

## Chemistry

## Section I – Part B (continued)

Marks

## Question 19 (7 marks)

Name ONE type of cell, other than the dry cell or lead–acid cell, you have studied. Evaluate it in comparison with either the dry cell or lead–acid cell, in terms of chemistry and the impact on society. Include relevant chemical equations in your answer.

7

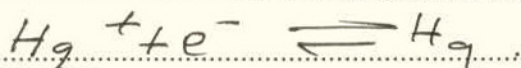
Mercuric Cell (Button Cell.)

Used in industry or society for things like watches and small appliances. As it is a small battery, that is an advantage. In comparison to the dry cell which is used for larger appliances such as the torch it has impact more on society technologically as it is useful for small electronic devices that are always evolving in society, today.

Anode reaction



Cathode reaction



## Question 20 (4 marks)

A  $0.1 \text{ mol L}^{-1}$  solution of hydrochloric acid has a pH of 1.0, whereas a  $0.1 \text{ mol L}^{-1}$  solution of citric acid has a pH of 1.6.

- (a) State ONE way in which pH can be measured.

1

PH meter

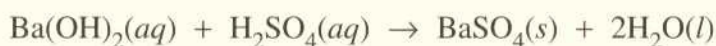
- (b) Explain why the two solutions have different pH values.

3

The different of the pH values  
because of HCl acid is stronger  
acid ~~but~~ <sup>than</sup> citric acid

## Question 21 (4 marks)

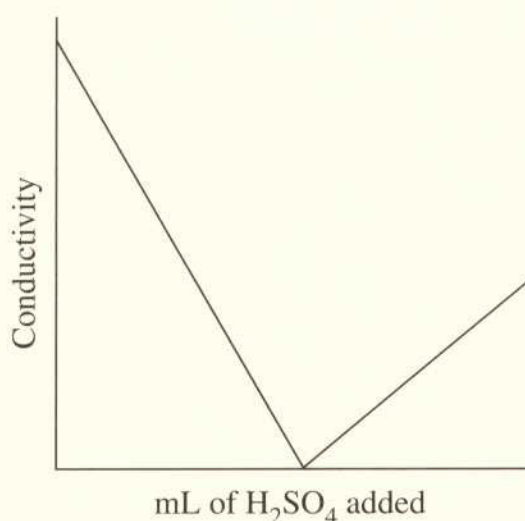
Barium hydroxide and sulfuric acid react according to the following equation:



- (a) Name this type of chemical reaction. 1

A neutralization reaction - acid plus base = salt + water

- (b) A 20 mL sample of barium hydroxide was titrated with  $0.12 \text{ mol L}^{-1}$  sulfuric acid. The conductivity of the solution was measured throughout the titration and the results graphed, as shown. 3



Explain the changes in conductivity shown by the graph.

The conductivity changes as  $\text{H}_2\text{SO}_4$  is added because as more and more is added - the more neutralized the sample gets until conductivity equals zero. Then conductivity increases as reaction comes to completion and conductivity increases - water conducts electricity.