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**

No sample available for Question 19

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**

using a pH meter

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

The different between the two is that HCl is man made unlike citric acid which is make by natural eg. lemon has citric acid it juice. but for HCl it could have some other element mixture in it.

Marks

Question 21 (4 marks)

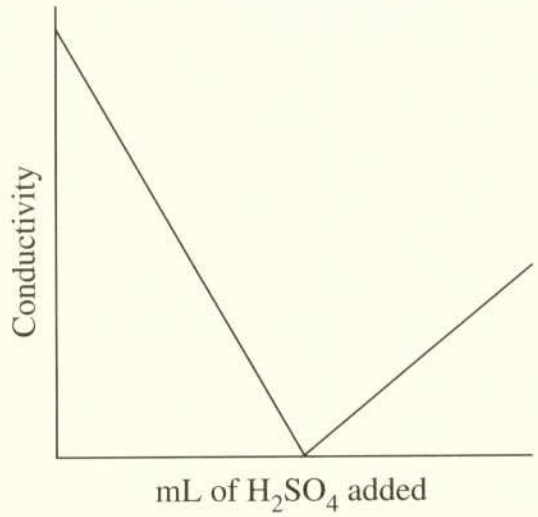
Barium hydroxide and sulfuric acid react according to the following equation:

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

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

acid + base → salt + water.

(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**



Explain the changes in conductivity shown by the graph.

Conductivity of $Ba(OH)_2$ decreases as more H_2SO_4 is added. Once the equivalence point is reached, the conductivity of $Ba(OH)_2$ (having undergone this change) begins to increase as H_2SO_4 is added.