1.10 Tectonic Hazards: 30-minute Pack

AQA 8035 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 State whether each response to an earthquake below is an IMMEDIATE response (in the hours/days after) or a LONG-TERM response (over the following months/years).

(a) Search and rescue teams pull survivors from collapsed buildings. **(1)**

(b) Damaged roads and buildings are rebuilt to a higher standard. **(1)**

(c) Emergency food, water and shelter are provided to survivors. **(1)**

(d) Building codes are updated and enforced for future construction. **(1)**

(Total for Question 1 is 4 marks)

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2 This question is about basic tectonic vocabulary.

(a) State what is meant by a tectonic plate. **(1)**

(b) State what is meant by the focus of an earthquake. **(1)**

(c) State what is meant by the epicentre of an earthquake. **(1)**

(d) State what is meant by magma. **(1)**

(Total for Question 2 is 4 marks)

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3 State one difference between a shield volcano and a composite (strato) volcano.

(Total for Question 3 is 2 marks)

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4 The table below compares the Nepal earthquake (2015) with the Christchurch, New Zealand earthquake (2011).

Feature	Nepal (2015)	Christchurch, New Zealand (2011)
Level of development	LIC	HIC
Magnitude	7.8	6.3
Deaths	almost 9,000	185
Homes and buildings	hundreds of thousands of homes destroyed or damaged	severe damage in the city centre, including many businesses, mainly due to liquefaction

(a) Using the table, describe TWO differences between the effects of the two earthquakes. **(4)**

(b) Suggest THREE reasons why the death toll from the Nepal earthquake was much higher than from the Christchurch earthquake, apart from the difference in magnitude. **(3)**

(Total for Question 4 is 7 marks)

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5 'The effects of, and responses to, a tectonic hazard depend mainly on the level of development of the country affected.' Assess the extent to which you agree with this statement.

(Total for Question 5 is 8 marks)

6 Explain how monitoring and prediction can reduce the risk to people from a volcanic eruption.

(Total for Question 6 is 4 marks)

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Mark scheme · 1.10 Tectonic Hazards: 30-minute Pack

Question 1

(a) immediate response **B1**

(a) Answer: Immediate response.

(b) long-term response **B1**

(b) Answer: Long-term response.

(c) immediate response **B1**

(c) Answer: Immediate response.

(d) long-term response **B1**

(d) Answer: Long-term response.

Question 2

(a) a large section of the Earth's rigid outer layer (the lithosphere), oe **B1**

(a) Answer: A large section of the Earth's rigid outer layer (the lithosphere).

(b) the point underground where the earthquake originates (where the rocks fracture), oe **B1**

(b) Answer: The point underground where the earthquake originates.

(c) the point on the Earth's surface directly above the focus, oe **B1**

(c) Answer: The point on the Earth's surface directly above the focus.

(d) molten (liquid) rock found beneath the Earth's surface, oe **B1**

(d) Answer: Molten (liquid) rock found beneath the Earth's surface.

Question 3

shield volcanoes have gently sloping sides, built from thin, runny lava that flows a long way before it sets, oe **B1**

composite volcanoes have steep sides, built from alternating layers of thick, sticky lava and ash, which do not flow far before they set, oe **B1**

Answer: Shield volcanoes have gentle slopes from thin, runny lava; composite volcanoes have steep sides built from alternating layers of thick lava and ash.

Question 4

(a) difference 1 identified, e.g. Nepal's earthquake killed far more people (almost 9,000) than Christchurch's (185), oe **B1**

(a) supported with data from the table, oe **B1**

(a) difference 2 identified, e.g. Nepal had hundreds of thousands of homes destroyed or damaged, whereas Christchurch had severe city-centre damage, including many businesses, mainly due to liquefaction, oe **B1**

(a) supported with data from the table, oe **B1**

(a) Answer: Nepal's earthquake killed almost 9,000 people compared with 185 in Christchurch. In Nepal, hundreds of thousands of homes were destroyed or damaged, whereas Christchurch suffered severe city-centre damage, including many businesses, mainly due to liquefaction.

(b) a valid reason, e.g. Nepal is an LIC, with fewer resources for earthquake-resistant building design and less strict enforcement of building codes (or, in comparison, Christchurch had stricter building codes), oe **B1**

(b) a second, different valid reason, e.g. Nepal's mountainous, rural terrain made rescue and aid delivery slower and harder to reach, oe **B1**

(b) a third, different valid reason, e.g. Christchurch (a HIC) had better-resourced emergency services and hospitals and better preparedness, which reduced deaths; accept any other valid reason, e.g. landslides and avalanches in Nepal's mountains, or poorer healthcare, oe **B1**

(b) Answer: Nepal is a lower-income country with fewer resources for earthquake-resistant buildings and building-code enforcement; its mountainous, rural terrain made search, rescue and aid delivery much slower than in the wealthier, more accessible city of Christchurch; and Christchurch had better-resourced emergency services and hospitals and better preparedness, which reduced deaths.

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Question 5

Level 4 A detailed, well-balanced assessment that uses accurate, detailed reference to named examples; reaches a clear, justified conclusion about the extent to which development level explains the differences in effects and responses, while also considering other relevant factors (e.g. magnitude, depth, distance from population centres).	**7-8**
Level 3 A clear assessment that uses accurate reference to at least one named example in some detail; a conclusion is reached, though the balance of the argument (development versus other factors) may be less developed.	**5-6**
Level 2 Some relevant comparison is made, with limited or generalised use of named examples; a simple conclusion is given with little justification.	**3-4**
Level 1 One or two isolated relevant points about tectonic hazards are made, with little or no use of named examples or comparison.	**1-2**
Level 0 No relevant content.	**0**

Indicative content:

- Nepal (2015, LIC): almost 9,000 deaths and hundreds of thousands of homes destroyed or damaged; mountainous terrain and limited resources slowed rescue and aid delivery.
- Christchurch, New Zealand (2011, HIC): 185 deaths despite severe city-centre damage; strict building codes, insurance and well-resourced emergency services limited the death toll.
- Supports the statement: development strongly affects building quality, code enforcement, emergency response capacity, and how quickly aid and rescue can reach people.
- Challenges the statement: Nepal's earthquake (magnitude 7.8) was much larger than Christchurch's (magnitude 6.3), and factors like depth and distance from population centres also affect the outcome, not just development.
- Christchurch still took years to rebuild fully because of funding and insurance disputes, showing that even HICs face long-term recovery challenges.
- A well-balanced answer weighs development level against these other physical factors before reaching a supported judgement.

Question 6

scientists use seismometers to detect small earthquakes (tremors) caused by rising magma, oe	**B1**
they measure ground deformation/tilt, which can show the ground swelling as magma rises, oe	**B1**
they monitor gas emissions (e.g. sulfur dioxide), which can increase before an eruption, oe	**B1**
if these signs suggest an eruption is becoming likely, the area can be evacuated in advance, saving lives, oe	**B1**

Answer: Scientists monitor tremors, ground deformation and gas emissions; if these show an eruption is becoming likely, the area can be evacuated in time to save lives.

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