2001 HIGHER SCHOOL CERTIFICATE EXAMINATION

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**

The Membrane cell / Mercury cell
- Mercury cell is very vital in society.
- Mercury is a poisonous liquid
~~this cell~~
- It finds the concentration of for example mercury.
In the dry cell it finds only non-liquid substances.

Marks

Question 20 (4 marks)

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

(a) State ONE way in which pH can be measured. **1**

adding equal amounts of universal indicator and comparing to a chart.

(b) Explain why the two solutions have different pH values. **3**

The HCl (hydrochloric acid) is much stronger than citric acid and can dissolve much easier. Citric acid is found in food.

Marks

Question 21 (4 marks)

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

$$Ba(OH)_2(aq) + H_2SO_4(aq) \rightarrow BaSO_4(s) + 2H_2O(l)$$

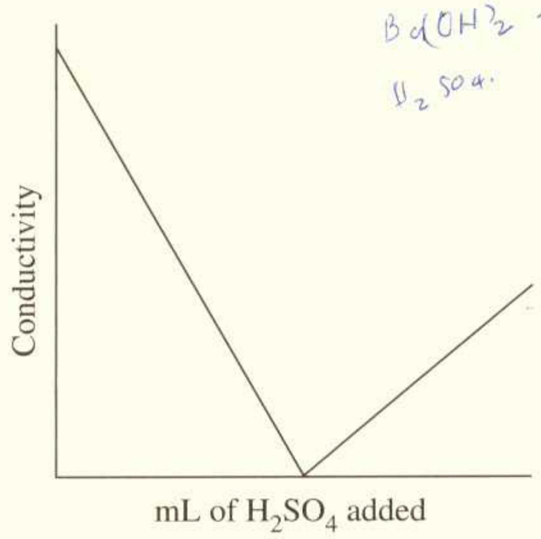
base. acid salt water

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

Acid and Base reaction

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

$Ba(OH)_2 = 20mL$
$H_2SO_4 = 0.12$ $C = n/V$ $= \frac{0.02}{0.12}$ $C = 0.17$
$\frac{0.997}{Mr}$



Explain the changes in conductivity shown by the graph.

The conductivity ~~was~~ has changed when ~~x~~ mL of H_2SO_4 was added as a H_2SO_4 conduct electricity in solution. Which the caused of increased in conductivity.