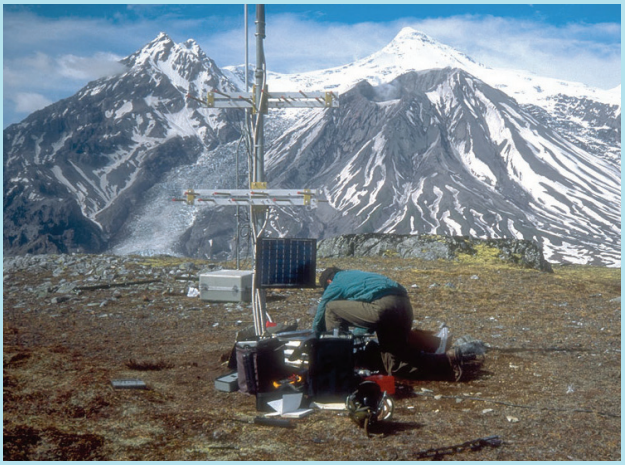
Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)

Earthquake-resistant building

School children in earthquake drill

Gas monitoring equipment



Seismometer

Introducing the question

Students can be introduced to this question using the Kerboodle assessment:
2 On your marks

This will help students to unpick the question and to decide what they should and shouldn't include in their answer.

Using student resources

The student resources for this question are provided on the following pages. These resources provide flexible support for your students in answering the question. They can be printed and copied as required.

continued overleaf

Student resources	Page
Plan your answer This is a planning document to help students decide what to include and how to structure their answer.	3–5
Write your answer This provides an answer sheet for students to complete their answer on paper in class or at home.	6–7
Mark your answer This student-friendly checklist and mark scheme can be used for self- or peer-marking. It can also be used by students in assessing the sample answers.	8–10
Sample answers Five sample answers, at a range of levels, are given. These could be used in a number of ways to demonstrate to students how to maximise their marks for this question.	11–15
Marked sample answers These marked and annotated versions of the five sample answers can be used by students to compare with their own marked sample answers.	16–20

Please note: Students do not automatically have access to the *On your marks* presentation or resources from Kerboodle. If you would like your students to access these resources, or to complete the *On you marks* question on-screen, you will need to assign these to your students in Kerboodle.

Using the Kerboodle Markbook

If you would like to use the Kerboodle Markbook to monitor progress and record student marks for this question, you must assign **2 On your marks** to the students from the assessment tab. Students can type their answer onto the final screen of the presentation and then submit this to the Kerboodle Markbook. Students' marks can then be entered into the Kerboodle Markbook and they will be informed automatically of their mark when they next log in to Kerboodle.

Timing	Spelling, punctuation and grammar (SPaG)
Under exam-style conditions, it should take students around **nine** minutes to complete their answer to this question.	Three additional marks are available for the accuracy of spelling, punctuation, grammar and use of terminology.

Name _____ Class _____

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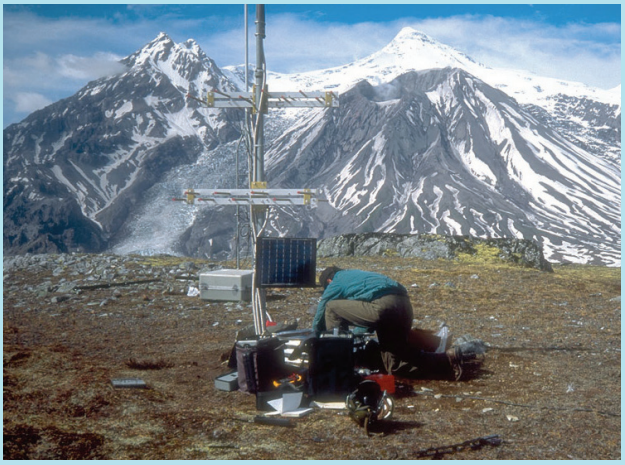
School children in earthquake drill

Gas monitoring equipment



Seismometer

Before attempting to answer the question, remember to BUG it.

