

1. Complete the retrieval practice quiz below:

i) Which scientists work led to the discovery of the nucleus?

- A Bohr
- B Dalton
- C Rutherford
- D Thomson

ii) A proton has what relative charge?

- A 0
- B +1
- C -1
- D +2

iii) Sub-atomic particles have relative masses and charges because...?

- A. They are related to each other
- B. They are very tiny, so cannot get their actual mass or charge.
- C. They are very large compared to an atom
- D. The masses and charges are compared to the mass and charge of a Neutron

iv) Electrons are found...?

- A. In the nucleus
- B. On the electron shell in a set configuration
- C. On the electron shell in a no order
- D. Some inside and some outside the nucleus

v) Atoms are neutral (no charge) because...?

- A. They have more neutrons than electrons
- B They have more electrons than protons.
- C. They have equal number of protons and electrons.
- D. The number of protons and neutrons are not the same.

vi) Mendeleev used the following to arrange his version of the Period Table of Elements.

- A. Relative Atomic Mass
- B Chemical Properties of elements
- C. Left gaps for undiscovered elements
- D. All of the above.

vii) The vertical columns in a Periodic Table are known as

- A. Periods
- B. Groups
- C. Columns
- D. Arrangements

viii) The modern Periodic Table is arranged based on

- A. Increasing atomic number along the Periods (rows).
- B. Increasing atomic number down the Groups (columns).
- C. Increasing atomic mass along the Periods (rows).
- D. Increasing atomic mass down the Groups (columns).

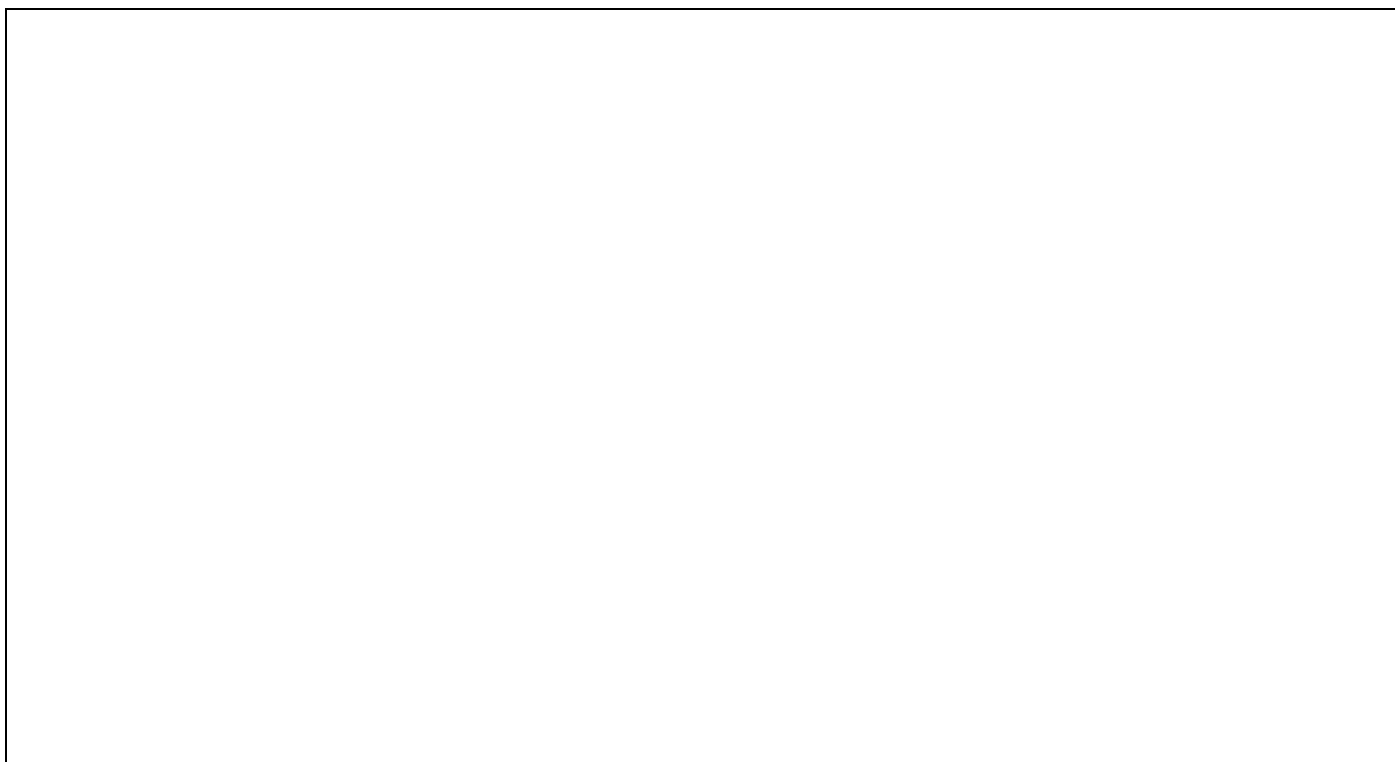
ix) Chlorine has an atomic number (Z) of 17. How many electron shells does it's atom have?

