Level 2 Earth and Space Science: practice paper 2026

AS 91193 Demonstrate understanding of physical principles related to the Earth System · Vertex Academy practice paper, not an NZQA paper

Attempt ALL the questions. Show ALL working. Write your answers on lined paper, or in the space under each question.

QUESTION ONE

(a) Heat from inside the Earth drives the movement of its tectonic plates.
Describe where the Earth's internal heat comes from, and describe the three ways heat can be transferred.

(b) Rock in the mantle is solid, but over millions of years it flows very slowly in convection currents.
Explain how heat from the core sets up a convection current in the mantle. Include density in your answer.

(c) Near Antarctica, sea water becomes very cold, and when sea ice forms it leaves most of its salt behind in the water underneath. This water sinks to the ocean floor and spreads north along the bottom of the oceans, as far as the North Pacific.
Discuss why this water sinks, and how its sinking helps move heat around the Earth.

QUESTION TWO

(a) Describe how the Sun heats the Earth's surface during the day, and describe how the surface loses heat at night.

(b) On a sunny summer afternoon, a cool wind blows off the sea onto Auckland's west coast beaches, though the morning was calm.
Water's specific heat capacity is about five times that of dry sand.
Explain why the land heats faster than the sea, and how this causes the sea breeze.

(c) Alexandra is inland in Central Otago. Dunedin is on the coast. The table shows NIWA's median temperatures for the coldest and warmest hour of the day.

Discuss why Alexandra's daily temperature range is about twice Dunedin's, in both summer and winter.

Place	January coldest	January warmest	July coldest	July warmest
Alexandra	12.3 °C	22.4 °C	−1.1 °C	7.8 °C
Dunedin	12.5 °C	17.0 °C	5.3 °C	9.6 °C

QUESTION THREE

(a) White sunlight is made of the colours of the visible spectrum.
Describe the order of the colours, and describe how their wavelength and frequency change across the spectrum.

(b) On a clear day the sky is blue, though sunlight is white.
Explain why the sky looks blue. Include wavelength and scattering in your answer.

(c) At midday the sky over Muriwai is blue. At sunset the Sun looks orange-red, and on smoky days it can look deep red.

Discuss why the colour of the sky and the Sun changes from midday to sunset. Include wavelength and scattering in your answer.

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