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**ATAR Chemistry 11 Unit 1 Task 2 NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Atomic Structure and Mass Spectrometry test**

(Total 42 marks)

1. a) State the two forces in the nucleus and which particles they act on. [ 2 marks]

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b) Explain how the nucleus stays together [ 2 marks] \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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c) Explain how the atom stays together [2 marks]

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2. [11 marks]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Symbol | Atomic number | Mass number | Protons | Neutrons | Electrons |
| Oxygen 17 | 17O |  |  |  |  |  |
| Chlorine 35 |  |  |  |  |  |  |
|  |  |  |  | 16 |  |  |
|  |  | 82 | 207 |  |  |  |

3. Write the symbol for the following atoms. [8 marks]

a) lithium\_\_\_\_\_\_\_\_\_ e) potassium \_\_\_\_\_\_\_\_\_\_

b) Lead \_\_\_\_\_\_\_\_\_ f) Silver \_\_\_\_\_\_\_\_\_\_\_

c) Iron \_\_\_\_\_\_\_\_ f) Barium \_\_\_\_\_\_\_\_\_\_\_\_

d) sodium \_\_\_\_\_\_\_\_\_\_ g) Beryllium \_\_\_\_\_\_\_\_\_\_\_

4. Name the following: (6 marks)

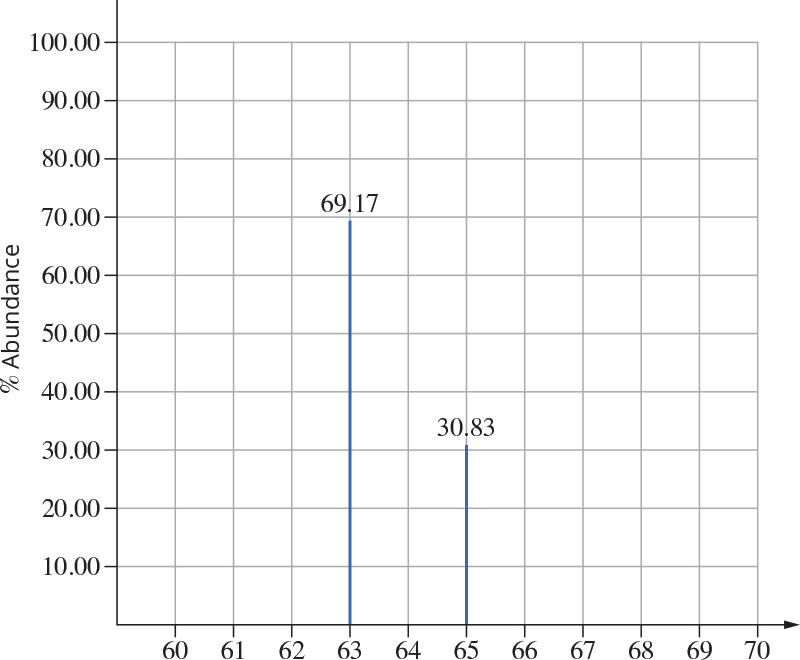
a) Ca \_\_\_\_\_\_\_\_\_\_\_\_ b) Cr \_\_\_\_\_\_\_\_\_\_\_

c) Cu \_\_\_\_\_\_\_\_\_\_\_ d) Al\_\_\_\_\_\_\_\_\_\_\_\_

e) K \_\_\_\_\_\_\_\_\_\_\_\_ h) Mn \_\_\_\_\_\_\_\_\_\_

5 (4 marks)

The mass spectrum for a sample of copper is shown below.

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a Label the x-axis of the mass spectrum. (1 mark)

b From this data determine the RAM (relative atomic mass) for copper. Show all working.

(3 marks)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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6. Explain precisely what isotopes of an element are. [ 2 mark]

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7. Explain the function of the following parts of the mass spectrometer: ( 4 marks)

a)

Vaporisation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Electron scattering: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Electric field: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Magnetic field: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1. How is the mass determined? [1 marks]

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