

Oxford Revise | Geography | Answers

Chapter 4 Earth structure and tectonic plate movements

All exemplar answers given are worth full marks.

1.
 - a) D
 - b) The internal structure of the Earth is made up of a series of layers. The outer layer consists of oceanic crust which is high density basalt and continental crust which is low density granite. Next comes the mantle which is made up of silica-based rocks. Beneath this lies the outer core which is liquid and mainly made up of iron and nickel. The inner core is at the centre of the Earth is also made of iron and nickel, but is solid.
 - c) The oceanic crust is much thinner than the continental crust.
Accept suitable alternative answers.
 - d)
 - i) Eurasian plate
 - ii) Eurasian and North American plates
Accept suitable alternative answers.
 - iii) Pacific and Philippine plates
Accept suitable alternative answers.
 - e) Convergent
 - f) The ridge and slab theory suggests that new crust rises through the mantle because it is warm and thin, creating a ridge, pushing older crust away from the ridge. Old crust is cooler and thicker than the hot mantle, so it sinks into the mantle. Accept suitable alternative answers.
2.
 - a) C
 - b) Hotspots are places where magma rises through the mantle and forces through the crust creating a volcano.
 - c) It is thought that as the Earth rotates, iron in the liquid outer core flows to produce the Earth's magnetic field.
 - d) Most of the Earth's heat energy comes from the radioactive decay of uranium and other elements within the core.
 - e) Earthquakes form at different plate boundaries. The least destructive earthquakes happen at conservative boundaries because small tremors occur all the time as the plates slide beside each other. There are only major earthquakes if the plates get stuck and do not move for a long time, building up

pressure until there is major movement. Destructive earthquakes are found at convergent and collision margins because of the shock waves caused by the plates moving together and hitting each other. This can result in tsunamis. The most destructive volcanic eruptions are found at convergent boundaries although less powerful eruptions can occur at divergent boundaries as the magma rises to the surface.

- f) At divergent plate boundaries, the magma from the fissures created is chemically basic and is very hot and fluid, which allows the lava to flow a long way before cooling. This results in broad gentle sided shield volcanoes. The subduction of the oceanic crust at convergent boundaries forms magma at great depth, which is acidic, sticky, and full of gas. This makes it very explosive, resulting in steep sided composite volcanoes.
- g) When an oceanic plate is subducted beneath a continental plate, there is a great deal of friction between the two plates. If the plates get stuck for any period of time, there is a build-up of pressure. Eventually this will lead to sudden, violent shaking of the ground causing an earthquake.
- h) The crust is the outermost layer and consists of two types. An oceanic crust is made of high-density basalt. It is thinner than a continental crust, which is made of granite which has a low density. The mantle is the largest of the Earth's layers, the density of which increases with depth. It is largely made of silica-based rocks. *Accept suitable alternative answers.*

3.

- a) B
- b) There is little evidence to show that tropical cyclones overall are becoming more frequent. In some areas the numbers are increasing but in other parts of the world they have become less common. There is evidence that the intensity of tropical cyclones has increased in recent years and that is because of climate change. As the Earth gets warmer there is more energy available for the formation of tropical cyclones.