S

SUPERVISOR'S USE ONLY

93104





QUALIFY FOR THE FUTURE WORLD

KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Tick this box if you have NOT written in this booklet

# Scholarship 2022 Earth and Space Science

Time allowed: Three hours Total score: 24

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 answer ALL the guestions in this booklet.

Pull out Resource Booklet 93104R from the centre of this booklet.

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

Check that this booklet has pages 2–16 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (
). This area may be cut off when the booklet is marked.

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

Question	Score
ONE	
TWO	
THREE	
TOTAL	

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#### **QUESTION ONE: WILDFIRE EFFECTS**

Discuss the effect wildfires have on the climate, both short term and long term. Contrast this to a moderate volcanic eruption such as Mount Pinatubo.  Analyse how wildfires and volcanic eruptions can be affected by human interactions, including management of the environment and impacts of human populations.		

#### **QUESTION TWO: AN UNEXPECTED BALANCE**

Carbon dioxide and methane are the greenhouse gases with the largest worldwide focus	s. There is
much research on the emission and absorption of the greenhouse gases carbon dioxide	and methane.

Discuss possible reasons why New Zealand has higher than expected carbon absorption from intact mature native forest, and its importance. Analyse why the placement of the new monitoring stations is important for the study of New Zealand's carbon balance, and any future initiatives that might come from these placements.		

#### **QUESTION THREE: KUIPER BELT OBJECTS**

The size and composition of the larger Kuiper Belt objects have been determined using changes in their albedos during their orbit.

shapes of their orbits. Furthermore, discuss the effect that Neptune has on the orbits of hot and cold classical Kuiper Belt objects.			

## Extra space if required. Write the question number(s) if applicable.

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