**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: 9 marks  Section III: Extended-response questions: 11 marks  Total: 25 marks |

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

Section I: Multiple-choice questions

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| For each question, circle or highlight the correct answer.  1 What does this hazard symbol represent? | |  |
| A | Substance can cause serious health effects if touched, inhaled or swallowed. |
| B | Substance is toxic to marine organisms and may cause long-lasting effects in the environment. |
| C | Substance can catch fire easily. |
| D | Substance can cause death if touched, inhaled or swallowed. |
| 2 Which one of the following should you do to maintain a high-quality logbook? | | |
| A | Write notes for each experiment on a separate piece of paper. | |
| B | Always round all numbers to 1 decimal place. | |
| C | Neatly record all results and observations from each experiment. | |
| D | Rewrite any entry that contains a mistake. | |
| 3 You are conducting a simple experiment to determine the optimal amount of water required each day for bean plants to sprout from seed. The independent variable of this experiment is: | | |
| A | the time of day the seeds are watered. | |
| B | the type of seeds used. | |
| C | the amount of water used each day. | |
| D | the time taken for the seeds to sprout. | |

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| 4 What is the name of this dissecting tool? | |
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| A | Scalpel |
| B | Poker |
| C | Probe |
| D | Forceps |
| 5 Graphs can be used to show the relationship between two variables in an experiment. The graph below shows: | |
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| A | that the dependent variable is not affected by the independent variable. |
| B | that as the dependent variable increases, so does the independent variable. |
| C | an inversely proportional relationship between the variables. |
| D | the independent variable on the vertical axis and the dependent variable on the horizontal axis. |

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|  | Section I  Total marks:  /5 marks |

Section II: Short-answer questions

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| 6 Your lab partner accidentally drops and breaks a beaker. Describe what you should do. | | |
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| Tell the teacher (1 mark). If it is safe to do so, use a dustpan and brush to collect the pieces and dispose of in a sharps container (1 mark). | | |
|  | | /2 marks |
| 7 Identify three safety procedures you should carry out before, during or after a dissection. | | |
| Any three of (1 mark each for a maximum of 3 marks):  • Wear a lab coat.  • Wear gloves.  • Wear safety glasses.  • Cover work space with newspaper.  • Use fingers to probe the specimen.  • Wrap the specimen in newspaper before disposing.  • Wash instruments in hot water and disinfect.  • Wash hands after dissection. | | |
|  | | /3 marks |
| 8 What is a ‘fair test’ in terms of scientific experiments? | | |
| A fair test can be repeated by other scientists (1 mark); it is an experiment where only the independent variable is changed and all other variables are kept constant (1 mark). | | |
|  | | /2 marks |
| 9 Identify the dependent variable in the experiment from the information in the graph below. | | |
|  | | |
| Temperature (°C) | | |
|  | /1 mark | |
| 10 From the graph above, what temperature was the water after four minutes? | | |
| 80°C | | |
|  | /1 mark | |
|  | Section II  Total marks:  /9 marks | |

Section III: Extended-response questions

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| 11 You are conducting an experiment to determine the relationship between the starting temperature of water and the time taken for jelly to set once the crystals are added to the water. The hypothesis is IF the water were cooler THEN the jelly will set faster.  Write a possible method to test this hypothesis. | |
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| Students’ responses will vary. Award 1 mark for writing the method as a numbered or bulleted list, and 1 mark for each logical step to a maximum of 5 marks.  For example:  1 Add 100 g of jelly crystals to four clean and dry jugs / bowls labelled 100°C, 90°C, 80°C and 50°C.  2 Heat water to 100°C, 90°C, 80°C and 50°C.  3 Pour 250 mL of water into each bowl, ensuring the temperatures match the labels.  4 Stir each bowl to dissolve the jelly crystals, then put into the fridge and start the stopwatch.  5 Check all jugs every 10 minutes and record when the jelly sets in each bowl. | |
|  | /6 marks |
| 12 Identify five variables that should be controlled in the experiment you have outlined above. | |
| Students’ answers will vary. Award 1 mark for each logical response for a maximum of 5 marks.  For example:  • The volume of water added.  • The volume of jelly crystals used.  • The temperature of the fridge (if the same fridge if not used).  • The type / brand of jelly crystals.  • The shape of the bowl / jug. | |
|  | /5 marks |
|  | Section III  Total marks:  /11 marks |