Assessment schedule: practice paper 2026

AS 91191 Demonstrate understanding of the causes of extreme Earth events in New Zealand · Vertex Academy practice paper, not an NZQA paper

QUESTION ONE

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	focus: the point underground where the rock first breaks epicentre: the point on the surface directly above the focus stored strain energy is released as seismic waves seismic waves spread out in all directions through the rock	Describes the focus as the point underground where the rupture starts AND the epicentre as the point on the surface directly above it. Describes the energy travelling outward from the focus as seismic waves.		
(b)	magnitude: energy released at the source intensity: strength of shaking at one place near the faults the waves still carry most of their energy further away the waves spread out and lose energy as heat soft sediment can increase the shaking	Describes magnitude as the energy released AND intensity as the shaking or damage at a location.	Explains that intensity falls with distance because seismic waves spread out and lose energy as they travel, OR explains that soft ground can increase the shaking.	
(c)	steep slopes from uplift, fractured and weathered rock gravity pulls downhill, friction holds shaking on thousands of slopes at once landslides block rivers dam is loose debris dam failure releases the lake at once rain and aftershocks raise the risk	Describes steep slopes or weak rock. Describes shaking causing material to move downhill. Describes a landslide blocking a river and water building up behind it.	Explains how shaking overcomes friction on steep slopes. Explains why a landslide dam can fail (loose material eroded by seepage or overtopping).	Discusses why so many landslides happened, linking slope, rock strength and shaking, AND discusses the downstream hazard of dam failure, including why the risk continues after the earthquake.

QUESTION TWO

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	Pacific Plate and Australian Plate Pacific Plate: oceanic crust, thin and dense Australian Plate: continental crust, thicker and less dense plates move together	Names the Pacific and Australian plates. Describes the Pacific Plate as oceanic AND the Australian Plate as continental. Describes the Pacific Plate subducting under the Australian Plate.		
(b)	dense oceanic plate subducts water released into the hot mantle partial melting basaltic magma is less dense melts silica-rich continental crust andesitic magma: intermediate silica, viscous, gas-rich	Describes the Pacific Plate subducting. Describes water lowering the melting point. Describes magma rising because it is less dense. Describes andesite as intermediate in silica.	Explains how water released from the subducting plate causes partial melting to form basaltic magma, OR explains how melting silica-rich continental crust changes basaltic magma into andesitic magma.	
(c)	dense Pacific Plate subducts under the Australian Plate water lowers the melting point melts silica-rich crust explosive ash eruptions and short thick lava flows summit crater fills ash dam from earlier eruptions holds back the lake dam fails no subduction, no andesite, no steep cone or crater lake, no ash dam	Describes subduction of the Pacific Plate. Describes andesitic magma as sticky or gas-rich. Describes a stratovolcano as steep, built of layers. Describes a lahar as a flow of water, ash and rock.	Explains how subduction produces andesitic magma, OR explains how andesitic eruptions build a steep stratovolcano, OR explains how the failure of the ash dam caused the lahar.	Discusses the whole chain, linking subduction, andesitic magma, the stratovolcano and crater lake, and the ash dam failure to the lahar hazard, with evidence from the resource.

QUESTION THREE

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)

(a)	caused by a sudden push on a large volume of water moves the whole water column, sea floor to surface very long wavelength, many minutes between waves wind wave: surface water only, short wavelength, seconds between waves	Describes a tsunami as caused by a sudden displacement of water. Describes it moving the whole water column. Describes a long wavelength or high speed. Describes a difference from a wind wave.		
(b)	speed depends on depth sea floor rises near the coast the back catches up same energy in a shorter, slower wave	Describes the tsunami slowing in shallow water. Describes the wavelength getting shorter. Describes the height increasing near the coast.	Explains that speed depends on depth so the front slows first and the waves bunch up, OR explains that the same energy in a shorter, slower wave makes the wave taller.	
(c)	Hikurangi source just offshore South American source across the Pacific distant: time to measure, warn and evacuate local: may be no time for an official warning or sirens a long or strong earthquake is the natural warning move to high ground at once	Describes a local tsunami arriving sooner. Describes a distant tsunami allowing time for warnings. Describes a long or strong earthquake as a warning sign.	Explains that the short distance from Hikurangi means the tsunami arrives before an official warning can be given, OR explains why the shaking itself must be treated as the warning.	Discusses why a local tsunami is more dangerous than a distant one, linking distance, travel time and warning time, AND justifies acting on a long or strong earthquake without waiting.

Judgement for each question

N0	N1	N2	A3	A4	M5	M6	E7	E8
No response, or nothing relevant.	One Achievement point, partly described.	Two Achievement points.	Three Achievement points.	Four Achievement points.	One Merit point.	Two Merit points.	One Excellence point, with a minor error or omission.	One Excellence point, complete.

Grade score out of 24 (each question's grade: N0 = 0 to E8 = 8): Not Achieved 0 to 6, Achieved 7 to 12, Merit 13 to 18, Excellence 19 to 24 (the 2025 exam's cut scores).