

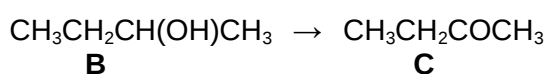
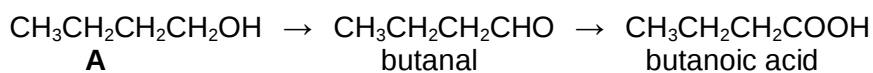
Name of the Student: _____

Max. Marks : 27 Marks

Time : 27 Minutes

Q1.

Consider the following reaction schemes involving two alcohols, **A** and **B**, which are position isomers of each other.



- (a) State what is meant by the term *position isomers*.

(2)

- (b) Name compound **A** and compound **C**.

Compound **A** _____Compound **C** _____

(2)

- (c) Each of the reactions shown in the schemes above is of the same type and uses the same combination of reagents.

- (i) State the type of reaction.

- (ii) Identify a suitable combination of reagents.

- (iii) State how you would ensure that compound **A** is converted into butanoic acid rather than into butanal.

- (iv) Draw the structure of an isomer of compound **A** which does not react with this combination of reagents.

- (v) Draw the structure of the carboxylic acid formed by the reaction of methanol with this combination of reagents.

(6)

- (d) (i) State a reagent which could be used to distinguish between butanal and compound **C**.

- (ii) Draw the structure of another aldehyde which is an isomer of butanal.

(2)

(Total 12 marks)

Q2.

- (a) Ethanol can be manufactured by the direct hydration of ethene and by the fermentation of sugars.

(i) State what is meant by the term *hydration*.

(ii) Give **one** advantage and **one** disadvantage of manufacturing ethanol by fermentation rather than by hydration.

Do **not** include energy consumption or cost.

Advantage _____

Disadvantage _____

(3)

- (b) Ethanol can be oxidised to an aldehyde and to a carboxylic acid.

(i) Draw the structure of this aldehyde and of this carboxylic acid.

Structure of aldehyde

Structure of carboxylic acid

(ii) Give a suitable reagent and reaction conditions for the oxidation of ethanol to form the carboxylic acid as the major product.

Reagent _____

Conditions _____

(5)

- (c) (i) Draw the structure of an alcohol containing four carbon atoms which is resistant to oxidation.

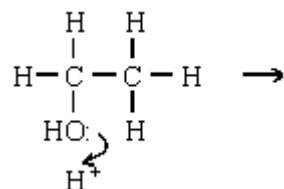
- (ii) Draw the structure of an alcohol containing four carbon atoms which can be oxidised to a ketone.

(2)

- (d) In the presence of a catalyst, ethanol can be dehydrated to ethene.

- (i) Give a suitable catalyst for use in this reaction.
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- (ii) Complete the mechanism for this dehydration reaction.



(5)

(Total 15 marks)