

91193



SUPERVISOR'S USE ONLY

Level 2 Earth and Space Science, 2016

91193 Demonstrate understanding of physical principles related to the Earth System

2.00 p.m. Thursday 10 November 2016 Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of physical principles related to the Earth System.	Demonstrate in-depth understanding of physical principles related to the Earth System.	Demonstrate comprehensive understanding of physical principles related to the Earth System.

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.

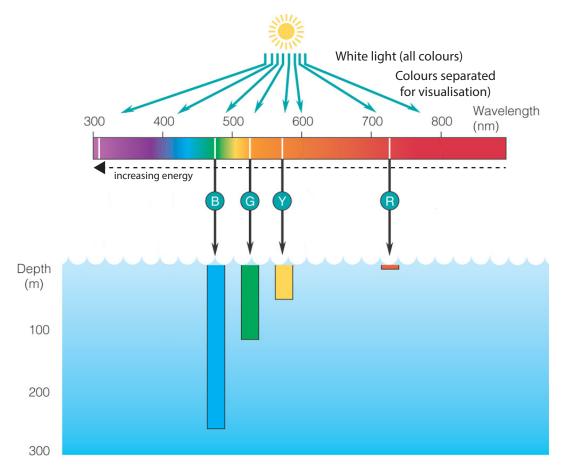
If you need more room for any answer, use the extra space provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–11 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

QUESTION ONE: OCEAN LIGHT



Adapted from: https://scholarsandrogues.com/2013/05/09/csfe-heat-capacity-air-ocean/

Use the diagram above to help explain why blue light travels further in water compared with red light.

Refer to wavelength, energy, absorption, and scattering of the blue and red light in your answer.			

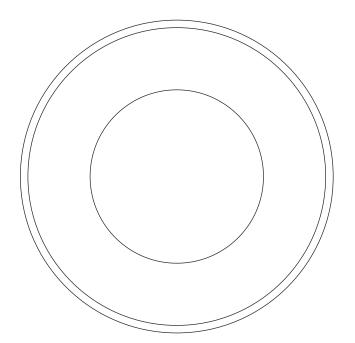
ASSESSOR'S USE ONLY
USE ONLY

QUESTION TWO: GEOTHERMAL POOLS

New Zealand is home to geothermal pools such as the world famous champagne pool in Rotorua, pictured on the right. The waters in these pools can reach boiling point.

Explain how geothermal pools form from heat within the Earth, how this heat is transferred through the layers of the Earth, and how this results in heating of groundwater.

An annotated diagram, using the template provided, will assist your answer.





ASSESSOR'S USE ONLY

More space for this answer is available on the following page.

ESSOR'S

This page has been deliberately left blank.

The examination continues on the following page.

QUESTION THREE: QUEENSTOWN IN WI	NTER AND SUMMER	ASSESSOR'S USE ONLY
Across Queenstown towards the Remarkables Mountain Range in winter. http://travel.stackexchange.com/questions/5593/which-side-of-the-plane-to-sit-on-an-auckland-akl-to-queenstown-zqn-flight	A similar view in summer. www.rajivmundayat.com/p902274080/h3E64B3DE#h3e64b3de	
Explain how solar radiation is absorbed, transmitt darker mountain rock at different times of the yea		
Use this information to compare and contrast the	overall heat energy reflected back into space.	

ASSESSOR'S
ASSESSOR'S USE ONLY

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

		Extra paper if required.	ASSESSOR'S	s
QUESTION NUMBER		Write the question number(s) if applicable.	USE ONLY	
NUMBER			J	