



JABchem



Not to be shared without the copyright holder's permission

Intermediate 1

Int 1

Chemistry



Section 12

Drugs

Intermediate 1 Chemistry Unit 3: Chemistry And Life

Section 12: Drugs

LO	Lesson	Text Book	Learning Outcome	Int1 Only
1	12.1	p181	A drug is a substance which alters the way the body works.	
2	12.1	p181	Drugs can damage health because of the way they can affect the body and lifestyle.	
3	12.1	p181	Alcohol is a drug which, if taken in excess, can have many harmful effects on the body, particularly the liver and the brain.	
4	12.2	p182	a) a bottle of alcopop contains approximately 2 units of alcohol b) a pint of beer contains approximately 2 units of alcohol c) a pub measure of spirit contains approximately 1 unit of alcohol. d) a glass of wine contains approximately 1 unit of alcohol.	
5	12.2	p182	Alcohol is broken down by the body at about 1 unit per hour.	
6	12.3	p183	Alcoholic drinks can be made by the fermentation of starch and sugars present in fruit and vegetables.	
7	12.3	p183	The type of alcoholic drink varies with the plant source of the carbohydrate.	
8	12.4	p183	During fermentation glucose is broken down to form alcohol; carbon dioxide is also produced.	Int1
9	12.4	p183	The fermentation process is catalysed by enzymes present in yeast.	Int1
10	12.4	p183	The alcohol produced by fermentation is called ethanol.	Int1
11	12.5	p184	Distillation is a method of increasing the alcohol concentration of fermentation products.	
12	12.5	p184	Water and alcohols can be partially separated by distillation because they have different boiling points.	
13	12.6	p189	a) Some drugs are legal e.g. medicines, alcohol, nicotine and caffeine b) Others drugs are illegal e.g. cannabis, LSD and ecstasy	
14	12.6	p185	Being unable to manage without a drug is called addiction.	
15	12.7	p186	Methanol, another alcohol, is very toxic causing blindness and death.	Int1
16	12.7	p186	Methylated spirits (meths) contains methanol and has both a colour and a bad tasting substance added to it to prevent people from drinking it.	Int1
17	12.8	p187	Chemical reactions are going on all the time to keep the body working properly.	
18	12.8	p187	Medicines contain drugs which help the body when it is not working correctly.	
19	12.8	p187	Some drugs, including antibiotics, can fight micro-organisms which interfere with the chemical reactions.	
20	12.8	p188	Medicines are usually made up of many chemicals and only the active ingredient works on the body.	

a) **Copy** the following passage into your jotter.

1. A is a chemical substance which alters the way the body works.

2. Examples of legal drugs include:

..... , , and

3. Drugs can damage your if not used properly

- They can damage your
- They can affect your personal

4. Alcohol can damage your body if taken in excess and can cause harm to different parts of your body:

..... and

5. Alcohol must not be taken if you are driving as drinking alcohol increases your time.

..... and

b) Use the word bank to **complete** the passage in your jotter.

wordbank	nicotine	drug	lifestyle	body	reaction
caffeine	alcohol	brain	aspirin	liver	health

12.2

Alcohol Content of Drinks

a) Copy the following table into your jotter.

Drink	Alcohol Units
1 pint of beer	2 units
1 pub measure of spirits (e.g. whisky, vodka, rum, gin)	1 unit
1 bottle of alcopop (e.g. Bacardi Breezers, WKD, etc)	2 units
1 glass of wine	1 unit

b) Copy the following passage into your jotter.

The body breaks down alcohol in the liver.

- The liver takes 1 hour to break down 1 unit of alcohol

Quantity of alcohol	No. of Alcohol Units	Time to break down alcohol
1 pint of beer	2 units	2 hours
3 glasses of wine	3 units	3 hours
2 pints of beer + 2 vodkas	6 units	6 hours

c) Copy and complete the following table in your jotter.

Drinks Consumed	Total Alcohol Consumed (units)	Time for Alcohol to be Removed From Body (hours)
4 pints of beer + 3 whiskies		
3 Bacardi Breezers + 3 Vodkas & Coke + 1 glass of wine		
5 glasses of wine + 2 gin & tonics		
3 double whiskies + 2½ pints of beer		

a) **Copy** the following passage into your jotter.

Alcoholic drinks are made by the fermentation of sugars and starch found in fruit and vegetables,

The type of alcoholic drink varies with the type of fruit or vegetable source of the carbohydrate (sugar or starch) used.

b) **Copy** the following table into your jotter.

