formation of small crystals. Granite on the other hand, is an intrusive igneous rock, meaning it cooled at depth, much more slowly, resulting in the formation of larger 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. The process responsible for such fragments is erosion of weathered rocks by gravity.

END