- A. 1
- B. 2
- C. 3
- D. 4

x) Chlorine has an atomic number of 17. What is the correct electron configuration of Chlorine?

- A. 2.7.8
- B. 2.8.7
- C. 8.7.2
- D. 8.2.7

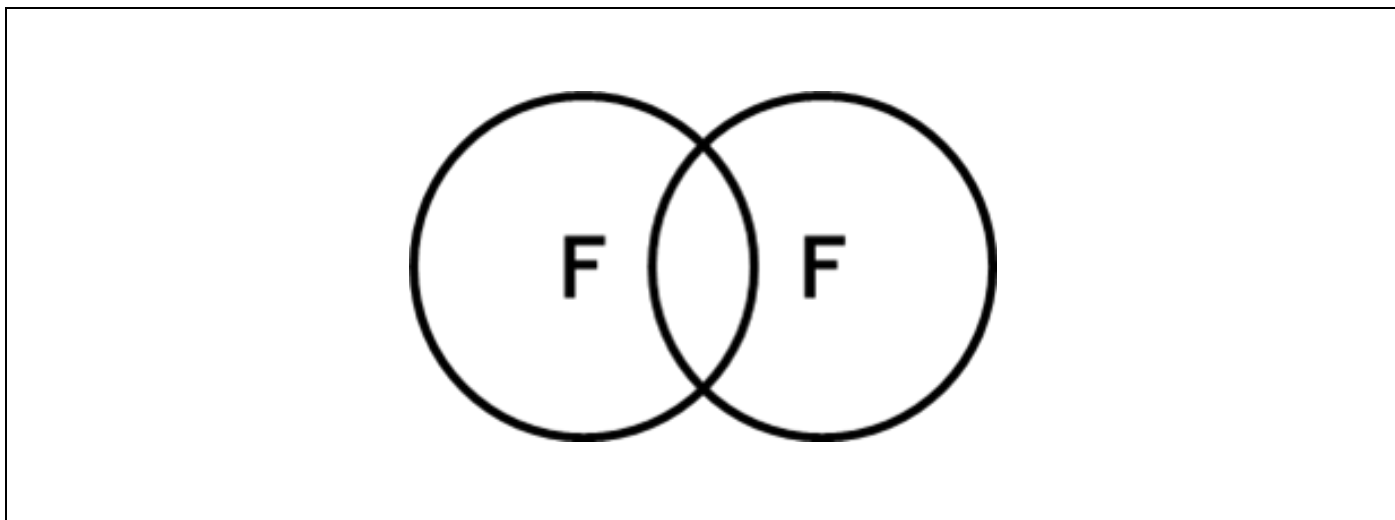
2. Draw a labelled diagram to show the structure of a carbon ( $^{12}_6\text{C}$ ) atom, including the correct number of subatomic particles in the nucleus.



3. Complete the table by adding the properties of the different subatomic particles.

Subatomic Particle	Relative charge	Relative mass
Electron		
Neutron		
Proton		

4. Complete the diagram to show the bonding between two fluorine ( $^{19}_9\text{F}$ ) atoms to form a diatomic fluorine molecule ( $\text{F}_2$ )



Exam Practice - Atomic Structure

1. The atomic number of oxygen is 8. The mass number of an atom of oxygen is 17.

Describe the number and type of particles in the nucleus of this atom. (2)

.....  
.....  
.....  
.....

2. Gallium metal is a conductor of electricity.

Explain how metals conduct electricity. (2)

.....  
.....  
.....  
.....

3. Chlorine has an atomic number of 17. The nucleus of an atom is made up of protons and neutrons. Atoms of chlorine contain 17 protons.