- ✓ **B**ox the command word.
- ✓ **U**nderline the following:
  - the **theme**
  - the **focus**
  - any **evidence** required
  - the **number of examples** needed.
- ✓ **G**lance back over the question – to make sure you include everything in your answer.

continued overleaf

Name _____ Class _____

Evidence: Support your answer with information about the methods used in the images and from your own knowledge.

Command word = Consider the evidence and give an informed judgement.

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)

Focus and number of examples: The question refers to more than one strategy, so you must assess more than one strategy.

Theme: This question is related to the theme of Tectonic hazard, assessed in Paper 1, Section A of your exam. The question is compulsory.

Focus: You must consider the reduction of the hazard risk, not just the hazard risk itself.

PEEL your answer

Use **PEEL** notes to structure your answer. This will help you to communicate your ideas to the examiner in the clearest way.

- **Point –** Make two or three points in detail, rather than lots of points in less detail. Don't use bullet points.
- **Explain –** Give reasons by using sentence starters such as: *'This is because …', 'One reason is …'.*
- **Evidence –** Include facts and other details from named examples to back up your point. Each point – with explanation and evidence – should represent a separate PEE paragraph.
- **Link –** To link different points to each other, use PEE sentence starters such as: 'Another important point is …' or 'Of more importance is …'. Make sure your conclusion also links back to the question.

Quality not quantity: You will not be marked simply on the number of points you make, but on the quality of your answer. That means the quality of the content **and** how well you structure your answer.

SPAG

SPaG: Three extra marks are available for spelling, punctuation and grammar for this question. So use your best English writing style and check your answer carefully.

continued overleaf

Name _____ Class _____

Planning grid

Use this planning grid to help you write high-quality paragraphs. Remember to include links to show how your points relate to each other and to the question.

	PEE paragraph 1	PEE paragraph 2	PEE paragraph 3
Point			
Explain			
Evidence			

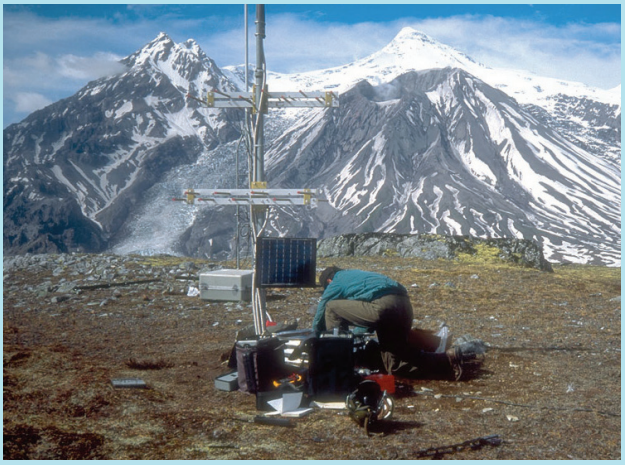
Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)

Earthquake-resistant building

School children in earthquake drill

Gas monitoring equipment



Seismometer

continued overleaf

Name _____ Class _____

Strengths of the answer			
Ways to improve the answer			
Level		**Mark**	

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)

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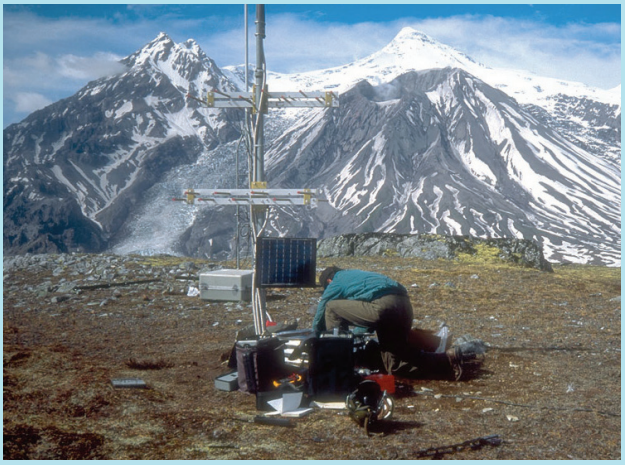


Seismometer

This question is assessing the following assessment objectives (AO).

