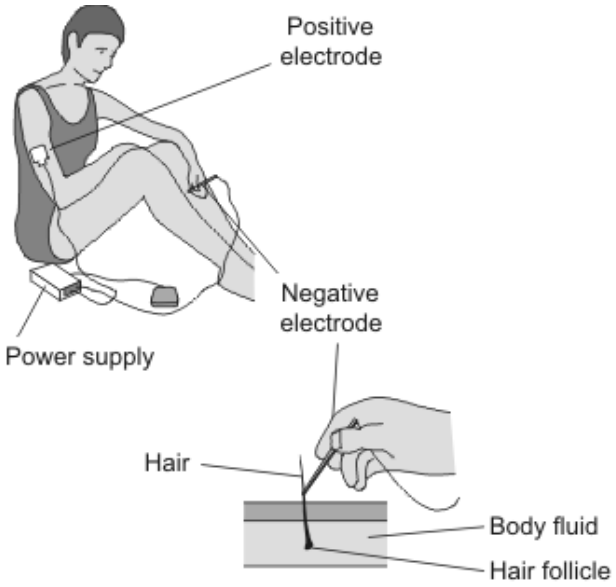
Electrolysis

1. Electrolysis can be used to remove unwanted hair from the skin.

The positive electrode is connected by a patch to the skin.

The negative electrode is connected to the hair.

The body fluid is a solution that contains sodium chloride. The electricity causes the electrolysis of a small amount of this solution.



(a) In this solution hydrogen ions move to the negative electrode.

Complete the sentence using **one** word from the box.

negative	**neutral**	**positive**

Hydrogen ions move to the negative electrode because they have a

..... charge.

(1)

(b) Draw a ring around the name of the gas produced at the positive electrode during the electrolysis of sodium chloride solution.

chlorine **hydrogen** **nitrogen**

(1)

(c) The electrolysis of the sodium chloride solution forms a strong alkali around the hair follicle.

(i) Complete the name of this strong alkali using **one** of the words from the box.

chlorine **hydrogen** **nitrogen**

The name of this strong alkali is sodium ..... .

(1)

(ii) Suggest how this strong alkali helps to remove the hair.

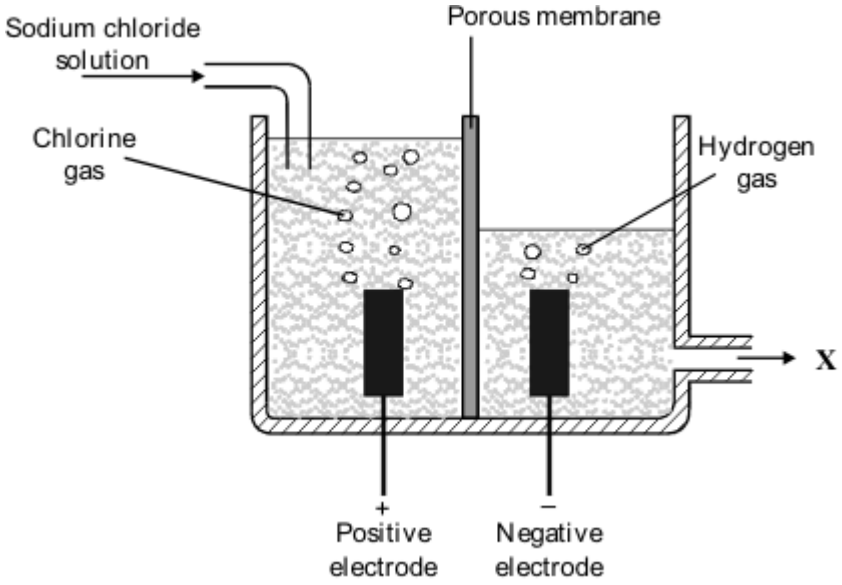
.....

.....

(1)

(Total 4 marks)

2. Sodium chloride solution is a useful raw material for the manufacture of other substances.



(i) What is the name of the process shown?

.....

(1)

(ii) Chloride ions lose electrons at the positive electrode. What is the name of this type of reaction?

.....

(1)

(iii) The solution formed at **X** is alkaline. What causes this solution to be alkaline?

.....

.....

.....

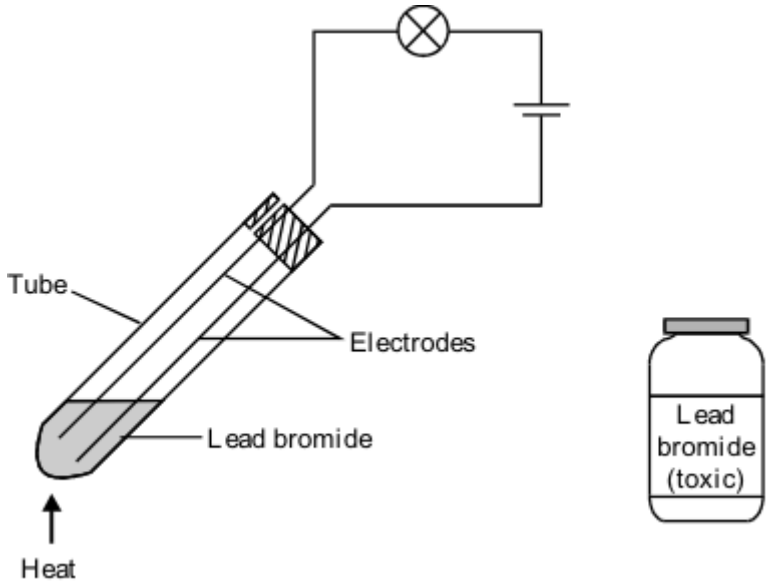
(2)

(iv) Give a balanced ionic equation for the formation of hydrogen gas at the negative electrode.

.....

(3)
(Total 7 marks)

3. A student investigated the *electrolysis* of lead bromide.



Lead bromide was placed in the tube and the circuit was switched on. The light bulb did not light up.

The tube was heated and soon the bulb lit up. The observations are shown in the table.

Positive electrode	Negative electrode
red-brown gas	silver liquid

(a) What is meant by *electrolysis?*

.....

(2)

(b) Why did the lead bromide conduct electricity when the tube was heated?

.....

(1)

(c) Name the substances formed at the:

positive electrode; .....

negative electrode. .....

(2)

(d) Suggest **one** safety precaution that should be taken during this investigation.

.....

(1)

(Total 6 marks)