**Science toolkit (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 What type of lab equipment is shown in this photo? | |  |
| A | Measuring cylinder |
| B | Test tube |
| C | Beaker |
| D | Watch glass |
| 2 What is a hypothesis? | | |
| A | The measurements taken during the experiment | |
| B | What you are trying to find out | |
| C | A prediction about the outcome of the experiment | |
| D | The variable being measured or tested during the experiment | |
| 3 A thermometer is used to measure: | | |
| A | temperature in millilitres. | |
| B | volume in millilitres. | |
| C | temperature in degrees Celsius. | |
| D | volume in degrees Celsius. | |

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| 4 The data below has been displayed in a: | |
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| A | scatter graph. |
| B | diagram. |
| C | data table. |
| D | column graph. |
| 5 Why is it important for scientists to use the correct equipment in their experiments? | |
| A | It ensures the scientist will not have to do the experiment again. |
| B | It ensures reliable results and the safety of the scientist. |
| C | It ensures the question being tested is always answered. |
| D | It is not that important. Scientists can use whatever equipment they like without affecting their results. |

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|  | Section I  Total marks:  /5 marks |

Section II: Short-answer questions

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| 6 Name four pieces of scientific equipment being used in this image. | |
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| Answers can include any of the following (1 mark each):  Test tube / Bunsen burner / Stirring rod / Tripod stand / Beaker / Gauze mat | |
|  | /4 marks |
| 7 What is an inference? | |
| An inference is a likely explanation (1 mark) based on an observation (1 mark). | |
|  | /2 marks |

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| 8 Why are experiments repeated several times rather than being carried out once? | | |
| Repeating experiments gives you greater confidence that your results are reliable and accurate. If different results are produced it indicates a possible source of error or uncontrolled factor and the method may need to be changed. | | |
|  | | /2 marks |
| 9 Outline the steps you would take to light a Bunsen burner safely. | | |
|  | | |
| Place the Bunsen burner on a heat proof mat and attach the gas hose to the gas tap. Turn collar to close air hole. Light match and place above barrel with your hand below the flame. Turn on gas tap to light Bunsen burner with a yellow (safety) flame. | | |
|  | /4 marks | |
|  | Section II  Total marks:  /12 marks | |

Section III: Extended-response questions

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| 10 Cane toads have been eating dog food that has been put out for the family’s pet dog. You decide to test whether cane toads prefer a certain brand of dog food. Three cane toads have already been trapped and placed in separate cages for you to use. Design an experiment to investigate the brand of dog food that cane toads prefer to eat. Include an aim and method for your experiment. Identify the dependent, independent and two controlled variables. | |
| Cane toads are an invasive species introduced to Australia. Scientists are researching methods of controlling cane toad populations. | |
| Students’ answers will vary.  Aim: To investigate if cane toads prefer different brands of dog food (1 mark)  Method: (3 marks)  brief method (1 mark), reasonable method (2 marks) or detailed method (3 marks)  1 Place each cane toad in a different cage.  2 Place 50 g (or 5 biscuits) of dog food A, B and C on 3 trays, ensuring each tray is identical.    3 Place one tray of food in the front of each cage at 6 pm.  4 Make observations of the cane toads feeding for 30 minutes – which food do they eat first?  5 After 2 hours, remove the tray and record the mass of each brand of dog food and calculate how much has been eaten (e.g. if there are 12 g left then 38 g was eaten from the initial 50 g).  6 Repeat the experiment for 6 days following the method above, except for step 2 – each day the brand of dog  • Day 1: A, B, C  • Day 2: A, C, B  • Day 3: B, A, C  • Day 4: B, C, A  • Day 5: C, A, B  • Day 6: C, B, A  Dependent variable: the brand of dog food (1 mark)  Independent variable: amount of dog food eaten after 2 hours (1 mark)  Controlled variables: location of food in each cage, position of food on the tray, amount of food, time cane toads are fed, amount of time, other suitable answer based on student’s experiment. (2 marks) | |
|  | /8 marks |
|  | Section III  Total marks:  /8 marks |