AO1	Testing your knowledge of the management strategies of monitoring, prediction, protection and planning	3 marks
AO2	Testing your understanding of how these management strategies can reduce tectonic hazard risk	3 marks
AO3	Testing that you can apply your knowledge and understanding to interpret geographical information, including from photographs and diagrams, and come to a reasoned judgement	3 marks

continued overleaf

Name _____ Class _____

1. To help you to identify if the answer includes well-structured PEE paragraphs,, first highlight or underline the:
   - **Points** in **red**
   - **Explanations** in **orange**
   - **Evidence** in **green**
2. Use the mark scheme below to decide what mark to give. You will not be awarding marks for individual points, but will choose a level and a mark based upon the **quality** of the answer as a whole.

Level	Marks	Descriptor	Examples
3 (Detailed)	**7–9**	**AO1:** Shows detailed knowledge of more than one management strategy used to reduce appropriate tectonic hazard risks. **AO2:** Shows thorough understanding of how these management strategies can reduce tectonic hazard risk. **AO3:** Shows thorough use of knowledge and understanding in well-developed points based on the evidence to reach a reasoned judgement.	Seismometers can measure the number and intensity of earthquakes beneath volcanoes. Any increase shows that magma is rising and that there is likely to be an eruption in the near future. Gas emitted from a volcano can change in concentration just before an eruption takes place, so there are gas-monitoring stations on the slopes of many volcanoes, which act as early warning stations. These early warnings that an eruption might happen will give time for an evacuation to take place.
2 (Clear)	**4–6**	**AO1:** Shows clear and accurate knowledge of more than one management strategy used to reduce at least one appropriate tectonic hazard risk. **AO2:** Shows some understanding of how these management strategies can reduce tectonic hazard risk. **AO3:** Shows reasonable use of knowledge and understanding in developed points based on the evidence to reach a reasoned judgement.	Strict building regulations ensure that building and bridges are constructed to resist ground shaking associated with earthquakes. Regular earthquake drills also keep people alert and prepared. Both these things help to protect and prepare people from building collapse.

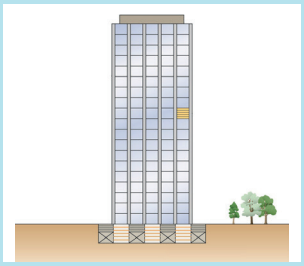
continued overleaf

Name _____ Class _____

Level	Marks	Descriptor	Examples
1 (Basic)	1–3	**AO1:** Shows limited and very general knowledge of the management strategies used to reduce tectonic hazard risk. **AO2:** Shows little understanding of how these management strategies can reduce tectonic hazard risk. **AO3:** Shows limited use of knowledge and understanding in simple basic statements that are not developed and may be purely descriptive. There will be little or no attempt to come to a judgement.	They build buildings that are earthquake proof. They have earthquake drills. They have monitoring equipment. They measure the movement of the Earth.

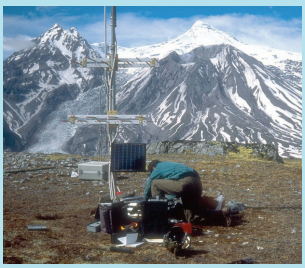
Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)


Earthquake-resistant building


School children in earthquake drill


Gas monitoring system (GPS)


Seismometer

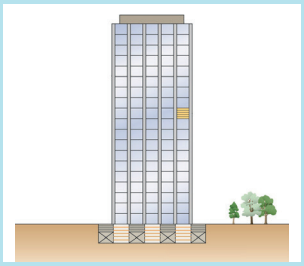
Sample answer 1

If people can be told that a volcano is going to erupt it will give them time to be evacuated. there needs to be a plan to make sure that people can be taken to a place of safety as quickly as possible and away from the lava flows. Prediction is possible, if there are special equipment, such as gas monitors. This measured whether there is any change in gas released from the ground, which happens when magma starts to rise up to the surface. Earthquake proof buildings in Japan are built on shock absorbers so the building does not fall down when the ground starts shaking in an earthquake. Schools have earthquake drills. Seismometers measure earthquakes and show how strong they are. Scientists use the history of past hazards to try and predict when there may be another one. Earthquakes are getting closer to Istanbal so scientists believe the city will have an earthquake before long.

