**Earth, Sun and Moon (answers)**

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| Instructions to students  • You have 50 minutes to complete the test.  • Please answer all questions in the spaces provided.  • There is to be no talking during the test. | Marks  Section I: Multiple-choice questions: 5 marks  Section II: Short-answer questions: 12 marks  Section III: Extended-response questions: 8 marks  Total: 25 marks |

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| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Score: /25  Grade: % |
| Comments: | |

Section I: Multiple-choice questions

For each question, circle or highlight the correct answer.

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| 1 Night and day on Earth are caused by: | |  |
| A | the Earth spinning around, once, on its axis. |
| B | the Earth completing a single orbit around the Sun. |
| C | the tilt of the Earth on its axis as it orbits the Sun. |
| D | the Moon completing a single orbit around the Earth. |
| 2 Why does the Sun appear to have a different path across the sky in the winter to the path taken in the summer? | | |
| A | The Sun revolves. | |
| B | The Sun rotates. | |
| C | The Earth’s axis is tilted. | |
| D | The distance from the Earth to the Sun changes. | |
| 3 Why was it necessary to send robot explorers to Mars rather than astronauts? | | |
| A | The robot explorers do not require food or water and can be controlled by scientists on Earth. | |
| B | The atmosphere on Mars is toxic for astronauts. | |
| C | It would take too long for astronauts to travel to Mars and back to Earth again. | |
| D | No astronauts volunteered for the mission. | |

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| 4 The different phases of the Moon are caused by: | | |
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| A | the distance of the Moon from the Sun. | |
| B | different parts of the Moon’s surface facing the Earth. | |
| C | the Moon being covered by the Sun’s shadow. | |
| D | only part of the Moon’s surface being in sunlight. | |
| 5 When a total solar eclipse is visible in Australia, the rest of the world: | |  |
| A | sees a partial eclipse. |
| B | will see a different view to what we see. |
| C | will see no eclipse at all. |
| D | sees exactly what we see too. |

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|  | Section I  Total marks:  /5 marks |

Section II: Short-answer questions

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| 6 What is the difference between a space probe and a satellite? | | |
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| A space probe travels through and explores some part(s) of space (1 mark) and a satellite orbits the Earth (or another planet) (1 mark). | | |
|  | | /2 marks |
| 7 ‘A solar and a lunar eclipse are exactly the same thing.’ Do you agree or disagree with this statement? Give your reasons. | | |
| Disagree (1 mark). A solar eclipse occurs when the Moon is between the Sun and the Earth (1 mark). A lunar eclipse occurs when the Earth is between the Sun and the Moon (1 mark). | | |
|  | | /3 marks |
| 8 What does equinox mean, and how many time a year do they occur? | | |
| An equinox occurs when the position of the Earth, relative to the Sun, allows for equal amounts of night and day (1 mark). There are two equinoxes every year (1 mark). | | |
|  | | /2 marks |
| 9 New Zealand is to the east of Australia. In which country does the Sun rise first? Explain why this is so. | | |
| The Sun rises in the east (1 mark) and so it rises in New Zealand before it rises in Australia (1 mark). | | |
|  | | /2 marks |
| 10 Why do we add an extra day to the calendar (29 February) every four years? | | |
| The Earth takes slightly longer than 365 days (365.25 days) to orbit the Sun (1 mark), and so adding an extra day very four years accounts for this differences (1 mark). | | |
|  | /3 marks | |
|  | Section II  Total marks:  /12 marks | |

Section III: Extended-response questions

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| 11 Explain why the Sun does not set in midsummer at the North and South Poles. | |
| The Earth is on a tilted axis (1 mark). The angle of this axis to the Sun changes as the Earth orbits the Sun (1 mark). In summer, the poles are pointed towards the Sun (1 mark) on such an angle that it does not appear to set at night (1 mark). | |
|  | /4 marks |

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| 12 The Hubble Space Telescope produces amazing images of the night sky, way beyond that of any ground-based telescope. Explain how telescopes work to produce an image. Why does the Hubble telescope create higher quality images? | |
| Telescopes collect more light that the human eye (1 mark) and magnify the image to make it easier to see distance objects (1 mark).  The Hubble Space Telescope is outside the Earth’s atmosphere (1 mark), which distorts and blocks some of the light coming from space (1 mark). | |
|  | /4 marks |
|  | Section III  Total marks:  /8 marks |