

Process of Physical & Chemical Weathering |

Sample Answer

Explain one process of physical weathering and one process of chemical weathering.

(2016 Q1C)

Aspect 1 - Physical Weathering

Freeze thaw action is a process of physical weathering.

This type of weathering can be seen in mountain areas where temperatures frequently rise above and fall below freezing point and precipitation provides water for ideal conditions.

Areas of bare rocks with cracks are greatly affected. Porous rocks that were formed in strata with many horizontal and vertical fissures are affected e.g. Limestone.

During the day when the temperatures are above zero degrees C, precipitation fills these cracks. At night, temperature fall below zero degrees C, the water in the cracks freezes and can expand up to 10%.

Once the ice melts, pressure is released. The continuous freezing and thawing weaken the rock until tiny fragments begin to break of.

This rock is known as scree. This scree is the pulled to the bottom of the mountain by gravity. They accumulate in small heaps at the bottom of slopes e.g. Miners Village Glendalough.

Diagram (1) water in rock (2) freeze with crack (3) scree

Aspect 2 - Chemical Weathering

Carbonation is a process of chemical weathering.

Chemical weathering is the breakdown and weakening of rock through reacting with another agent to form a new substance. Carbonation breaks down Limestone/Chalk.

Limestone is an alkaline rock with a component called calcium carbonate within it due to the seashell fragments that help form the rock.

As rainwater falls it absorbs carbon dioxide that is in the atmosphere. It turns into a weak carbonic acid that reacts with the alkaline calcium carbonate.

The reaction forms calcium bicarbonate that is a soluble that can easily be washed away by the rainwater. The removal of dissolved bicarbonate by rainwater is called solution.

As limestone is a permeable rock composed of layers and joints water often soaks within the rock and weathers it to form features e.g. Grikes, clints and karens. All can be found in The Burren.

If carbonic acid in rain enters rivers or streams it can cause the formation of underground caverns due to swallow holes which form in the river allowing access into the ground e.g. Crag cave

Process of carbonation speeds up with a temperature decrease as colder water holds more carbon dioxide gas. Also, the flow of the water through vegetation can collect more acid.