

Name of the Student: _____

Max. Marks : 16 Marks

Time : 16 Minutes

Q1.

Sulfuric acid is manufactured by the Contact Process.

- (a) In this process, sulfur dioxide reacts with oxygen.
The equation for the equilibrium that is established is



- (i) State and explain the effect of a **decrease** in temperature on the equilibrium yield of SO_3 .

Effect of a decrease in temperature on yield _____

Explanation _____

(3)

- (ii) Give **two** features of a reaction at equilibrium.

Feature 1 _____

Feature 2 _____

(2)

- (b) Write an equation for the reaction of concentrated sulfuric acid with potassium bromide to form potassium hydrogensulfate and hydrogen bromide.

(1)

- (c) Bromine is one of the products formed when concentrated sulfuric acid reacts with hydrogen bromide.

Write an equation for this reaction.

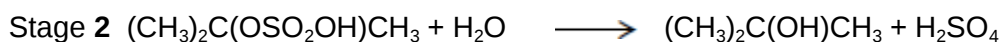
State the role of sulfuric acid in this reaction.

Equation

Role of sulfuric acid _____

(3)

- (d) Concentrated sulfuric acid is used in a two-stage process to convert 2-methylpropene into 2-methylpropan-2-ol.



- (i) Name and outline a mechanism for Stage 1 of this conversion.

Name of mechanism _____

Mechanism

(5)

- (ii) Deduce the type of reaction in Stage 2 of this conversion.

(1)

- (iii) State the overall role of sulfuric acid in this conversion.

(1)

(Total 16 marks)