

Elective Geography – Open-ended Questions (OEs)

Marking scheme:

Level 1 (0 – 3)

At this level answers will be generalised or with minimal support if any is given at all. Reasoning is rather weak and expression may be unclear. A basic answer with little development. Answers lack examples or other evidence, or are so sketchy that it adds little support to the answer.

Level 2 (4 – 6)

Agreement or disagreement are supported by appropriate detail. Or, both aspects are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer.

Level 3 (7 – 8)

At this level answers will be comprehensive and supported by sound knowledge. Both aspects are considered and well supported. Reasoning is clear and logical with good expression of language. Examples or other evidence to support answers will be extensive.

Note:

- Be prepared for such questions and include relevant points and examples.
- Start each paragraph clearly with the question stem (e.g. *Emergency drills help to mitigate the effects of earthquakes. OR Recessions result in a greater decline in tourist numbers.*).
- Avoid starting each paragraph with 'I agree that ...' and 'However, I disagree that ...' which is contradictory. The statement showing the extent to which you agree, i.e. large or small extent should only be written at the start of the last paragraph where you write your conclusion and justification.

Comparing criteria:

Criterion	Comparison		Topics
Effectiveness	effective	limitations	
Duration of impact	long-term	short-term / mitigating factors	
Scope of impact	widespread	confined	

Tectonic plates

1 'Emergency drills are more effective than land use regulations in mitigating the effects of earthquakes.'

To what extent do you agree with this statement? Use examples to support your answer. [8]

Para 1	<p>Emergency drills are effective in mitigating the effects of earthquakes.</p> <ul style="list-style-type: none"> • Emergency drills are a form of preparedness measure where people practise the steps to take when an earthquake occurs. The intention is to prepare the people mentally on how to react to a disaster. These drills help to create awareness among the population and reduce the level of panic and irrational behaviour during an event. Hence, they can be effective in mitigating the effects of a severe earthquake as the people will know how to react. • For example, every year since 1960, Japan conducts emergency drills on 1 September to commemorate Disaster Prevention Day. People from all over Japan are involved in this annual event where an earthquake of high magnitude is simulated. People take part in emergency drills by moving to safe locations, listening to instructions given by trained personnel and practising first aid. They may also become members of local response teams that assist people during a disaster. Main roads are blocked to create possible road conditions in the event of an earthquake. Emergency vehicles have to then seek alternative routes to reach affected areas.
Para 2	<p>Land use regulations can also be used to mitigate the effects of earthquakes.</p> <ul style="list-style-type: none"> • Land use regulations are a set of rules implemented to restrict developments in certain areas. It is effective because liquefaction occurs when vibrations from an earthquake cause saturated soil to flow like liquid. The ground becomes unstable and buildings should not be constructed in these areas as it is unsafe. • For example, in California (USA), all new building developments are not built across fault lines or areas at risk of liquefaction. In Memphis (USA), areas which are at risk of major liquefaction are mapped out to regulate the land use. • Another land use regulation is the prohibition of constructing new buildings on low-lying land which are vulnerable to tsunamis. Developments may be allowed only when protective barriers such as seawalls facing the ocean are constructed. • These regulations are commonly implemented along the coasts of Japan and North America where the Pacific Ring of Fire is located.
Conc	<p>In conclusion, I agree to a large extent that emergency drills are more effective than land use regulations in mitigating the effects of earthquakes.</p> <ul style="list-style-type: none"> • When people can better understand the information provided by the authorities, they will be able to follow the instructions and take precautions accordingly. In addition, rescue and recovery will also be faster as people already know how to respond and react during an earthquake, thus causing fewer injuries and deaths. • On the other hand, land use regulations are less effective as they often need to be carried out in areas which may already be built-up or are privately owned. In

some cases, government authorities have to buy land from private owners and have to compensate those who have to move, which is costly. Moreover, private owners may be reluctant to move, as they often believe that another hazard may not happen. Hence in these areas, emergency drills will be more effective.

OR

In conclusion, I agree to a small extent that emergency drills are more effective than land use regulations in mitigating the effects of earthquakes.

