

Name of the Student: _____

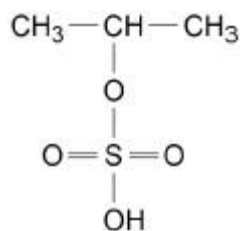
Max. Marks : 20 Marks

Time : 20 Minutes

Q1.

Propene reacts with concentrated sulfuric acid to form two isomers, E and F.

The structure of **E** is shown.



(a) Name and outline the mechanism for the formation of **E** in this reaction.

Name of mechanism _____

Mechanism

(5)

(b) Draw the structure of **F**.

(1)

(c) Explain why more of isomer **E** than isomer **F** is formed in this reaction.

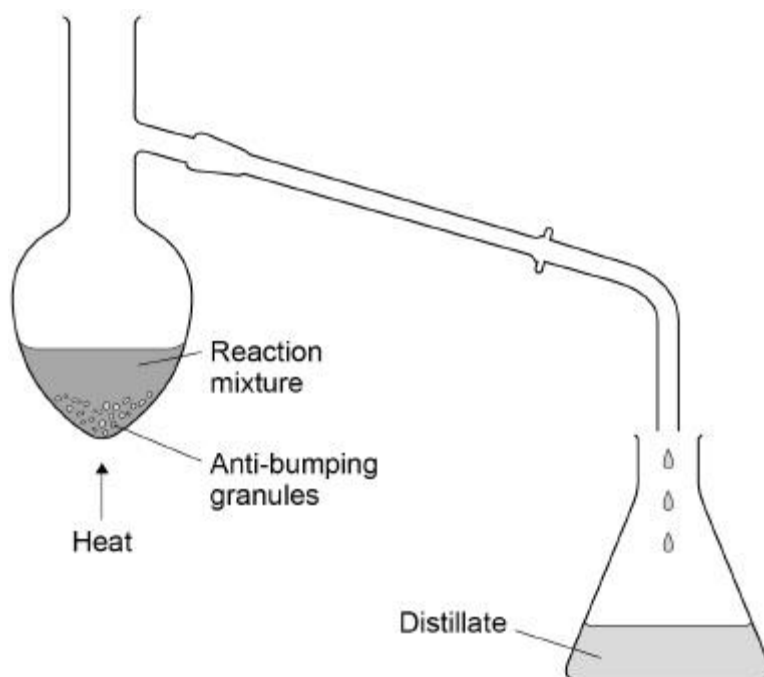
(2)

(Total 8 marks)

Q2.

A student prepared cyclohexene by heating cyclohexanol with concentrated phosphoric acid. The cyclohexene produced was distilled off from the reaction mixture.

- (a) Complete the diagram of the apparatus used to distil the cyclohexene from the reaction mixture at 83 °C.



(2)

- (b) The distillate was shaken with saturated sodium chloride solution. The cyclohexene was separated from the aqueous solution using a separating funnel.

State why cyclohexene can be separated from the aqueous solution using the separating funnel.

(1)

- (c) The cyclohexene separated in part (b) was obtained as a cloudy liquid. The student dried this cyclohexene by adding a few lumps of anhydrous calcium chloride and allowing the mixture to stand.

Give **one** observation that the student made to confirm that the cyclohexene was dry.

(1)

- (d) In this preparation, the student added an excess of concentrated phosphoric acid to 14.4 g of cyclohexanol ($M_r = 100.0$).
The student obtained 4.15 cm³ of cyclohexene ($M_r = 82.0$).
Density of cyclohexene = 0.810 g cm⁻³

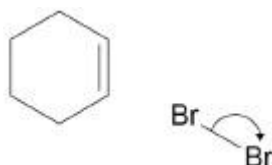
Calculate the percentage yield of cyclohexene obtained.
Give your answer to the appropriate number of significant figures.

% yield _____

(5)

- (e) Cyclohexene reacts with bromine.

Complete the mechanism for this reaction.



(3)

(Total 12 marks)