

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Q1.

Concentrated sulfuric acid reacts with alkenes, alcohols and sodium halides.

- (a) Name the mechanism for the reaction of concentrated sulfuric acid with an alkene.

(1)

- (b) Outline the mechanism for the reaction of concentrated sulfuric acid with propene to show the formation of the major product.

(4)

- (c) Draw the structure of the minor product of the reaction between concentrated sulfuric acid and propene.

(1)

- (d) Explain why the product shown in your answer to part (b) is the major product.

(2)

- (e) Butan-2-ol reacts with concentrated sulfuric acid to form a mixture of three isomeric alkenes. Two of the alkenes are stereoisomers.

Draw the skeletal formula of each of the three isomeric alkenes formed by the reaction of butan-2-ol with concentrated sulfuric acid.

Give the full IUPAC name of each isomer.

Skeletal formula	Name

(3)

- (f) A by-product of the reaction of butan-2-ol with concentrated sulfuric acid has the molecular formula C_4H_8O

Name this by-product, identify the role of the sulfuric acid in its formation and suggest the name of a method that could be used to separate the products of this reaction.

By-product _____

Role of sulfuric acid _____

Name of separation method

(3)

- (g) Concentrated sulfuric acid reacts with solid sodium chloride.

Give the observation you would make in this reaction.

State the role of the sulfuric acid.

Observation with sodium chloride _____

Role of sulfuric acid _____

(2)

- (h) Concentrated sulfuric acid reacts with solid sodium iodide, to produce several products.

Observations made during this reaction include the formation of a black solid, a yellow solid and a gas with the smell of bad eggs.

Identify the product responsible for each observation.

Black solid _____

Yellow solid _____

Gas _____

(3)

(Total 19 marks)