Drink	% Alcohol	Fruit/Vegetable Source Drink is Made From
Beer/Lager		Barley
Whisky		Barley
Vodka		Potatoes
Cider		Apples
Wine		Grapes
Rum		Molasses (from sugar cane)
Gin		Corn & Cereal Grains

c) **Use** p183-185 of Int1 Chemistry textbook to **complete** your table.

a) **Copy** the following passage into your jotter.

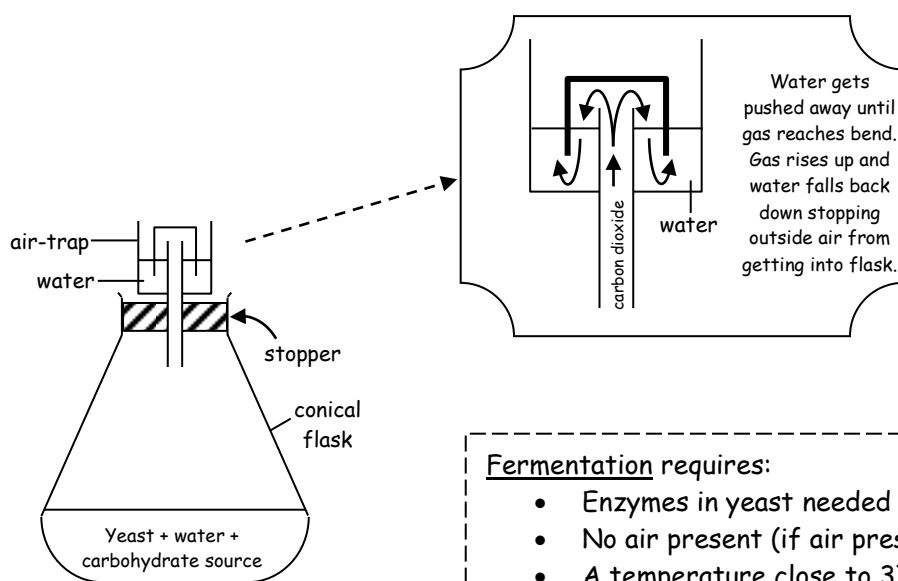
Fermentation is the process where alcohol is made from carbohydrate sources.



Yeast is a biological organism which catalyses the fermentation reaction.

- Enzymes in yeast catalyse the break down of starch into glucose (if necessary)
- Enzymes in yeast catalyse the break down of glucose into alcohol.

b) **Collect** a copy of the following diagram and **stick** it into your jotter.



Fermentation requires:

- Enzymes in yeast needed to catalyse fermentation
- No air present (if air present then no alcohol!)
- A temperature close to 37°C to get fermentation started
- A carbohydrate source from a fruit or a vegetable
- A way for the carbon dioxide to escape but not let air in

c) **Copy** and **complete** the following passage into your jotter.

Drinks made by fermentation alone have alcohol content of 16% alcohol or below.

e.g. , and

a) **Copy** the following passage into your jotter.

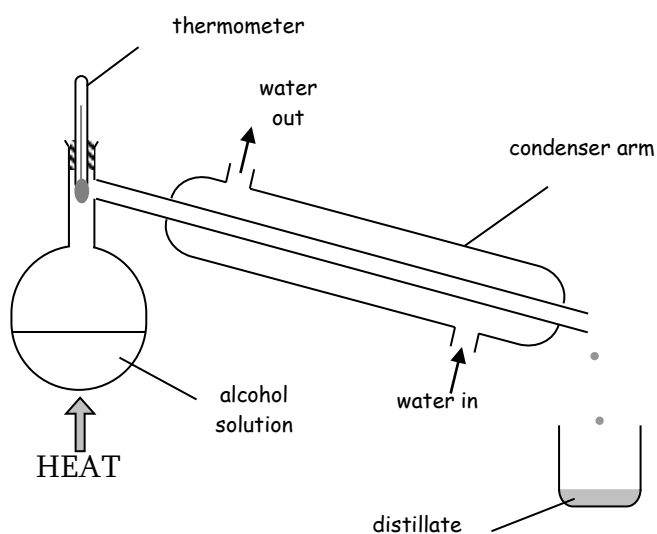
Drinks made by fermentation can only have up to ~16% alcohol.

The alcohol made by enzymes in the yeast eventually kills yeast at ~16% alcohol!

To achieve alcoholic drinks with above 16% alcohol, distillation is required to increase the alcohol concentration.

- Distillation separates liquids with different boiling points
- Alcohol boils at 78°C and water boils at 100°C
- Heat alcohol/water mixture to $\sim 85^{\circ}\text{C}$
 - Alcohol boils and is collected
 - Water does not boil and stays in flask

b) **Collect** a copy of the following diagram and **stick** it into your jotter.



