

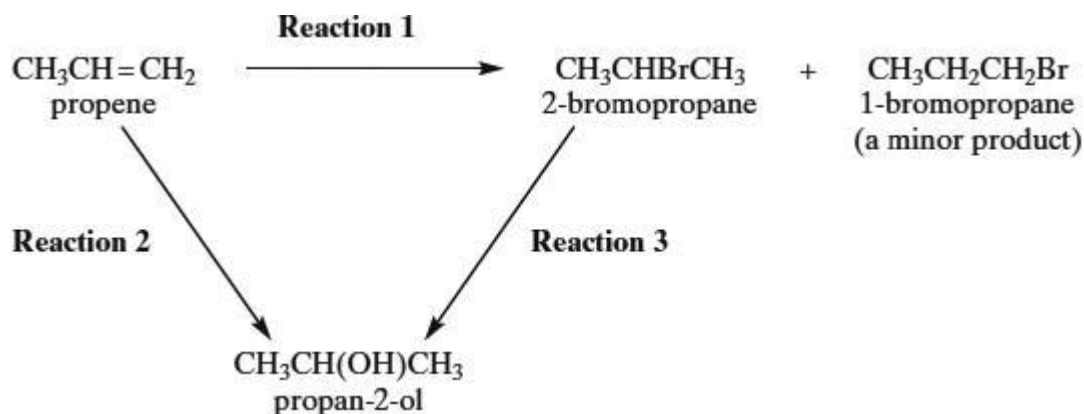
Name of the Student: _____

Max. Marks : 23 Marks

Time : 23 Minutes

Q1.

Consider the following reaction scheme.



- (a) (i) Name the mechanism for **Reaction 1**.

- (ii) Explain why 1-bromopropane is only a minor product in **Reaction 1**.

(3)

- (b) Give a suitable reagent and state the essential conditions required for **Reaction 3**.

Reagent _____

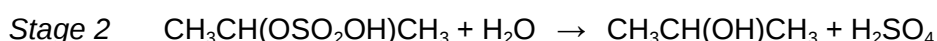
Conditions _____

(2)

- (c) The reagent used for **Reaction 3** can also be used to convert 2-bromopropane into propene. State the different conditions needed for this reaction.

(1)

- (d) **Reaction 2** proceeds in two stages.



- (i) Name the class of alcohols to which propan-2-ol belongs.

- (ii) Outline a mechanism for Stage 1 of **Reaction 2**, using concentrated sulphuric acid.

- (iii) State the overall role of the sulphuric acid in **Reaction 2**.

(6)

(Total 12 marks)

Q2.

- (a) Bromomethane, CH_3Br , can be formed by a reaction between bromine and methane.

The mechanism for this reaction is similar to the mechanism for the chlorination of methane.

- (i) Name the mechanism for this reaction.

- (ii) Give the name of, and state an essential condition for, the first step in the mechanism for this reaction.

Name _____

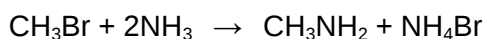
Essential condition _____

- (iii) Write an equation for a termination step in the mechanism for this reaction which gives ethane as a product.

- (iv) Bromomethane can undergo further substitution. Write an overall equation for the reaction between bromomethane and bromine in which dibromomethane is formed.

(5)

- (b) Bromomethane reacts with the nucleophile ammonia according to the following equation.



- (i) Explain what is meant by the term *nucleophile*.

- (ii) Name the organic product of this reaction.

- (iii) Outline a mechanism for this reaction.

(6)

(Total 11 marks)