- This is because emergency drills are often based on the most serious earthquake ever recorded in the area in the past. Thus, when an earthquake occurs on a scale never experienced before, emergency drills become inadequate to mitigate the devastation. Often, there is insufficient time for evacuation as earthquakes are difficult to predict.
- On the other hand, land use regulations are more effective as construction of buildings is prohibited in areas vulnerable to earthquakes, thus there will be less damage on property and fewer loss of lives and injuries.

2 'The risks of living in volcanic areas outweigh the benefits of living here.'

To what extent do you consider this statement to be true?

Support your answer with examples.

[8]

(2018 PGeog Qn 1d)

Para 1	<p>Living in volcanic areas brings both risks and benefits. Some of the risks associated include destruction by volcanic materials and landslides.</p> <ul style="list-style-type: none"> • Volcanic materials produced by volcanic eruptions include lava and rock fragments or volcanic bombs. These volcanic materials can lead to widespread damage of property as the high temperature of the lava burns the area it flows through. Volcanic bombs of heated rocks can fall in areas surrounding the volcano and cause damage to property. These volcanic bombs can range in length from several centimetres to the size of cars. • The ongoing eruption of Kilauea in Hawaii since 1983 has destroyed many homes and highways. • Another risk would be the occurrence of landslides. They can occur due to the structural collapse of a volcanic cone during a volcanic eruption. The landslide can range from a few rock fragments falling from the volcano to landslides of several hundreds of cubic kilometres. Landslides have the potential to obstruct the flow of rivers, causing floods, blocked roads, and buried villages and farmlands. • The eruption of Nevado del Ruiz in the Andes mountains of South America in 1985 released a pyroclastic flow. The mixing of pyroclasts and glacial ice along its path triggered lahars, which are landslides of wet volcanic debris on the side of a volcano. The lahar engulfed the town of Armeno and killed more than 20,000 people.
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Para 2	<p>Despite risks, people still choose to live in volcanic areas due to its benefits. These include fertile volcanic soil and tourism.</p> <ul style="list-style-type: none"> • Lava and ash from volcanic eruptions break down to form fertile volcanic soils. As the richest soils on the earth, volcanic soils are very favourable to agriculture. Although volcanic rocks are rich in minerals, they are not available to plants when the rocks are newly formed. The minerals are available after the rocks have been weathered and broken down for thousands of years. • The volcanic soils of Bali and Java in Indonesia support the cultivation of crops such as tea, coffee and rice. Despite continuous use, the soils are more fertile than most non-volcanic areas of Indonesia. • Volcanic areas also offer a variety of activities for tourists to engage in. Many people visit volcanoes to hike and camp in the area or simply to enjoy the scenery. These areas are rich in history and people can visit these areas to learn more about them. • The ruins of Pompeii, Italy, is one such example. The town was buried by layers of ash from the nearby Mount Vesuvius when it erupted in 79 CE. The unearthed archaeological site has revealed buildings, pottery and mosaics left intact. Almost 3 million people visit the site every year. This benefits the locals in the area as they are able to gain employment from the tourism industry.
Conc	<p>In conclusion, I consider the statement to be true to a large extent.</p> <ul style="list-style-type: none"> • The risks of living in volcanic areas do not necessarily outweigh the benefits as the risks are largely short-term whereas the benefits are long-term. • Hence, people may still choose to live in these areas as they are able to enjoy the benefits that will impact them positively over a longer period of time. • In addition, the risks of living in volcanic areas can be mitigated by putting in place measures to manage the negative impact. Volcanic eruptions are also not very common and may not occur frequently.

- 3 'Communities with high literacy rates often suffer less from the effects of natural hazards than communities with low literacy rates.'