(a) Explain why atoms of chlorine have no overall charge. (2)

.....  
.....  
.....  
.....

(b) Atoms of chlorine-37 have a mass number of 37.

Calculate the number of neutrons in atoms of chlorine-37. (1)

number of neutrons = .....

(c) There are two isotopes of chlorine, chlorine-35 and chlorine-37.

Explain the meaning of the term isotopes. (2)

.....  
.....  
.....  
.....

4. The scientist John Dalton lived over 200 years ago. John Dalton suggested an early model of atoms. When Dalton first described atoms he said that:

- all elements are made of atoms
- atoms are not formed of any smaller particles
- all atoms of the same element are identical.

Give two differences between Dalton's model of atoms and today's model of atoms. (2)

1:  
.....  
.....

2:  
.....  
.....

5. Which of the following is true for most metals? (1)

- A they are dull
- B they have low melting points
- C they are found on the right-hand side of the periodic table
- D they are malleable

6. Gallium, Ga, is in the same group of the modern periodic table as aluminium. The formula of aluminium oxide is  $Al_2O_3$ .

(a) Predict the formula of gallium oxide. (1)  
.....

(b) Gallium oxide has a very high melting point. Gallium oxide does not conduct electricity when solid but does conduct electricity when molten.

What type of substance is gallium oxide? (1)

- A giant covalent
- B ionic
- C metallic
- D simple molecular

(c) State how you know that calcium is a metal from its position in the periodic table. (1)  
.....  
.....



Exam Practice - Transition Metals

1. Iron objects can corrode when exposed to the atmosphere.

(a) Corrosion involves the oxidation of iron.

State what is meant by oxidation.

(1)

.....

.....

(b) Painting iron objects prevents corrosion.

Explain why painting iron objects prevents corrosion.

(2)

.....

.....

.....

.....

(c) Corrosion of iron objects can be prevented by painting them or by electroplating them.

State one other way of preventing the corrosion of iron objects.

(1)

.....

.....

2. The apparatus shown in Figure 1 was used to electroplate a spoon with nickel.

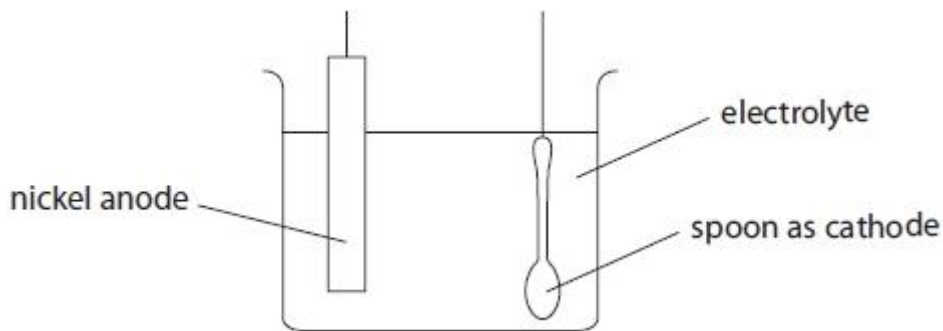


Figure 1

(a) State to what the anode and cathode must be connected in order to carry out the electroplating. (1)

.....

.....

(b) Predict the name of a substance that could be dissolved in water to form the electrolyte for this electroplating. (1)

(1)

.....

.....

3. Transition metals and group 1 metals have many properties in common because they are all metals. However some properties of transition metals are different from properties of group 1 metals.

(a) Which is a property of transition metals but not of group 1 metals? (1)

- A good conductor of electricity
- B high melting point
- C malleable
- D shiny when cut or polished

(b) Transition metals have many uses. Figure 2 shows five statements about iron.

Put ticks (✓) in the boxes in Figure 2 to show which statements are true and which statements are false. The first one has been done for you. (3)

	true	false
iron is a poor conductor of heat		✓
iron can act as a catalyst		
iron forms compounds that are coloured		
iron has a low density		
iron has a very high melting point		

Figure 2

(c) Draw one straight line from each substance and its use to the property that makes it suitable for the use given. (3)

**substance and use**

**property**

aluminium in aeroplane parts	kills pests on plants
copper in household wiring	low density
phosphorus compounds in fertilisers	helps plants to grow
	good conductor of heat
	good conductor of electricity