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| 52  Marks Total | Course Review  **Part One: Unit A – Momentum and Impulse**  Part One of this assignment is worth 18 marks. The value of each question is noted in parentheses in the left margin. **Note:** The answer areas will expand to fit the length of your response. |

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| (2) **1.** | What characteristics of an object affect its momentum? |
|  |  |
| Answer: |  |
| (2) **2.** | How are momentum and impulse related? |
| Answer: |  |
| (4) **3.** | What is the difference between a perfectly elastic collision and a perfectly inelastic collision? |
| Answer: |  |

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| (2) **4.** | | What is the difference between a scalar and a vector quantity? | |
| Answer: | |  | |
| (2) **5.** | | How is momentum related to Newton’s laws? | |
| Answer: | |  | |
| (2) **6.** | | How is impulse related to Newton’s laws? | |
| Answer: | |  | |
| (2) **7.** | | What is the law of conservation of momentum? | |
| Answer: | |  | |
| (2) 8. | | Describe how crumple zones in vehicles serve to increase the safety of the occupants. | |
| Answer: | |  | |
| **Part Two: Unit B – Forces and Fields**  Part Two of this assignment is worth 13 marks. The value of each question is noted in parentheses in the left margin. Note: The answer areas will expand to fit the length of your response. | |

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| (3) **1.** | What is the difference between an electrical insulator and an electrical conductor? Provide an example of each. |
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| Answer: |  |
| (3) 2**.** | Use the information below to answer question 2.   |  | | --- | | A bar magnet pushed into a loop increases the flux through the loop and induces a current to flow. |   Assuming conventional current, explain how you determine the direction (clockwise or counter clockwise) of the induced current. You may use a diagram if you wish. |
| Answer: |  |
| (3) **3.** | Describe, in detail, how a moving charge is be affected by a magnetic field. |
| Answer: |  |
| (2) **4.** | How are current-carrying conductors affected by magnetic fields? You may use a sketch if you wish. |
| Answer: |  |
| (2) **5.** | How is electric potential energy similar to gravitational potential energy? |
| Answer: |  |

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| **Part Three: Unit C – Electromagnetic Radiation**  Part Three of this assignment is worth 10 marks. The value of each question is noted in parentheses in the left margin. Note: The answer areas will expand to fit the length of your response. |

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| (2) **1.** | In what *circumstances* does the photoelectric effect occur? |
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| Answer: |  |
| (2) **2.** | What did Maxwell’s electromagnetic theory predict? |
| Answer: |  |
| (3) **3.** | Describe how polarizing filters work and give one example of where they might be used. |
| Answer: |  |
| (3) **4.** | How does the photoelectric effect support the notion of wave-particle duality? You may use a diagram to support your response. |
| Answer: |  |

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| **Part Four: Unit D – Atomic Physics**  Part Four of this assignment is worth 11 marks. The value of each question is noted in parentheses in the left margin. Note: The answer areas will expand to fit the length of your response. |

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| (2) **1.** | Explain how the discovery of cathode rays contributed to the development of atomic models. |
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| Answer: |  |
| 1. **2.** | Explain how electron diffraction provides experimental support for the de Broglie hypothesis. |
| Answer: |  |
| (2) **3.** | A neutron decays into a proton and an electron. Write the decay reactions of a neutron using both nucleons and quarks. You will need to show two reactions. |
| Answer: |  |
| (3) **4.** | Compare and contrast the characteristics of fission and fusion reactions. |
| Answer: |  |
| (2) **5.** | How is the conservation of energy and mass applied to nuclear decay? |
| Answer: |  |

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| **When you have completed all of the questions in this assignment, submit your work.** |