Strengths of the answer			
Ways to improve the answer			
Level		**Mark**	

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)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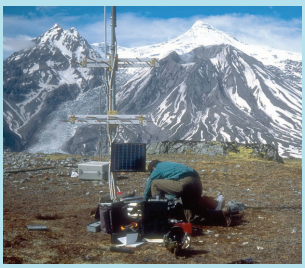

Seismometer

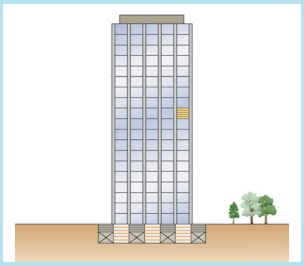
Sample answer 2

The equipment in the photographs and diagram show what can be done to monitor when an earthquake or a volcanic eruption is likely to take place. Information can be given telling people what to do should an earthquake take place. A earthquake is often followed by aftershocks, when buildings are already damaged may fall down. It is important that people are kept away from damaged buildings so people are kept at a safe distance. Buildings are built into solid rock to make them less likely to collapse. There are often rubber shock absorbers to absorb the earthquake shocks. People have well-practised earthquake drills to help reduce the danger of being injured by the earthquake. Regular earthquake drills help people to keep alert and be prepared.

Strengths of the answer			
Ways to improve the answer			
Level		**Mark**	

Name _____ Class _____

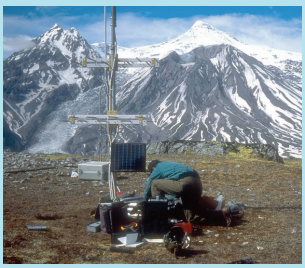
Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)



Earthquake-resistant building

School children in earthquake drill

Gas monitoring system (GPS)



Seismometer

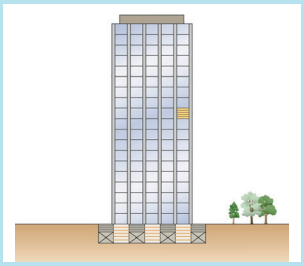
Sample answer 3

Protection involves building earthquake strong buildings. Their are good roads to get to hospital. Use is made of fire-resistant materials. Monitoring is shown by seismographs recording earthquakes. Gas instruments detect gases. Walls can divert larva away from buildings. Prediction tries to say where and when a tectonic event will happen. People can learn what to do when there is an earthquake. There are earthquake drills. Richer countries are often successfuller in reducing the impact of earthquakes.

Strengths of the answer			
Ways to improve the answer			
Level		**Mark**	

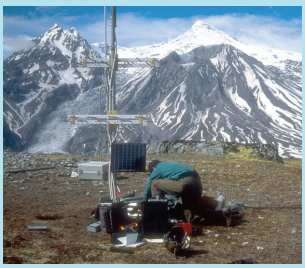
Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)


Earthquake-resistant building


School children in earthquake drill


Gas monitoring system (GPS)


Seismometer

Sample answer 4

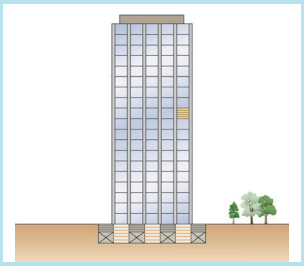
In California there are monitors all along the San Andreas Fault, which can show when there is increased earthquake activity. The aim is to give people time to evacuate or find some kind of protection. There are well-developed earthquake drills taught in schools and people have a list of procedures to carry out if they are in their home. Buildings are constructed with steel frames that can bend during earth movements so that they are less prone to collapse. The buildings have automatic window shutters to prevent glass falling.