How far do you agree with this statement? Support your answer using evidence. [8]
(Specimen paper)

Para 1	<p>Communities with high literacy rates often suffer less from the effects of natural hazards than communities with low literacy rates because areas with high literacy rates amongst the community usually have the ability to communicate information more easily.</p> <ul style="list-style-type: none"> • This can be in the form of authorities providing printed information, which can be read or understood, or by community groups exchanging written information between members. As a result, areas with high literacy are more aware of the likelihood of hazards, are better informed in preparation and are aware of what to do during and after such events. • For example, in Japan, which is a country with high literacy rates, emergency drills are conducted annually, such as on Disaster Prevention Day when an
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	<p>earthquake of high magnitude is stimulated and people from all over the country are involved. Emergency drills are a form of preparedness measure where people practice the steps to take when an earthquake occurs. This creates awareness among the population and reduces levels of panic and irrational behaviour during an event. People take part in emergency drills by moving to safe locations, listening to instructions given by trained personnel and practicing first aid. They may also become members of local response teams that assist people during a disaster.</p> <ul style="list-style-type: none"> • In such communities with high literacy rates, emergency drills are very effective as the people can understand the information provided by the authorities and will be able to follow the instructions and take precautions accordingly. In addition, rescue and recovery will also be faster as people already know how to respond and react due to the prior information given by the authorities. Hence, there will be fewer injuries and deaths. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • In contrast, in areas with low literacy, for example Haiti, there may be prolonged problems and a high death toll as the people may not be able to understand the information that is given to them. Hence, they may not be prepared in advance, neither are they able to respond as quickly to rescue and recovery efforts. • For example, in the 2010 Haiti earthquake in Port Au Prince, the lack of preparedness among the people, which was partly impeded by low literacy rates together with the slow recovery in the aftermath caused the people and the country to suffer more from the effects of natural hazards.
Para 2	<p>However, communities with high literacy rates may not always suffer less from the effects of natural hazards than communities with low literacy rates.</p> <ul style="list-style-type: none"> • Despite being more aware and informed about emergency drills and having infrastructure that is developed to withstand vibrations associated with earthquakes, communities with high literacy rate may still suffer more compared to those with low literacy rate. This is especially when the earthquake was on a scale never experienced before. • For example in Tohoku, Japan in 2010, while strict building codes successfully protected people from collapsed buildings, the earthquake caused a tsunami which not only caused widespread damage to property and infrastructure, it also destroyed the Fukushima nuclear power plant. This worsened the impact as the tsunami led to the failure of the cooling system, resulting in the explosion of the nuclear reactors. The release of toxic gases and exposure to high levels of radiation further put people at risk, which may have long-term impacts on health.

4 'Short term responses to earthquakes are more effective in saving lives than long term responses.'

To what extent is this true? Support your answer with evidence.

[8]

(2014 EGeog)

Para 1	<ul style="list-style-type: none"> ● I agree with the statement. Short term responses are effective in saving lives as these measures are implemented immediately and last for weeks after the occurrence of an earthquake. ● They include searching and rescuing casualties whereby people trapped under collapsed buildings are quickly located and freed. It is effective in saving lives as survivors can also be found after being trapped for even a couple of weeks. ● For example, after the earthquake in Tohoku, Japan in 2011, sniffer dogs and heat sensors were deployed and successfully rescued many who were trapped. ● Short term responses also include providing emergency food and medical supplies. This involves treating the injured and providing them with clean drinking water to prevent dehydration and the spread of diseases. The provision of such immediate aid helps survivors to continue with their lives. Provision of clean drinking water is important in saving lives as otherwise survivors would be affected by water-borne diseases if they have no access to potable water. ● For example, the outbreak of the water-borne disease, cholera, killed almost 4,000 people in the tent cities of Haiti.
Para 2	<ul style="list-style-type: none"> ● However, I disagree with the statement. Long term responses to earthquakes can stretch over months and years and involve rebuilding infrastructure in the affected region. ● Stricter building codes can be developed to ensure infrastructure is restored at a higher safety level than before. ● For example, after the earthquake in Japan in 1995, Japan spent billions developing technology to build more earthquake-resistant buildings. Such buildings are built strong enough to resist the shockwaves produced by the earthquakes and are less likely to collapse, thus effective in preventing lives lost. ● Another long term response includes provision of healthcare to those who had lost their loved ones, homes or jobs after earthquakes. Health options such as long-term counselling are provided as people could have experienced the loss of loved ones, homes or jobs after the earthquake. This can cause long-lasting trauma and may develop problems of anxiety and depression, which could result in them developing suicidal thoughts. Deploying counsellors is effective in saving lives as problems can be identified and addressed early, thus helping these survivors cope better with their grief and to continue with their lives. ● For example, a year after the earthquake in Christchurch, New Zealand, in 2011, significant problems of anxiety and depression were identified and healthcare workers were being deployed to provide counselling to people in the affected area.

