Hazards: Seismic event impacts and human responses *3.1.5.4* ANSWERS

Q1	***Which of these factors causing people to die in earthquakes is the 'Odd one out' and why?***	
A	Level of development	
B	Depth of focus	✓
C	Population density	
D	Building control and aseismic design	
E	Earthquake forecasting and planning	
This is a natural physical seismic factor. All the others involve human factors.		

Q2	***Of these pairs, which is 'effect' and which is 'response' in relation to the aftermath of earthquakes***		
		EFFECT	***RESPONSE***
A	Search and rescue/ collapse of buildings	**Collapse of buildings**	**Search and rescue**
B	Water mains rupture/ Bottled water supplied	**Water mains rupture**	**Bottled water supplied**
C	Fear and anxiety / Loss of friends and family	**Loss friends & family**	**Fear and anxiety**
D	Roads reconstructed / Roads damaged	**Roads damaged**	**Roads reconstructed**
E	Increase in diseases / Supply of medication	**Increase in diseases**	**Supply of medication**
F	Food aid / Lack of food available	**Lack of food available**	**Food aid**

Q3	***What qualities of these physical factors would lead to increased fatalities in an earthquake?***
Location of epicentre: If the epicentre is near urban areas more buildings and people are going to be affected	**Depth of focus:** Shallow-focused earthquakes cause more shaking
Prediction: Forecasting when and where an earthquake might strike can provide planning time for people. Not all countries have adequate prediction systems.	**Time of day:** More deaths can occur if people are asleep/inside, especially when buildings are poorly built
Geology: Unconsolidated rocks such as clay and sand can amplify shockwaves and cause the collapse of buildings	**Level of development:** Poorer countries can't afford to mitigate the impact of earthquakes through prediction, protection and preparation

Q4	***Explain the different ways that people respond to an earthquake in the long-term.***
Monitoring: • Tiltmeters & magnetometers are used to detect changes in the ground height & local magnetic field. • Seismographs can detect foreshocks prior to the main seismic event. • Water can be measured for radon gas and changes in the height of the water table. • Strainmeters can monitor the increase in stress experienced in crustal rocks. • Unusual animal behaviour can indicate an imminent earthquake.	

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Prediction:
Knowing where and when earthquakes have occurred in the past allows seismologists to predict where they may occur along a fault line, assuming that the 'gap theory' is correct in that places that have not recently experienced an earthquake are more likely to experience one in the future.

Protection:
Examples of educating people or improving building design. People can be educated as to what to do in the event of an earthquake, this can include the advice by the Southern California Earthquake Centre to 'Drop, Cover and Hold on' or the Japanese advice for those near the coast to run to high ground to avoid incoming tsunami waves.
For those living in earthquake zones, the best form of mitigation is hazard-resistant design. Buildings made of mud-brick (adobe) or natural materials tend to collapse, but may not kill people if the roof material is light.

Preparation:
By forward thinking about how to respond in the event of an earthquake, places located in hazardous areas can prepare for earthquakes and reduce the death toll. Japan effectively prepares for disasters by creating emergency evacuation plans and developing information management and warning systems for earthquakes and tsunamis.

Q5	***Explain why responses to the Haiti earthquake have not been able to improve the lives of all the people living in Port au Prince.***

Haiti was unprepared for this disaster as it lacks a stable government. It required help from other countries to deal with the aftermath and therefore it has not been able to fully reconstruct.

The UN sent peacekeepers who accidently introduced cholera to the water supplies, killing 9,200 people. This has introduced a medical problem to the country that was not there before the earthquake.

There was a lack of doctors and medical care for people before the earthquake and after the international emergency response left after the disaster, people struggle with access to medical care and medicines.

The rebuild has been slow as most people survive on less than two dollars a day and cannot afford to rebuild their own homes.

Due to fear, many thousands of people have moved away from Port-au-Prince, hoping for a better life away from the capital city.