

**CHEMISTRY FORM THREE**  
**MARKING SCHEME:**

- (a)  $\text{NO}_3^-$   
(b) (i) Copper (II) or  $\text{Cu}^{2+}$   
(ii) Copper (II) oxide or  $\text{CuO}$ .
- (a)  $P_1V_1 = P_2V_2$   
(b)  $P_1 = 800\text{mmHg}$   $P_2 = 720\text{mmHg}$   
 $V_1 = 375\text{ cm}^3$   $V_2 = ?$   
 $P_1V_1 = P_2V_2$   
 $V_2 = \frac{P_1V_1}{P_2} = \frac{800 \times 375}{720} = 416.7\text{cm}^3$
- (i) A – Covalent  
B – Dative or co-ordinate  
(ii) Aluminium chloride undergoes hydrolysis with production of hydrated ions which are responsible for the PH of 3.
- R.A.M =  $\frac{\text{Mass.no} \times \text{Abundance}}{\text{Total abundance}}$   
Let the abundance of Li-6 be x  
Relative abundance of Li-7 will be 100-x.  
 $\therefore 6.94 = \frac{(6 \times x) + 7(100-x)}{100}$   
 $6x + 700 - 7x = 694$   
 $x = 6\%$   
Li-6 has 6%, Li-7 has 94%
- (a) Magnesium is more reactive than lead hence removes oxygen from lead oxide while lead cannot remove oxygen from magnesium oxide hence no reaction.  
(b) (i) Magnesium.  
(ii) Lead oxide.
- A mixture of hydrogen and air explodes when ignited Hydrogen is not readily available hence expensive.
- (i)

(ii)

8. (a) 7  
(b) Group V  
Period 2

9. (a)  $3\text{Mg}_{(s)} + \text{N}_{2(g)} \rightarrow \text{Mg}_3\text{N}_{2(s)}$   
(b) Sodium hydroxide.  
(c) Argon/Neon/ Xenon /Krypton  
It's stable hence does not react under normal conditions.

10. (i) Hygroscopy  
(ii) Amphoterism.  
(iii) Malleability.

11. Mass of chloride used =  $14.25 - 3.6\text{g} = 10.65\text{g}$ .

Element	Mg	Cl
Mass (g)	3.6	10.65
R.A.M	24	35.5
Moles	$\frac{3.6}{24}$	$\frac{10.65}{35.5}$
	0.15	0.3
	0.15	0.15

Mole ratio 1:2  
Formula  $\text{MgCl}_2$

12. (a) Noble gases  
(b)  $\text{D}_2\text{SO}_4$   
(c) (i) D  
(ii) E

- (d) Ionic bond. It involves transfer of electrons from B to H.
- (e) D
- (f) During ionization, an extra electron is added to the energy shell which reduces the effective nuclear force of attraction.
- (g) Placed in group VI and period 3.
- (h) G forms a simple molecular structure with oxygen while L forms a giant atomic (covalent) structure with strong covalent bonds which require more heat to break.
- (i) I is larger than C. I has a lower effective nuclear charge due to smaller number of protons hence weaker attraction between the outermost energy level and the nucleus.
- (j) It increases across from J to L due to increase in the effective nuclear charge from J to L.