Plate Tectonics | Sample Answer

Destructive Plate Boundaries (2018 Q3C)

A plate boundary is how the earth's crust is broken into plates, where 2 plates meet is known as a plate boundary. Different plate boundaries exist as plate boundaries move by convection currents. Land is usually destroyed at destructive plate boundaries.

At continental-continental destructive plate boundaries, fold mountains are formed e.g. the Himalayas formed where the Indian and Eurasian plates slowly collided. Continental crust is 40-60km thick, made of SIAL-rich rock, and is older than oceanic crust. The Eurasian plate crumpled and rose forming the Tibetan Plateau and the Himalayas. When 2 continental plates collide, neither sinks, sometimes they move upwards or sideways causing shallow earthquakes, for example in Pakistan in 2005, a shallow earthquake occurred and 89,000 people died. Fold mountains are usually made from sedimentary rock as they form underwater, and marine fossils are found in the Himalayas.

At Oceanic-continental destructive boundaries, the oceanic plate subducts under the lighter continental plate into the mantle. It melts, turns to magma, moves up through the continental crust, causing an explosive volcano to form, e.g. Mount Saint Helens, USA. The oceanic plate subducts beneath the continental crust as it is heavier and made of more dense SIMA rock. Deep earthquakes are also common at these boundaries. A trench is created at the junction of two colliding plates. This marks the subduction zone e.g. Peru-Chile Trench. The Pacific Ring of Fire is an area which contains 452 active volcanoes at the subduction zone at the edge of the Pacific Plate. 75% of the world's active volcanoes are here e.g. Mount Pinatubo, and Mount Fuji, Japan. At the point of collision the continental plate buckles and fold mountains are formed e.g. The Andes formed due to the collision between the Nazca plate and South American plate.

At a boundary where two oceanic plates collide, one subducts beneath the other and a deep trench forms, like the Mariana Trench in the West Pacific ocean. This trench marks where the Pacific plate subducts under the Phillipine plate. Strong earthquakes can occur at trenches to release pressure e.g. Japan 2011. The subducted plate sinks and melts causing raising bubbles of magma to break through the crust. This forms active volcanoes which build upon the sea floor until it is visible on the surface. An island arc forms here e.g. the Philippine Islands. An island arc is a curved line of volcanic islands marking a subduction zone.