Human interaction with the rock cycle | sample answer

Q. ‘Examine how humans interact with the rock cycle, with reference to one of the following: Mining, Extraction of building materials, Oil/gas exploration or Geothermal energy production’ (2013 Q2 C.)

Mining:

Everywhere humans interact with the rock cycle. Either through business or leisure activities. eg hiking. The rock cycle is the formation, breakdown and reformation of a rock as a result of sedimentary, igneous or metamorphic processes. All rocks are made of minerals. A mineral is defined as a naturally occurring, crystal structure.

Mining is breaking through rocks to get the actual rock themselves or to get the metal inside them. It can be a very intrusive process.

Tara lead and zinc mine is in Navan, Co, Meath. It is the largest lead mine in Europe and is the fifth largest in the world.

It sends its 2.7m tonnes of lead concrete and zinc to refineries in Finland, Norway and other EU countries.

To get lead and zinc they find it in sedimentary bedding planes of carboniferous limestone and dolomite rocks. These rocks that contain metal are referred to as ore, they were created 350m years ago when Ireland was under tropical sea.

To extract metal from the rock, vertical and horizontal mine shafts are cut out to a depth of 50-900m below the surface, this effects the rock cycle because they are intruding into the earth.

One of the extraction methods is called stope and pillar technique. This involves blasting stopes (caverns) and leaving pillars (left over rock for support)

Mines pump their water waste after they treat it into tailing ponds, when the sediments settle they create concrete and pump the unwanted rock back into the stopes for support.

The ponds are carefully analyzed by EU and World health organizations for pollution.

Humans have interacted so much with the rock cycle in the mine, since 1977 it has produced almost 5 million tonnes of zinc and over 1 million tonnes of lead.

It seems inevitable that humans will continue to mine because of the importance we put on zinc and lead. 60% of the lead is used for batteries. Lead is also used for lots of other things like plumbing and soundproofing.

Zinc is used to rust proof (galvanized) steel, cosmetics, sun creams, ink and many other uses.

Even though mining is seen to be intrusive, unnatural and possibly harmful/dangerous to the workers and planet, it has a huge spin off effect in employment, national and local economy.

For example mining and quarrying in Ireland generates €1 billion to the Irish economy. it is estimated that for every job at Tara, 3 indirect jobs are supported such as caterers, truck drivers and machine surveyors, to name but a few.