Q2. Copper(II) sulfate is an ionic compound.

(a) Describe the arrangement of the ions and the type of attractive forces between the ions in solid copper(II) sulfate.

arrangement .....

type of attractive forces .....
[2]

(b) Explain why solid copper(II) sulfate does not conduct electricity but aqueous copper(II) sulfate does conduct.

.....

.....

.....[2]

(c) When aqueous copper(II) sulfate is electrolysed using platinum electrodes, copper(II) ions are reduced to copper at the negative electrode. Oxygen is formed at the positive electrode by loss of electrons from hydroxide ions.

(i) State the source of the hydroxide ions.

.....[1]

(ii) Complete the equation for the reaction at the positive electrode.

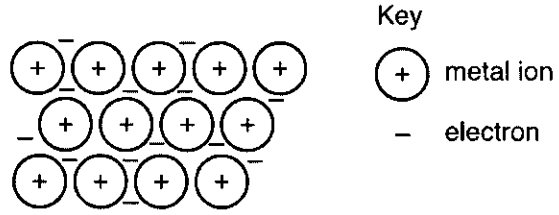
.... OH^- → O_2 + ... H_2O + ... [1]

(iii) Suggest why hydroxide ions and **not** sulfate ions are discharged at the positive electrode.

.....

.....[1]

Q3. The diagram shows the structure of a metal.



(a) Refer to this structure to explain why

(i) metals are malleable,

.....

.....[2]

(ii) metals conduct electricity.

.....[1]