

Geology : Notes/W.S.-10

Geology is the study of the Earth. It includes the study of rocks, strata, mountains, volcanoes, earthquakes, fossils, and the structure of the Earth.

We will start by looking at rocks near the Earth's surface.

Types of Rocks

There are three main rock types

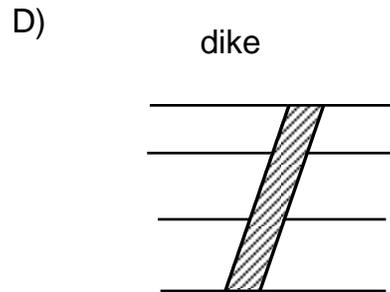
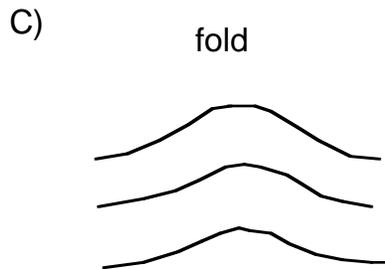
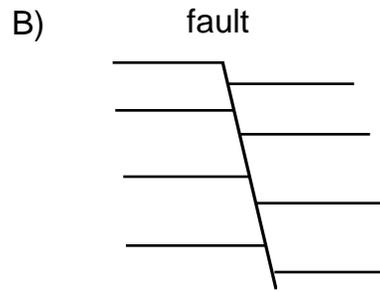
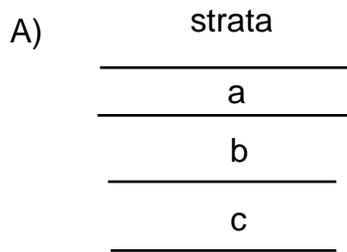
Sedimentary - These rocks were formed from hardened sediment (weathered rock) that was deposited by water, wind or ice. Examples are; limestone, sandstone and shale. These rocks are often layered. The layers are called strata. These layers can be fractured, faulted, or folded.

Igneous - This hard rock was formed from hardened magma (molten rock). The magma comes from volcanoes and from deep underground. Examples are; granite and basalt. When magma forces its way into a fracture of other rock, a dike will form.

Metamorphic - This rock forms when sedimentary or igneous rock is subjected to high heat and pressure. This occurs in rock that has been buried deep underground. Examples are schist, slate and marble.

Disturbances in Rock

The rocks near the Earth's surface are subjected to enormous forces from deep underground. These forces are often caused by moving magma. They may cause; fractures, faults, dikes or folds. These forces are also responsible for earthquakes, volcanoes, and the building of mountains.



Relative Ages of Rocks and Disturbances

There are two rules regarding the relative ages of rocks and disturbances of rocks.

1) **Law of Superposition** - In a series of strata, younger rock lies on top of older rock. In diagram A) above, c is the oldest stratum and a is the youngest.

2) **Crosscutting Rule** - A rock (or a disturbance, e.g. fault) is younger than the rock that it cuts. In diagram B) above, the fault is younger than all of the strata that it cuts.

Problems:

- 1) What is geology?
- 2) What are the three main types of rocks?
- 3) How are sedimentary rocks formed?
- 4) How are igneous rocks formed?

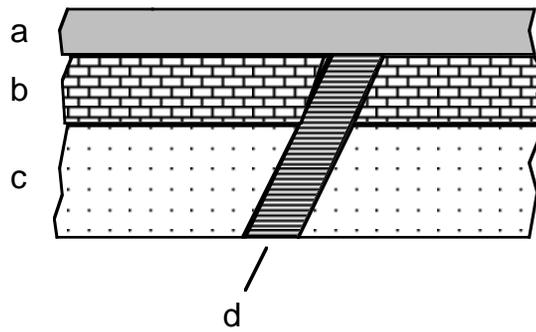
5) What causes disturbances in rock?

6) What is "The Law of Superposition"?

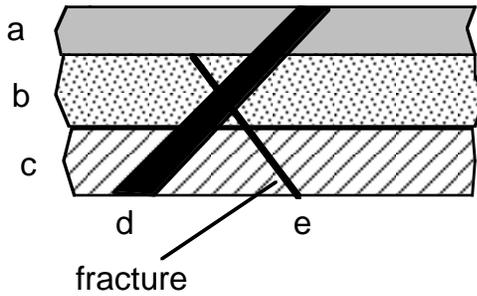
7) What is "The Crosscutting Rule".

8) List the relative ages (oldest to youngest) of the rocks shown in the diagrams below.

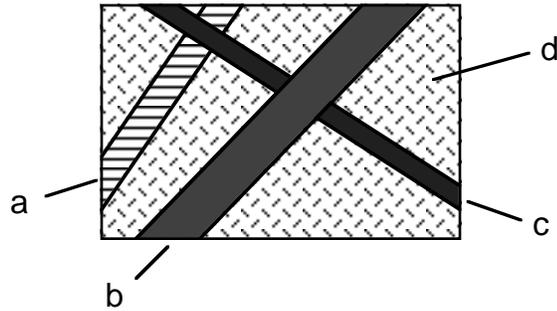
a)



b)



c)



Answers: 1) Geology is the study of the Earth., 2) sedimentary, igneous, metamorphic, 3) They are formed from hardened sediment., 4) They are formed from magma that has solidified., 5)a) They are caused by magma moving deep underground., b) igneous, c) sedimentary, 6) In a series of strata, younger rock lies on top of older rock., 7) A rock or a disturbance, is younger than the rock which it cuts., 8)a) c, b, d, a, b) c, b, e, a, d, c) d, a, c, b.