The seismometer is a piece of equipment that picks up on the vibrations in the earth. Scientists can use them to work out the exact location of an earthquake by studying different types of seismic waves. Remote sensing from satellites detect heat and changes to the volcano's shape, which happens when there is to an eruption in the near future. On the slopes of Mt Etna in Italy they have used earth embankments or explosives to divert lava away from buildings.

Strengths of the answer			
Ways to improve the answer			
Level		**Mark**	

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)


Earthquake-resistant building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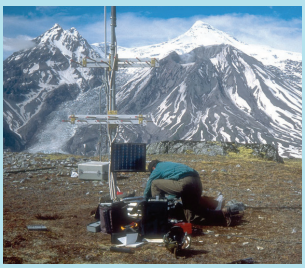
Gas monitoring system (GPS)


Seismometer

Sample answer 5

Building earthquake resistant buildings can reduce the risk from a tectonic hazard. These are built with deep foundations with rubber shock absorbers and concrete reinforced with steel. They are designed to twist and sway, have sprinkler systems and gas cut off valves.

Emergency plans can be drawn up, and supplies such as bottled water, medicines tinned food etc. can be stockpiled by individuals or stored in safe places in the local area. Earthquake drills are held to practice what to do in the event of an earthquake such as the one held in Japan on 1 September every year.

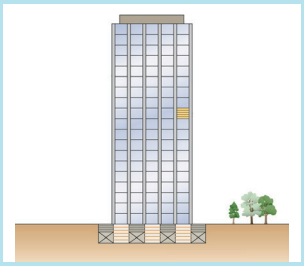
As tsunamis occur in the Pacific Ocean there are data collecting devices to give warnings of such an event. They are also being built in the Indian Ocean.

All these methods contribute to making areas less likely to suffer from tectonic hazards.

Strengths of the answer			
Ways to improve the answer			
Level		**Mark**	

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)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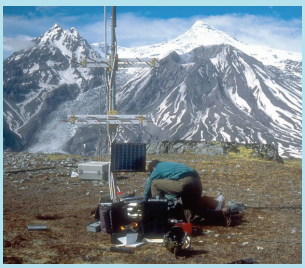

Seismometer

Sample answer 1

If people can be told that a volcano is going to erupt it will give them time to be evacuated. there needs to be a plan to make sure that people can be taken to a place of safety as quickly as possible and away from the lava flows. Prediction is possible, if there are special equipment, such as gas monitors. This measured whether there is any change in gas released from the ground, which happens when magma starts to rise up to the surface. Earthquake proof buildings in Japan are built on shock absorbers so the building does not fall down when the ground starts shaking in an earthquake. Schools have earthquake drills. Seismometers measure earthquakes and show how strong they are. Scientists use the history of past hazards to try and predict when there may be another one.
Earthquakes are getting closer to Istanbal so scientists believe the city will have an earthquake before long.

Point: Clearly recognises the focus of the question. Developed in the next sentence.

Evidence: Links equipment in the photograph to a named strategy.

Evidence: Uses own knowledge to explain what a gas monitor does. Could have been developed to explain how it can reduce the hazard risk.

Point: Identifies a second strategy (planning).

Point: Not developed.

Evidence: Uses own knowledge.

Explanation: Does not explain clearly enough how prediction can reduce the hazard risk.

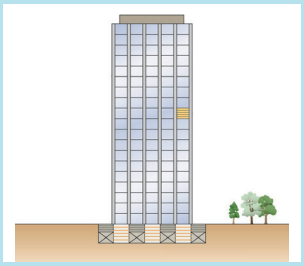
Feedback: This answer makes many clear points but more need to be developed to show how the strategies relate to the aim of reducing the hazard risk. There is not enough assessment, as required by the command word 'assess'.

