

## FILL IN THE BLANKS:

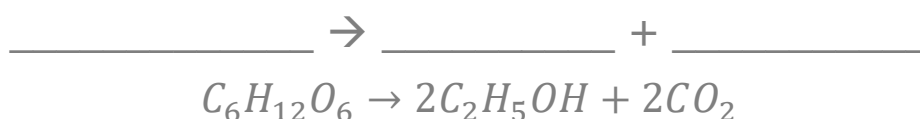
### Fermentation:

Is the chemical \_\_\_\_\_ of organic material in the absence of oxygen (anaerobically).

Fermentation is used in the brewing industry to manufacture beer and cider.

Fermentation is carried out by \_\_\_\_\_ such as yeast. The microbes act as a \_\_\_\_\_ for the reaction.

In the production of beer, the yeast converts a malted grain into \_\_\_\_\_ and carbon dioxide. The sugar source for beer is malted grains.



The sugar source is different for different alcoholic beverages.

- Beer's sugar source is malted grains
- Wine's sugar source is \_\_\_\_\_
- Cider's sugar source is \_\_\_\_\_

It is impossible to produce alcoholic drinks of 40% v/v by fermentation alone.

- Beer and Cider is about 8% v/v
- Wine is about 12 % v/v

The ethanol that the yeast cells produce during fermentation eventually kills the yeast. The fermentation process is then stopped. Different types of yeasts have different tolerance levels to the ethanol.

To produce alcoholic drinks of a higher concentration, the fermented liquid must be \_\_\_\_\_.

### Distillation:

Is the process of \_\_\_\_\_ two miscible liquids based on their boiling points. Distillation is used in the distillery industry to produce alcoholic drinks of higher \_\_\_\_\_ such as spirits like whiskey, brandy, gin and vodka (40 % v/v). In this process, the fermented liquid is \_\_\_\_\_.

Ethanol evaporates and the vapour is collected and cooled back into a liquid. The distilled liquid is called the \_\_\_\_\_.

- Ethanol has a boiling point of 78 °C
- Water has a boiling point of 100 °C

### Concentration:

The concentration of a solution is the amount of \_\_\_\_\_ that is dissolved in a given volume of \_\_\_\_\_.

### % v/v :

Concentration can be expressed in the form of \_\_\_\_\_ per \_\_\_\_\_ (% v/v).  
A concentration of 40 % v/v means that there is 40 cm<sup>3</sup> \_\_\_\_\_ per 100 cm<sup>3</sup> \_\_\_\_\_.

$$\text{Concentration \% v/v} = \frac{\text{Volume of } \underline{\hspace{2cm}}}{\text{Volume of } \underline{\hspace{2cm}}} \times 100$$

### Functional Group:

Is an atom or group of atoms responsible for the common \_\_\_\_\_ of certain compounds, especially organic compounds. The functional group of alcohols is \_\_\_\_\_.

### Homologous Series:

Is a series of compounds with the same \_\_\_\_\_ and similar chemical properties.

### Primary Alcohols:

The carbon with the OH is joined to \_\_\_\_\_ other carbon atom. (or none in the case of methanol)

### Secondary Alcohols:

The carbon with the OH is joined to \_\_\_\_\_ other carbon atoms.

### Tertiary Alcohols:

The carbon with the OH is joined to \_\_\_\_\_ other carbon atom.

### Tetrahedral Shape:

The bond angle in a tetrahedral shape is \_\_\_\_\_°

### V-Shaped Shape:

The bond angle in a V-Shaped is \_\_\_\_\_°.

### Solvent:

Is a substance that dissolves another substance to form a \_\_\_\_\_.

### \_\_\_\_\_ Agent:

An additive added to alcohol (e.g. methanol) to make it poisonous, bad tasting, foul smelling or nauseating, to discourage recreational consumption. In some cases, it is also dyed.

### Catalyst:

Is a substance that \_\_\_\_\_ the speed of a chemical reaction without being consumed by the reaction

### Dehydration/ Elimination:

A chemical reaction whereby water is \_\_\_\_\_ from ethanol to form \_\_\_\_\_. This is done by passing ethanol vapour over hot \_\_\_\_\_ (Al<sub>2</sub>O<sub>3</sub>)

### Oxidation:

A chemical reaction converting a primary alcohol to a \_\_\_\_\_ and a secondary alcohol to a \_\_\_\_\_ by the removal of 2H atoms.

### Esterification:

A chemical reaction where an alcohol reacts with an \_\_\_\_\_ to form an \_\_\_\_\_ and water.