* *relate responses to saving lives*

5 'Preparedness measures are the most effective in coping with threats from earthquakes.'

To what extent is this true? Give reasons for your answer.

[8]

(2014 EGeog)

Para 1

Agree

Preparedness measures are strategies that people put in place to cope with the threats of earthquakes. Preparedness measures can reduce the extent of damage and allow populations to survive an earthquake. ...

Land use regulations

- are a set of rules implemented to restrict developments in certain areas.
- For example, in California (USA), all new building developments are not built across fault lines or areas at risk of liquefaction. This is because liquefaction occurs when vibrations from an earthquake cause saturated soil to flow like liquid. The ground becomes unstable and buildings should not be constructed in these areas as it is unsafe. Maps are used to indicate areas at risk of major liquefaction in Memphis (USA).
- Another land use regulation is the prohibition of constructing new buildings on low-lying land which are vulnerable to tsunamis. Developments may be allowed only when protective barriers such as seawalls facing the ocean are constructed. These regulations are commonly implemented along the coasts of Japan and North America where the Pacific Ring of Fire is located.
- Such land use regulations are effective in reducing damage, as there will be fewer buildings and people staying in such high-risk areas. During earthquakes, there will be fewer casualties and less damage to properties.
- However, land use regulations may often need to be carried out in areas which may already be built-up or are privately owned. In some cases, government authorities would buy land from private owners; compensate those who have to move and put into place effective protection measures. But these strategies are costly. Land use regulations may be ineffective due to the cost and the reluctance of private owners to move, as they often believe that another hazard would not happen.

OR

Emergency drills

- are a form of preparedness measures where people practise the steps to take when an earthquake occurs. The intention is to prepare the people mentally on how to react to a disaster.
- Every year since 1960, Japan conducts emergency drills on 1 September to commemorate Disaster Prevention Day. People from all over Japan are involved in this annual event where an earthquake of high magnitude is simulated.
- Emergency drills are effective as they create awareness among the population and reduce the level of panic and irrational behaviour during an event. During an earthquake, people will know how to react and reduce the time taken to evacuate to safety. This leads to faster evacuation and fewer lives lost.
- However, emergency drills are often designed based on the most serious earthquake ever recorded in the area in the past. For example, the earthquake that occurred in Tohoku, Japan, in 2011 was on a scale never experienced

before in Japan, the emergency drills and evacuation plans were inadequate to prevent the devastation of the areas affected by the earthquake. Hence, emergency drills were not always effective. There is also often insufficient time for evacuation as earthquakes are difficult to predict. Lives may still be lost. Under such circumstances, emergency drills may not be very effective in reducing the risks created by earthquakes.

OR

Infrastructure needs to be developed

- with advanced engineering to withstand the vibration associated with an earthquake. Homes, office buildings and factories can be fitted with trip switches that ensure all electrical points are switched off in the event of an earthquake. This helps to prevent fires from breaking out.
- In Japan, machines in many factories automatically shut down when they sense earthquake vibrations. Large underground water tanks found in Tokyo, Kyoto and Kobe in Japan are constructed as emergency reservoirs for possible fire fighting after an earthquake.
- Through such development of infrastructure, there could be fewer lives lost, faster rescue and evacuations, and less money spent on recovery for the affected areas. Hence, it is effective as it helps to mitigate the effects of severe earthquakes.
- However, it is costly to develop such infrastructure. Hence, in less developed countries, they may not have the finances to fund the development of such infrastructure. As a result, the infrastructure may not be able to withstand the effects of a severe earthquake which may eventually lead to more lives lost. Therefore, in these countries, infrastructure development is not very effective in mitigating the effects of earthquakes.