Spelling and punctuation are used with considerable accuracy, but some errors do occur (see underlined text). Some grammatical errors are included, such as the overuse of commas, but the rules of grammar are used with general control of meaning.

Level = 2 **Marks = 6** **SPaG = 2**

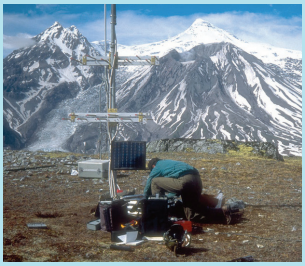
Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)


Earthquake-resistant building


School children in earthquake drill


Gas monitoring system (GPS)


Seismometer

Sample answer 2

The equipment in the photographs and diagram show what can be done to monitor when an earthquake or a volcanic eruption is likely to take place. Information can be given telling people what to do should an earthquake take place. A earthquake is often followed by aftershocks, when buildings are already damaged may fall down. It is important that people are kept away from damaged buildings so people are kept at a safe distance. Buildings are built into solid rock to make them less likely to collapse. There are often rubber shock absorbers to absorb the earthquake shocks. People have well-practised earthquake drills to help reduce the danger of being injured by the earthquake. Regular earthquake drills help people to keep alert and be prepared.

Evidence: Refers to the images, linked to a named strategy.

Point: Relates to another strategy (planning).

Explanation: An attempt to explain how strategies can reduce risk.

Explanation: Successfully explains how strategies can reduce risk.

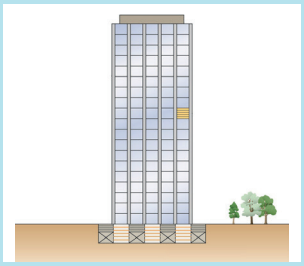
Feedback: This answer goes beyond simple basic statement, with some clear explanation. However, it needs more development and clarity to reach the top of the level.

Spelling and punctuation are used with considerable accuracy, but some mistakes occur (see underlined text). Sentence construction could be improved in places to improve clarity, but the rules of grammar are used with general control of meaning.

Level = 2 **Marks = 5** **SPaG = 2**

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)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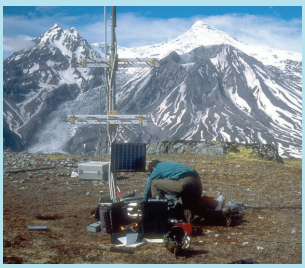

Seismometer

Sample answer 3

Protection involves building earthquake strong buildings. Their are good roads to get to hospital. Use is made of fire-resistant materials. Monitoring is shown by seismographs recording earthquakes. Gas instruments detect gases. Walls can divert larva away from buildings. Prediction tries to say where and when a tectonic event will happen. People can learn what to do when there is an earthquake. There are earthquake drills. Richer countries are often successfuller in reducing the impact of earthquakes.

Point: Identifies one type of strategy.

Points: Not related enough to each other or to the question.

Evidence: Uses the images.

Evidence: Uses own knowledge and identifies two more strategies (prediction and planning), but not developed to explain how the strategies reduce hazard risk.

Point: Irrelevant to the question.

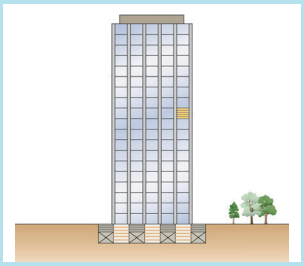
Feedback: Basic answer. None of the points are developed to explain or asses how strategies are used to reduce risk.

Spelling and punctuation are used with reasonable accuracy, but a number of mistakes are included (see underlined text). The rules of grammar are used with some control of meaning and the errors do not significantly hinder meaning. Only a limited range of specialist terms are included.

