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SUPERVISOR'S USE ONLY

NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Scholarship 2019
Earth and Space Science

9.30 a.m. Monday 2 December 2019
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.

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

You should answer 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.

Check that this booklet has pages 2–16 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.

Question	Score
ONE	
TWO	
THREE	
TOTAL	/24

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QUESTION ONE: TUNDRA – A MELTING LANDSCAPE

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Use the information provided on pages 2 and 3 of your resource booklet to answer this question.

Analyse and discuss the effects of climate change on the tundra and permafrost found in and around the Arctic Circle, as well as the possible flow-on effects globally.

Also consider the advantages and disadvantages surrounding the possible exploitation of the methane gas found in these regions.

Well-labelled diagrams may assist your answer.

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QUESTION TWO: MASS EXTINCTION

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Use the information provided on pages 4 and 5 of your resource booklet to answer this question.

Summarise the evidence for a large asteroid colliding with the Earth 65 million years ago. Analyse how these events contributed to mass extinction and the breakdown of global systems.

In your discussion, detail why it is important that past mass extinction events are studied.

Well-labelled diagrams may assist your answer.

ASSESSOR'S USE ONLY

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QUESTION THREE: AURORAS ON GANYMEDE

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Use the information provided on pages 6 and 7 of your resource booklet to answer this question.

Analyse why Ganymede has a magnetic field, when other planets and moons in the solar system do not.

Give a possible reason why Ganymede's auroras are very large for a solar body with a magnetic field of its size.

What information about Ganymede's composition can we gain from the wobbling of the auroras and how they may change over large passages of time?

(A detailed explanation of the physics behind the formation of auroras is not required.)

Well-labelled diagrams may assist your answer.

ASSESSOR'S USE ONLY

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

QUESTION NUMBER

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