OR

Effective building design

- can reduce the collapse of buildings and minimise the damage caused by earthquakes.
- Buildings can be built using steel and reinforced concrete which are able to withstand earthquakes better than more brittle materials such as non-reinforced concrete. Taipei 101, a building in Taiwan, is made of steel and reinforced concrete.
- Damping devices act as shock absorbers for some of the seismic energy released during an earthquake, Damping devices also act as counterweights which move in the direction opposite to the motion of an earthquake. They prevent a building from swaying too much and collapsing. A damping device is installed in Taipei 101.
- Constructing buildings with wide and heavy bases decreases the likelihood of these buildings from collapsing. For example, the foundation of Taipei 101 is reinforced by heavy metal bars.

- Base isolation bearings made of rubber or cushion can be placed between the ground and the building. These bearings act as a buffer to prevent the building from shaking too much during an earthquake. When an earthquake occurs, base isolation bearings absorb the force of the earthquake and reduce the movements of the building. For example, lead bearings are used at the Sabiha Gokcen Airport in Istanbul.
- However, building designs could be ineffective as constructing buildings that can withstand potential earthquakes adds to the cost of construction and maintenance of buildings. It may also be expensive to convert existing buildings to include earthquake-resistant features.

OR

Technological devices

- such as monitoring and warning systems allow scientists to warn people of the potential hazards so that they can evacuate. Earthquakes can be monitored by studying the history of when and where earthquakes have occurred. This provides an estimation of the frequency and magnitude of earthquakes at particular fault lines. In this way, earthquakes can be predicted. Installing earthquake sensors in earthquake-prone zones helps monitor the frequency of vibrations and detect possible developments of an earthquake.
- Earthquake motion data is gathered from hundreds of observation stations installed on bridges and roads in Japan. These stations monitor ground motion and enable the occurrence of an earthquake to be predicted. Earthquake sensors are also used to quickly estimate danger to bridges, railways or other infrastructure.
- However, monitoring and warning systems have its limitations. Earthquake sensors are expensive to obtain, install and use. An earthquake usually occurs seconds after a warning is sounded. Thus, warnings may not provide sufficient time for an evacuation. Noise, lightning or device failure may also interfere with the seismograph and result in false warnings being given. It is also difficult to give accurate warnings when multiple earthquakes occur close to each other.
- Tsunami monitoring devices help predict tsunamis. They are often linked to warning systems which are activated to warn people about the occurrence of a tsunami.
- For example, a network of pressure sensors, seismographs and deep ocean tsunami detectors are located in Hawaii (USA), to monitor and forecast the path of tsunamis. Such warning systems when activated will allow people to evacuate from coastal areas before the impending tsunamis, thus saving many lives.
- However, deep-ocean tsunami detectors have their limitations. They are prone to giving false alarms when waves are high. There is also limited time to evacuate once an approaching tsunami is detected. Therefore, the use of tsunami detectors may not be effective in reducing the risks created by earthquakes as people may not take the warnings seriously, since many warnings are proven to be false alarms and people may also not be able to escape in time, even if the warning is sounded.

