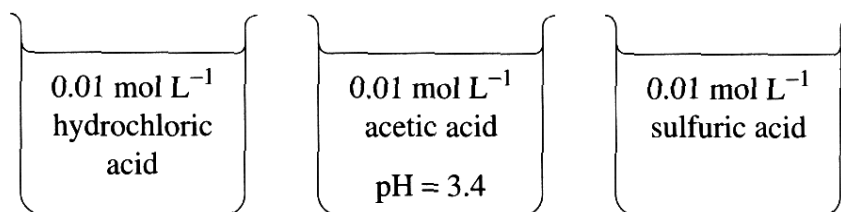# Chemistry

Section I – Part B (continued)

Marks

Question 22 (5 marks)

Solutions of hydrochloric acid, acetic acid and sulfuric acid were prepared. Each of the solutions had the same concentration (0.01 mol L^{-1}). The pH of the acetic acid solution was 3.4.

0.01 mol L^{-1} hydrochloric acid	0.01 mol L^{-1} acetic acid pH = 3.4	0.01 mol L^{-1} sulfuric acid

(a) Calculate the pH of the hydrochloric acid solution.   **1**

1.2

(b) Compare the pH of the sulfuric acid solution to the pH of the hydrochloric acid solution. Justify your answer. (No calculations are necessary.)   **2**

(c) Explain why the acetic acid solution has a higher pH than the hydrochloric acid solution.   **2**

This is because the acetic acid doesn't give up its H^+ ions as easily as the hydrochloric acid does.