Level = 1 **Marks = 3** **SPaG = 1**

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)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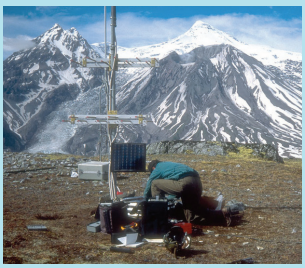

Seismometer

Sample answer 4

In California there are monitors all along the San Andreas Fault, which can show when there is increased earthquake activity. The aim is to give people time to evacuate or find some kind of protection. There are well-developed earthquake drills taught in schools and people have a list of procedures to carry out if they are at home. Buildings are constructed with steel frames that can bend during earth movements so that they are less prone to collapse. The buildings have automatic window shutters to prevent glass falling. Monitoring like this, preparations and building earthquake-proof buildings, can reduce the risks produced by earthquakes.

The seismometer is a piece of equipment that picks up on the vibrations in the earth. Scientists can use them to work out the exact location of an earthquake by studying different types of seismic waves. Remote sensing from satellites detect heat and changes to the volcano's shape, which happens when there is to an eruption in the near future. On the slopes of Mt Etna in Italy they have used earth embankments or explosives to divert lava away from buildings. Both these strategies can reduce the risks from volcanoes.

Evidence: Uses the images and a named location.

Explanation: Explains how strategy can be used to reduce risk.

Points: Further detail on strategies, but **how** these reduce risk needs to be clearer.

Point: Attempts a judgement and links back to the question.

Evidence: Uses the images and own knowledge.

Point: Another strategy but needs clear link to risk reduction.

Point: Attempts a link to risk reduction.

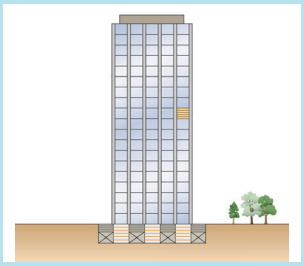
Feedback: Overall, this answer addresses the question well and is worthy of the highest level. However, some points could have been developed more fully to explain how strategies reduce risk.

Spelling and punctuation are used with consistent accuracy. The rules of grammar are used with effective control of meaning. A wide range of specialist terms are used.

Level = 3 **Marks = 8** **SPaG = 3**

Name _____ Class _____

Using the images and your own knowledge, assess how management strategies can be used to reduce tectonic hazard risk. (9 marks)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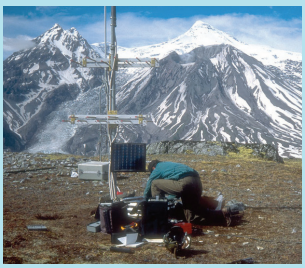
School children in earthquake drill


Gas monitoring system (GPS)


Seismometer

Sample answer 5

Building earthquake resistant buildings can reduce the risk from a tectonic hazard. These are built with deep foundations with rubber shock absorbers and concrete reinforced with steel. They are designed to twist and sway, have sprinkler systems and gas cut off valves.

Emergency plans can be drawn up, and supplies such as bottled water, medicines tinned food etc. can be stockpiled by individuals or stored in safe places in the local area. Earthquake drills are held to practice what to do in the event of an earthquake such as the one held in Japan on 1 September every year.

As tsunamis occur in the Pacific Ocean there are data collecting devices to give warnings of such an event. They are also being built in the Indian Ocean.

All these methods contribute to making areas less likely to suffer from tectonic hazards.

Explanation: Could be clearer if the strategy of building special buildings was **followed** by the point linking them to reducing risk.

Points: Further detailed strategies, making good use of own knowledge. Need to explain how they can reduce risk.

Evidence: Uses own knowledge and a named location.

Explanation: Attempt to relate another strategy to reducing hazard risk.

Point: Effective conclusion, linking back to the question.

Feedback: This answer delivers clear, detailed information but does not explain effectively enough how strategies reduce risk. It concludes with an effective judgement.

Spelling and punctuation are used with considerable accuracy, but some errors do occur (see underlined text). Sentence construction could be improved in places, but the rules of grammar are used with general control of meaning. A good range of specialist terms are used appropriately.

Level = 2 **Marks = 4** **SPaG = 2**