	<p><u>Disagree</u></p> <p>However, preparedness measures are not always the most effective. How people respond to an earthquake can also be effective in coping with threats from earthquakes.</p> <p><u>Searching for and rescuing casualties</u></p> <p>People still trapped under collapsed buildings are quickly located and freed. This is effective as some survivors are saved after being trapped for a couple of weeks without food.</p> <p>For example, after the earthquake in Tohoku (Japan) in 2011, sniffer dogs and heat sensors were deployed and successfully rescued many who were trapped. However, rescue workers only have a limited time of 72 hours to find trapped survivors. Without food and water, people who are trapped are unlikely to survive after 3 days. For example, rescue workers had a limited time of 3 days to rapidly search through 2 towns after the earthquake in Tohoku in 2011.</p> <p style="text-align: center;">OR</p> <p><u>Providing medical aid, food and water</u></p> <p>The injured are treated and clean drinking water is provided to survivors to prevent dehydration and the spread of diseases. The provision of immediate aid helps survivors continue with their lives.</p> <p>For example, after the earthquake in Afyon in 2002, the Turkish Red Crescent Society immediately responded by delivering 20,000 tents, 50,000 blankets and 3,000 heaters to the region.</p> <p>However, medical supplies, food and water may not be sufficient and this may cause social unrest. For example, after the earthquake in Haiti in 2010, looting and fighting broke out as people fought for food and medical supplies.</p> <p><u>Conclusion</u></p> <p>I agree to a small extent that preparedness measures are the most effective. This is because even the best preparedness measures may not be able to minimise the damage caused by earthquakes. Preparedness measures together with the response measures will be more effective in coping with the threats of earthquakes.</p>
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- 6 'Preparedness measures are the most effective ways of mitigating the effects of earthquakes and tsunamis.'

To what extent is the statement true? Give reasons to support your answer.

[8]

(2018 EGeog Qn 6c)

A preparedness measure to mitigate the effects of earthquakes and

Variable weather & changing climate

Tourism

- 1 'Recessions result in greater decline in tourist numbers than unfavourable political situations.'
To what extent do you agree with this statement? Use examples to support your answer. [8]

Para 1	<p>Recessions can cause a decline in tourist numbers.</p> <ul style="list-style-type: none"> • A recession is a period of general slowdown in economic activities. In a recession, many people experience a loss of income or jobs. This decline in income causes people to cut back on spending. This leads to a decline in the demand for goods and services. Therefore, people are less likely to travel overseas during a recession. This results in fewer international tourists. • For example, the Global Financial Crisis (2007 – 2008), which was caused by the crash in housing markets in the USA also affected many countries around the world, causing their economies to slow down or shrink. Europe's top tourist destinations were hit by the Global Financial Crisis. France's number of international visitors dropped nearly one third from its usual 80 million visitors. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • A regional recession, the European Sovereign Debt Crisis (2010) which started when Greece was unable to repay its government debt. Since then, other European countries have also sought help to repay their government debts. The crisis has affected many countries in Europe that used the Euro as their national currency. It caused the collapse of businesses and financial institutions and massive unemployment, resulting in fewer international tourists.
Para 2	<p>Unfavourable political situations can also cause a decline in tourist numbers.</p> <ul style="list-style-type: none"> • Unfavourable political situations such as wars may discourage tourists from visiting. This is because such unrest poses dangers to tourists as well as residents. As a result of political conflicts, tourists may postpone or cancel their travel plans. Due to the danger of conflict, government authorities may also issue travel advisories to discourage their citizens from travelling to a particular country. • For example, most countries banned their citizens from visiting Libya in 2011 as there was a civil war in the country. Many commercial airlines reduced or stopped flying to Libya, thus there were no tourist arrivals by air. When countries experience unfavourable political situations, the number of international tourist arrivals and the tourism revenue drop significantly.
Conc	<p>In conclusion, I agree with the statement to a small extent that recessions result in greater decline in tourist numbers than unfavourable political situations.</p> <ul style="list-style-type: none"> • This is because countries can recover from a recession and tourism can return to normal. Many people will also choose to go for holidays in their own country instead of travelling overseas and this can help boost domestic tourism. • On the other hand, when countries experience wars, their infrastructure would have been lost. It will take a long time to rebuild the infrastructure and for visitors to regain their confidence in the country as a safe place to visit. <p style="text-align: center;">OR</p>

	<p>In conclusion, I agree with the statement to a large extent that recessions result in greater decline in tourist numbers than unfavourable political situations.</p> <ul style="list-style-type: none">• The impact of a global or regional financial crisis is more widespread and they can affect many countries in the region or world, thus causing a greater decline in tourist numbers.• On the other hand, unfavourable political situations are confined only to affected countries, such as Libya and Egypt, thus will only affect tourist arrivals to these countries or people from these countries travelling overseas.
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