**Forces**

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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

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| For each question, circle or highlight the correct answer.  1 If, in a game of ‘tug of war’, one team pulls with a total force of 1000 N to the left and the other team pulls with a total force of 1100 N to the right, the net force is: | |  |
| A | 100 N to the left. |
| B | 100 N to the right. |
| C | 2100 N to the left. |
| D | 2100 N to the right. |
| 2 The term used to describe how many particles an object is made up of is: | | |
| A | Newtons. | |
| B | weight. | |
| C | mass. | |
| D | gravity. | |
| 3 An axe is an example of a: | | |
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| A | lever. | |
| B | screw. | |
| C | wedge. | |
| D | ramp. | |

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| 4 When a tennis player hits the ball with the racquet, their arm acts as a type of: | |
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| A | pulley. |
| B | first-class lever. |
| C | second-class lever. |
| D | third-class lever. |
| 5 Which of these will NOT cause electrostatic attraction? | |
| A | A positively charged object brought near a neutral object. |
| B | A north magnetic pole brought near a south magnetic pole. |
| C | Two neutral objects brought near each other. |
| D | A positively charged object brought near a negatively charged object. |

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|  | Section I  Total marks:  /5 marks |

Section II: Short-answer questions

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| 6 When objects have forces acting on them, six possible things can happen to them. Give two of these. | | |
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|  | | /2 marks |
| 7 What could cause an electric shock in everyday life? Give an example. | | |
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| 8 Describe how to calculate the mechanical advantage of a simple machine. | | |
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| 9 Give an example of a situation where friction makes a task more difficult, and suggest a method of reducing the friction in that situation. | | |
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|  | | /2 marks |
| 10 What are the only two possibilities for the motion of an object when it experiences a zero net force? | | |
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| 11 A see-saw is an example of a lever. Label the fulcrum, effort and load on the diagram below. | | |
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|  | /3 marks | |
|  | Section II  Total marks:  /12 marks | |

Section III: Extended-response questions

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| 12 Explain how you could make a simple compass using a bar magnet and other items commonly found in a school science department. | |
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| 13 Design an experiment to compare the friction of three floor surfaces commonly found inside or around homes. Write an equipment list, and a method as a set of steps. | |
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|  | Section III  Total marks:  /8 marks |