

Name of the Student: _____

Max. Marks : 15 Marks

Time : 15 Minutes

Q1.

This question is about sulfuric acid and its salts.

- (a) Draw the displayed formula of a molecule of H_2SO_4

(1)

- (b) In aqueous solution, sulfuric acid acts as a strong acid. The H_2SO_4 dissociates to form HSO_4^- ions and H^+ ions.

The HSO_4^- ions act as a weak acid and dissociate to form SO_4^{2-} ions and H^+ ions.

Give an equation to show each stage in the dissociation of sulfuric acid in aqueous solution.

Include appropriate arrows in your equations.

Equation 1 _____

Equation 2 _____

(2)

- (c) A student is required to make 250 cm^3 of an aqueous solution that contains an accurately measured mass of sodium hydrogensulfate (NaHSO_4).

Describe the method that the student should use to make this solution.

(4)

- (d) A solution that contains 605 mg of NaHSO_4 in 100 cm^3 of solution has a pH of 1.72

Calculate the value of K_a for the hydrogensulfate ion (HSO_4^-) that is behaving as a weak acid.
Give your answer to three significant figures.

State the units of K_a

K _____ Units _____

(6)

- (e) Some sodium sulfate is dissolved in a sample of the solution from part (d).

Explain why this increases the pH of the solution.
