

SUPERVISOR'S USE ONLY

91191



Level 2 Earth and Space Science, 2012

91191 Demonstrate understanding of the causes of extreme Earth events in New Zealand

2.00 pm Tuesday 27 November 2012 Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of the causes of extreme Earth events in New Zealand.	Demonstrate in-depth understanding of the causes of extreme Earth events in New Zealand.	Demonstrate comprehensive understanding of the causes of extreme Earth events in New Zealand.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL

You are advised to spend 60 minutes answering the questions in this booklet.

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QUESTION ONE: EARTHQUAKES IN HAWKE'S BAY

More than 160 years of written records show that Hawke's Bay is one of the most seismically active regions of New Zealand. Over this time the Hawke's Bay area has been subjected to a number of high-magnitude earthquakes.

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http://julians rock and iceblog.blogspot.com/2011/05/wellingtons-stuck-plate-boundary.html

Explain in detail why Hawke's Bay in particular, is regularly rocked by high-magnitude earthquakes.

In your answer you should include:

- the nature and composition of the tectonic plates
- the type of plate boundary and its depth in the Hawke's Bay area
- why high-magnitude earthquakes occur in **this** area of New Zealand.

You may wish to include a labelled diagram in your answer.

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QUESTION TWO: AUCKLAND'S HOT SPOT VOLCANOES

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Auckland is built upon a volcanic field. There are around 50 volcanoes in the area, and each erupts from **one basaltic magma source**. Not all of Auckland's volcanoes look the same. Lake Pupuke and Mount Eden (pictured below) show two clearly different volcanic forms.

Both of these volcanoes have been affected by human settlement, but it is still possible to clearly see the form of each.

Mount Eden Lake Pupuke For copyright reasons, this resource cannot For copyright reasons, this resource cannot be reproduced here. be reproduced here. www.sciencelearn.org.nz/Contexts/Volcanoes/ www.sciencelearn.org.nz/Contexts/Volcanoes/ Sci-Media/Images/Lake-Pupuke Sci-Media/Images/Mt-Eden Compare and contrast the **volcanic formations** of Lake Pupuke and Mount Eden. In your answer you should include: an explanation of how Lake Pupuke formed from a basaltic volcanic eruption under the sea an explanation of how Mount Eden formed from a basaltic volcanic eruption on land a comparison of the degree of explosiveness of the eruptions a comparison of the different shapes of the two basaltic volcanoes. You may wish to use a labelled diagram in your answer.

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QUESTION THREE: THE TSUNAMI RISK FROM A PUYSEGUR TRENCH EARTHQUAKE

Puvsegur Trench Area

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Fiordland landslide

The Alpine Fault continues down through the South Island and extends under the Tasman Sea as the Puysegur Trench. Movement along the fault line can cause earthquakes to occur.

In 2003, a magnitude 7.2 earthquake struck Fiordland and caused two different types of tsunami to occur. One of these was due to landslides in the fiords.

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http://earthobservatory.nasa.gov/IOTD/view.php?id=39415&src=eoa-iotd	www.geonet.org.nz/var/storage/images/media/images/news/2003/fiordland-quake-200-02-1/50801-1-eng-GB/fiordland-quake-200-02-1.jpg
Explain how earthquakes cause landslides into the sea and why the Your answer should include: tectonic plate movement and landslide formation an explanation of how a tsunami is formed the energy transmission from the plate movement the size of generated tsunamis.	ais can result in tsunamis.

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		Extra paper if required.	
QUESTION NUMBER		Write the question number(s) if applicable.	