

Measurements and effects of Earthquakes| sample answer

Q. 'Examine, with reference to actual examples, the measurement and effects of earthquakes' (2008 Q3 B.)

The earth's crust is broken into slabs, they are called plates. These plates are constantly moving because of convectional currents in the mantle (asthenosphere). Their movements cause earthquakes.

Earthquakes are vibrations in the earth's crust that occur when strain in the crust is suddenly released by displacement along a fault line.

The origin of the earthquake is called the focus, directly above the focus, on the surface is called the epicenter. Tremors disperse from the focus.

Earthquakes are measured in 2 ways, the Richter scale and the Modified Mercalli scale.

The Richter scale uses instruments called seismometers to measure the magnitude of the earthquake. The magnitude is the energy of the earthquake.

It is an open ended scale, however the strongest quake ever recorded in the 21st century is the Asian Tsunami Quake at 9.1

In 1960 the strongest ever earthquake was recorded at 9.5, this was called the Chilean Quake. Anything less than 3 on the Richter scale can only be detected by the instruments.

The other way in which earthquakes are measured is the Modified Mercalli Scale, this does not measure the magnitude of the tremors.

The Modified Mercalli scale does not use instruments. It describes the effects or intensity of an earthquake based on human experiences and observations of the earthquake.

It records the effects on the population, the natural world and man-made structures. It runs from I to XIII: I is a weak one, XIII is complete destruction.

When an oceanic plate subducts under a less dense continental plate, it is called a subduction zone. These zones create powerful earthquakes. (eg Asian Tsunami Quake 2004).

The subduction is a sudden burst and the focus can be up to 300km under the surface. They are usually 8 or 9 on the Richter scale. When 2 continental plates collide, fold mountains are formed. (eg Himalaya Mountains)

There are immediate effects and long term effects:

Death and destruction, tsunamis, gas explosions, fire, loss of freshwater and homelessness. During the quake of Burren 2004, a devastating tsunami was an effect.

The wave affected 11 countries in Southeast Asia, India and East Africa and caused more deaths and injuries than any other in history. The waves were 5 metres high, 320,000 people were killed and 1.5m were made homeless.

Migration is a direct result of destruction. People's livelihoods, homes, business are destroyed. Mass migration causes problems in neighbouring countries.

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Disease can sometimes be a problem. Water and sewerage pipes burst and take time to repair. A severe outbreak of cholera of the month that followed the earthquake in Haiti led to more deaths.

The economy after an earthquakes takes a large strain. Not just repairing costs but tourism and the time it takes for shops to reopen loses the government lots of money. In Haiti 1 in 5 jobs were lost.

Without recovering aid, devastated areas would not be able to recover. Everyone in the world tries to help.

When Hati needed money the World Bank waived the countries debt repayments for 5 years.