Metals

1. *a) chlorine gas would react with steel anode*

$^{24}_{11}$ **Na**

Na

b) Hood and steel gauze prevent chlorine sodium, from anode and cathode from mixing and reacting.

- *Sodium metal is less dense, floats on motten brine where it is siphoned out.*

c) -To Whom It May Concern: melt the ore, rock salt

- For electrolysis of the molten ore

2. *a) $SO_{2(g)}$ is produced as a by- product, this mixes with rain water producing acid rain which may corrode buildings and affect plants* ✓ ½

$SO_{2(g)}$ is poisonous when inhaled ✓ ½

b) - H_2SO_4 manufacture – to make use of $SO_{2\,(g)}$

- Manufacture of dry cells – make use of zinc

- Production of iron sheets which are galvanized using zinc (Any one with an explanation)

c) Low density, does not corrode easily, duchle, malleable (Any 2 each ½ mark)

3. *Aluminium is lighter/low density. (any)* ✓ 1

It is a good conductor of electricity ✓ ½

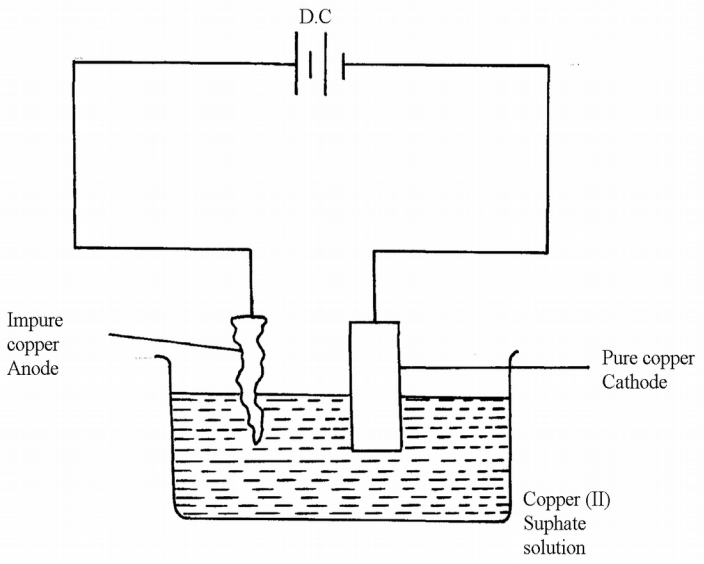
4. *Stage 1 – oxidation; Coke is oxidized to CO* ✓ ½

Stage 2 – Reduction: zinc is reduced to Zinc metal ✓ ½

Stage 3;- Recycling stage; CO_2 is reduced to regenerate CO ✓ ½

5. *a) Q is sulphur (IV) oxide $SO_2(g)$.* √1

b)



- Impure copper is the while pure copper is cathode. During electrolysis impure copper is purified and pure copper deposited on the cathode as shown in the half electrode reaction below;

<u>CATHODE EQUATION:</u>

$Cu^{2+} + 2e \longrightarrow Cu(s)$ √½

- *The cathode is therefore removed and replaced after an interval.*

6. (a) Froth floatation. √1 (1 mk)
(b) $PbCO_{3(s)} \longrightarrow PbO_{(s)} + CO_{2(g)}$ (1 mk)
(c) Making of pipes/lead acid accumulators. √1 (any one) 3

7. a) bauxite√
b) Copper pyrites √

8. i)

ii) I It's uneconomic// Expensive// a lot of energy is required to produce this high temperature
II Addition of cryolite √½ mark

iii) The melting point is below 800 C √½ mark