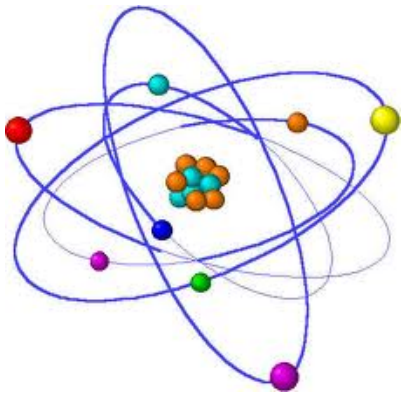
Elements of Life (EL) Starter Pack

Key Topics

- ✓ Atoms and The Periodic Table
- ✓ Isotopes
- ✓ Electron Shells
- ✓ Molecules, Compounds and Molecular Mass
- ✓ Bonding – Covalent, Ionic and Metallic



This pack is designed to help you revise some of the topics that you'll need to start the Elements of Life (EL) unit in the A Level Chemistry course. Look back at your GCSE work, revision guides and perhaps online tutorials (such as GCSE Bitesize) to help refresh your Chemistry knowledge when completing this pack.

Notes to myself – what do I need to revise?

Mark:

Teacher feedback: **/ 53**

Atoms and the Periodic Table

1. Sketch an atom. Label the nucleus and the electrons. (3 marks)

2. Name the three types of particle in an atom. State the relative mass and charge of each particle. (9 marks)

Particle	*Relative Mass*	*Charge of Particle*

3. What is the difference between mass number and atomic number? (2 marks)

Mass number is ……

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Atomic number is ……

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4. What feature of atoms determines the order of the modern periodic table? (1 mark)

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5. The modern periodic table can be divided into metals and non-metals. The non-metals are:

(Circle the correct answer) (1 mark)

A On the left of the periodic table
B On the right of the periodic table
C In the middle of the periodic table
D In group 2

6. Calcium or iron? Which element has properties which are more similar to magnesium? (1 mark)	7. Name an element you would find in Group 1 of the periodic table. (1 mark)	8. Do elements in Group 1 form cations or anions? Explain why. (2 marks)

Isotopes

1. What is an isotope? (2 marks)

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2. The element boron has two main isotopes $^{11}_{5}B$ and $^{10}_{5}B$. Its A_r value is 10.8.

a) What is the difference between the two boron isotopes? (2 marks)

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b) How many electrons does a neutral boron atom have? (1 mark)

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c) What does A_r stand for? (1 mark)

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d) Which isotope is the most abundant? (1 mark)

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3. Explain how carbon-14 is different from carbon-12. (1 mark)

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Bonding

1. How many electrons does it take to fill the first electron shell of an atom? (1 mark) ……..

2. How many electrons can occupy the third shell in an atom? (1 mark) ……..

3. Magnesium is a metal found in Group 2 of the periodic table. How many electrons does it have in its outer shell? (1 mark) ……..

4. Potassium and chlorine react to form potassium chloride.
a) Complete the following table: (6 marks)

	Potassium atom, K	Potassium ion, K^+	Chlorine atom, Cl	Chlorine ion, Cl^-
Number of electrons	19			
Electron arrangement	2, 8, 8, 1			

b) Draw a dot and cross diagram to show the formation of potassium chloride. (2 marks)

5. How is covalent bonding different from ionic bonding? (2 marks)

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6. Sketch dot and cross diagrams to show the bonding in molecules of:

a) Hydrogen (1 mark)	b) Hydrogen chloride (1 mark)	c) Water (1 mark)

7. Some molecules, e.g. oxygen (O_2), contain double bonds. Explain what this means. (1 mark)

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8. Draw a dot and cross diagram to show the ionic bonding in sodium chloride. (2 marks)

9. All metals have the similar physical properties.

a) Describe how the structure of a metal allows it to carry an electric current. (1 mark)

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b) State two other properties of metals. (2 marks)

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Molecules and Compounds

1. Explain the difference between a mixture and a compound. (2 marks)

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2. Do alkali metals form ionic or covalent compounds? (1 mark)

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