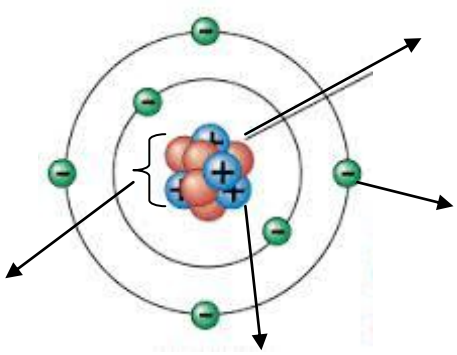
ADVANCED CHEMISTRY
REVISION
THE FIRST 5 WEEKS

1. Define each of the following words so that you can differentiate between them:-
   ELEMENT and COMPOUND, ATOM and MOLECULE
2. Label each of the following parts on the ion.



3.
   a. If you pick up an atom off the ground how many electron should there be?
   b. What are the relative charges and masses of each of the particles found in an atom?
   c. If the nucleus was blown up to the size of a golf ball, how big is the atom?
4. What is an ISOTOPE? Draw an example of 3 isotopes of any atom, clearly showing the number of each of the particles.

Isotope 1	Isotope 2	Isotope 3

5. Fill in the following table. This should be done without the use of a periodic table

SYMBOL	NAME	ATOMIC NUMBER	MASS NUMBER	NUMBER OF PROTONS	NUMBER OF NEUTRONS	NUMBER OF ELECTRONS
$^{12}_{6}C$	Carbon	6	12	6	6	6
$^{16}_{8}O$			16			8
	Nickel		59	28		
$^{137}_{56}Ba$						
		82				82
	Copper					29
	Aluminium ion					
$^{23}_{11}Na^{+}$						
	Sulphide ion					
$^{14}_{7}P^{3-}$						

6. **Write** down the electron configuration of the following atoms/ions. Lithium, nitrogen, argon, and magnesium ion. **Draw** each of the atoms including the electrons surrounding each atom.
7. Review the Periodic Table. Label each of the following parts:- periods, groups, metals, non-metals.
8. Explain how to determine the valency of an ion from the periodic table
9. Why can it be said that the fluoride ion is, in one way, similar to the noble gas neon? Draw the 2 atoms to illustrate your answer.
10. Fill in the following table by writing the correct formulae.

	FLUORIDE	NITRIDE	SULPHITE	PHOSPHATE
SODIUM	NaF			
BARIUM				
COPPER I				
AMMONIUM				
IRON IV				
CHROMIUM VI				
NICKEL III				
TIN II				

11. Fill in the following table by either giving the name or the formula of the missing part.

NAME	FORMULA
	H_2O
	NH_3
Sulphur trioxide	
	SiO_2
Dinitrogen tetroxide	
	S_2Cl_4
Oxygen dichloride	
	HCl
Sulphur hexafluoride	
	HBr

12. What is the difference between the bonding in the compounds in question 10, and that of the bonding in the compounds of question 11?
13. What are chemical reactions? Where do you find the products, and where the reactants in an equation. What are subscripts and why are they used in equations?

14. What is the meaning of the law in chemistry stated "The law of the Conservation of Mass."

15. Write balanced DISSOCIATION equations for the soluble solids potassium sulphate and magnesium chloride.
16. Using a solubility table write down a balanced precipitation equation leaving out the spectator ions. If there are no precipitates produced then write down no reaction.

AQUEOUS SOLUTIONS MIXED	BALANCED PRECIPITATION EQUATION	SPECTATOR IONS
Lead II nitrate and Potassium hydroxide		
Copper II sulphate and aluminium chloride		
	$2Fe^{3+}_{(aq)} + 3CO_3^{2-}_{(aq)} \rightarrow Fe_2(CO_3)_{3\,(s)}$	SO_4^{2-} and K^+
Barium hydroxide and magnesium iodide		
Strontium II iodide and Barium hydroxide		
	$+ \rightarrow Ca_3(PO_4)_2$	OH^- and NH_4^+

17. Write fully balanced equations for each of the following reactions

ACID-METAL HYDROXIDE REACTIONS

a. hydrochloric acid is added to calcium hydroxide solution
b. magnesium hydroxide is added to phosphoric acid
c. barium hydroxide mixed with nitric acid

ACID-METAL REACTIONS

d. zinc mixed with hydrochloric acid
e. magnesium added to phosphoric acid
f. aluminium added to ethanoic acid
g. aluminium and phosphoric acid
h. iron and nitric acid

ACID-CARBONATE REACTIONS

i. hydrochloric acid poured over sodium carbonate
j. a piece of copper (II) carbonate is added to a beaker of ethanoic acid
k. a teaspoon of magnesium hydrogen carbonate is added to 500 ml of nitric acid