Distillation requires:

- 2 liquids with different boiling points
- Set temperature of flask to between the two boiling points of the alcohol and water ($\sim 85^{\circ}\text{C}$)
- The alcohol vapour is condensed back into a liquid by a condenser arm
- Pure alcohol (distillate) collects as a liquid in the beaker
- A little water will be boiled and condensed too as there will always be localised heating in the flask where it is hot enough for water to boil

c) **Copy** and **complete** the following passage in your jotter

Water and alcohol can be separated by distillation because

Examples of drinks made by fermentation followed by distillation and have an alcohol content above 16% include:

..... , and

a) **Copy** the following passage into your jotter.

Drugs can be legally available or illegal.

- Some legal medicines are only available by Doctor's prescription due to the possibility of their misuse.

Some drugs and medicines are **addictive**.

- Addiction is when you are unable to manage without taking a drug regularly

b) **Copy** and following table in your jotter.

Legal Drugs	Illegal Drugs

c) Use the word bank to **complete** your table.

wordbank				
alcohol	nicotine	ecstasy	aspirin	paracetamol
L.S.D.	cannabis	caffeine	heroin	cocaine

a) **Copy** the following table into your jotter.

Meths (methylated spirits) is a widely-used chemical which is used as a solvent or as a fuel.

As meths contains 95% alcohol (ethanol), a substance is added to meths to stop people from drinking it.

b) **Look** at the sample of meths. **Copy** and **complete** the following sentence.

Methylated spirits have 3 additives to prevent you from drinking it:

..... , and

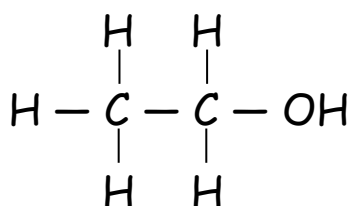
c) **Copy** the following passage into your jotter.

Methanol is an alcohol but is different to ethanol (drinking alcohol)

- Methanol is very toxic (poisonous)
- Methanol will cause blindness to anyone who drinks it
- If methanol is drunk in larger amounts, it will cause death.

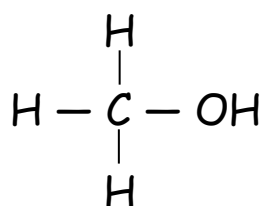
d) **Draw** the following structures into your jotter and **write** the formula below.

ethanol



Formula:

methanol



Formula:

a) **Copy** the following passage into your jotter.

1. The body has many reactions going on to keep your body working properly.
2. When the body is not working properly, we take to help our body get back to working properly again.
3. Medicines are made up of many different substances. The actual drug in the medicine which acts on the body is called the ingredient.
4. Some micro-organisms interfere with the body's chemical reactions. Drugs like fight bacterial infection to restore the body's chemical reactions back to normal.

b) **Complete** the passage using the word bank.

wordbank			
medicines	active	chemical	anti-biotics

Access 3 Level Revision Questions

1. Which of the following drugs is illegal?

caffeine or heroin

2. Which of the following contains one unit of alcohol?

a pub measure of vodka or a pint of beer

3. Whisky is made by

fermentation or distillation

4. Beer is made by

fermentation or distillation

5. Water and alcohol can be separated by

filtering or distillation

6. Someone who is unable to manage without a drug regularly is called

an alcoholic or an addict

7. How long does it take to remove one unit of alcohol from the body?

1 minute or 1 hour

8. Too much alcohol can harm

the liver or the heart

9. Whisky has an alcohol concentration

lower than beer or higher than beer

10. Which of the following drugs is legal?

alcohol or cannabis

11. The chemical in a medicines which acts on the body is called

the reactive ingredient or the active ingredient

1. The alcohol made by fermentation is called?
A. methanol B. ethanol C. glycerol D. drinkahol
2. Which drug is legal
A. alcohol B. ecstasy C. heroin D. cannabis
3. Which drug is illegal?
A. caffeine B. nicotine C. alcohol D. L.S.D.
4. Which organ in your body is damaged by drinking too much alcohol?
A. stomach B. liver C. kidneys D. heart
5. How many units of alcohol are in 4 pints of beer?
A. 1 unit B. 2 units C. 4 units D. 8 units
6. How long does the body take to break down 2 units of alcohol?
A. 1 hour B. 2 hours C. 4 hours D. 8 hours
7. Which of the following is made by fermentation only?
A. whisky B. wine C. vodka D. rum
8. Which of the following is made by fermentation followed by distillation?
A. beer B. wine C. vodka D. cider
9. The gas produced by fermentation is
A. carbon monoxide B. carbon dioxide C. oxygen D. nitrogen