

Q: 'With reference to the Irish landscape, examine the processes which have influenced the development of any one underground landform in a karst region' (2010 Q3 C.)

Limestone is a grey, organic, sedimentary rock made from calcium carbonate. It contains horizontal bedding planes between the layers (strat) and many vertical joints which were formed during plate tectonic movement.

Limestone is pervious. This means that rain passes down through the joints and along the bedding planes rather than through the actual rock itself.

The burren has quite a few distinctive physical features:

Drainage, a lot of the rivers are under the bed rock because limestone is porous. There are a few springs such as St Brendan's Wall but they disappear into swallow holes.

Surface landforms, 60% of the Burren is bare rock. This is a limestone pavement, with spectacular swallow holes for example Pollnagollum is over 40m in diameter.

Sub surface, the underground rivers carved caves and caverns under the surface. Aillwee is an example of a dry cave.

In underground landforms like caves and caverns dripstone deposits can occur.

A good example of these dripstone deposits/ speleothem is the Burren Co. Clare.

The Burren translates into english as 'Rocky Place'. The Burren is a karst region, a karst region is a place where limestone (usually carboniferous limestone) is exposed on the surface.

Limestone in the Burren Was exposed with a combination of glaciers retreating and removing the topsoil and also human activity in prehistoric ireland, when farmers removed forests and made the soil susceptible to soil erosion.

Dripstone deposits occur when water saturated with calcium carbonate may drip from the ceiling of a cave. As it does, evaporation takes place.

The result is that a tiny deposit of insoluble calcium carbonate is left behind. This then crystallizes to form calcite; a hard, white mineral.

The calcite can be left on the ceiling or wall of the cave while more is deposited when the drops of water fall to the floor. Because of the way they form, these deposits are called dripstones.

Stalactites: As water saturated with calcium carbonate drips through the ceiling of the cave, each drip hangs from the ceiling for a few seconds.

A small amount of calcium carbonate crystallises into a calcite ring around the outside of the water droplet.

As this process continues over thousands of years hollow straw-like stalactite form. If the straw gets blocked, water is forced to flow down the outside, and calcite deposits thicken.

Processes shaping formation of landforms in Karst region| sample answer

Stalagmites: when the drop of water hits the floor, more carbon dioxide evaporates and deposits of calcite build upwards as small domes to form stalagmites. These are thicker and more shapeless than stalactites due to the splashing effect of the water.

Columns: In time stalactites and stalagmites continue to grow until they join up to form columns or pillars.

Curtains: They grow on slanting ceilings instead of horizontal. The droplets deposit a small ridge of calcite, as the water continues to flow down the same path, the calcite ridge grows out from the wall, forming a curtain.