

REVISION ASSIGNMENT – ATOMS, FORMULAE AND BONDING

NAME: _____ /60 _____ %

1. Two different atoms are isolated and their atomic and mass numbers are identified.

If the atoms can be represented as ${}^{86}_{37}\text{X}$ and ${}^{32}_{16}\text{D}$

Determine (using a Periodic Table where necessary):

- (a) Number of **protons** in each atom

X: 37

D: 16

- (b) Number of **valence electrons** in each atom

X 1

D 6

- (c) the **ion** that each atom would be expected to produce if they reacted together.

X^{+1} D^{2-}

- (d) the **formula of the compound** made by reacting X and D together.

X_2D

2. What is the difference between a MONATOMIC ION and a POLYATOMIC ION?

Monatomic ion consists of 1 atom only eg. Na^+

polyatomic ion consists of 2 or more atoms eg. CO_3^{2-}

3. Complete the table by putting in the **formulas**. The first one has been done for you.

Positive Ions	Negative Ions				
	Chloride	Sulfide	Hydroxide	Nitrate	Sulfate
Ammonium	NH_4Cl	$(\text{NH}_4)_2\text{S}$	NH_4OH	NH_4NO_3	$(\text{NH}_4)_2\text{SO}_4$
Magnesium	MgCl_2	MgS	$\text{Mg}(\text{OH})_2$	$\text{Mg}(\text{NO}_3)_2$	MgSO_4
Iron (III)	FeCl_3	Fe_2S_3	$\text{Fe}(\text{OH})_3$	$\text{Fe}(\text{NO}_3)_3$	$\text{Fe}_2(\text{SO}_4)_3$

4. Correct the following formulae if necessary

Iron II carbonate	$\text{Fe}_2(\text{CO}_3)_3$	<u>FeCO_3</u>
Potassium iodide	KI_2	<u>KI</u>
Tin II oxide	Sn_2O	<u>SnO</u>
Calcium hydroxide	CaOH_2	<u>$\text{Ca}(\text{OH})_2$</u>
Sodium hydrogencarbonate	NaHCO_3	<u>NaHCO_3</u>
Silver carbonate	AgCO_3	<u>Ag_2CO_3</u>

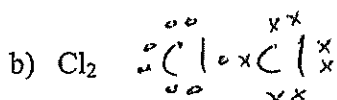
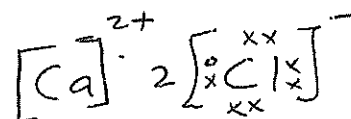
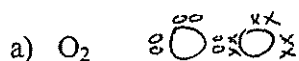
5. Give the chemical names for the following formulae.

FORMULA	NAME
ZnSO_4	<u>Zinc Sulfate</u>
NH_4Br	<u>Ammonium Bromide</u>
$\text{Cu}(\text{HCO}_3)_2$	<u>Copper hydrogen Carbonate</u>
BaCO_3	<u>Barium Carbonate</u>

6. Classify the following as having ionic, covalent or metallic bonds

a) NaCl	<u>ionic</u>
b) Ag	<u>Metallic</u>
c) CO_2	<u>covalent</u>
d) N_2	<u>covalent</u>
e) Lead Iodide	<u>ionic</u>
f) Oxygen gas	<u>covalent</u>
g) Magnesium Bromide	<u>ionic</u>
h) Brass	<u>Metallic</u>

7. Draw electron dot diagrams for the following:



8. Complete the following table by placing a tick where the listed characteristics are applicable for each of the chemicals on the left hand side.

Substance	Conducts electricity	Ductile and malleable	Low melting point	Brittle
Iron Fe	✓	✓		
Phosphorus P ₄			✓	✓
Distilled water H ₂ O			✓	
Potassium Iodide Solution KI(aq)	✓			
Calcium Carbonate Solid CaCO ₃ (s)				✓

9.

9. Using the solubility table, identify which of the following ionic compounds are soluble.

(h)	silver nitrate	soluble	
(i)	sodium Bromide	soluble	—
(j)	silver iodide	insoluble	—
(k)	calcium sulfate	insoluble	—
(l)	magnesium carbonate	insoluble	—
(m)	barium hydroxide	soluble	
(n)	aluminium sulfide	insoluble	

10. Place the following under the appropriate column.

Copper chlorine sodium oxide sulfide hydrogen gas
 manganese Ammonium oxygen gas silver ammonium chloride

ATOM	ION	MOLECULE	COMPOUND
Cu Mn Ag	S ⁻² NH ₄ ⁺	Cl ₂ O ₂ H ₂	Na ₂ O NH ₄ Cl

11. Complete the following table.

Substance	Formula	Type of Bonding
Chlorine	Cl ₂	covalent
Copper	Cu	metallic
Sodium hydroxide	NaOH	ionic
Carbon tetrabromide	CBr ₄	covalent
Iron(III) fluoride	FeF ₃	ionic