

# Knowledge Revision

## AQA Entry Level Certificate in Science

### Biology Topic 1 – The Human Body

You **need to master** and be able to recall the facts so that you can make progress and complete the external assignments to the best of your ability.

You can use Google or revision guides to help you. You can email me any questions or use Zoom if you'd like some immediate face to face help.

You will need to use Zoom when we complete the assignments.

Email: [jdixon@desc.herts.sch.uk](mailto:jdixon@desc.herts.sch.uk)

Zoom:

- Download 'Zoom' app
- Sign up for an account
- Select 'Meet & Chat' on the bottom bar
- Select 'Join' – blue + symbol at the top of the screen
- Enter meeting ID: **960 412 5303**

Name .....

## B1.1 Animal Cells

KEY LEARNING POINTS – Assess as you go!

	R	A	G
Living things are made up of microscopic cells.			
Animal cells have a basic pattern to their structure – a nucleus in cytoplasm surrounded by a cell membrane.			
A nucleus contains genetic material (DNA) and controls what the cell does.			
Cytoplasm is a jelly-like substance where many chemical reactions take place.			
A cell membrane controls what substances enter and leave the cell.			
This basic pattern can be modified to allow cells to become specialised and carry out specific jobs. Examples of specialised animal cells include nerve cells, sperm, muscle cells and red blood cells.			

### Essential Questions

1. What is a cell?
2. What are the three parts of most human cells and what does each part do?
3. Why do cells need to be specialised?

#### CORE

Practise drawing and labelling a basic animal cell.

#### EXTEND

Describe and explain adaptations for both a sperm cell and a red blood cell that let them carry out their jobs.

You should be able to give definitions for the following words:

Key word	Definition
Cell	
Cell membrane	
Cytoplasm	
Genetic	
Nucleus	

## B1.2 Tissues, Organs and Systems

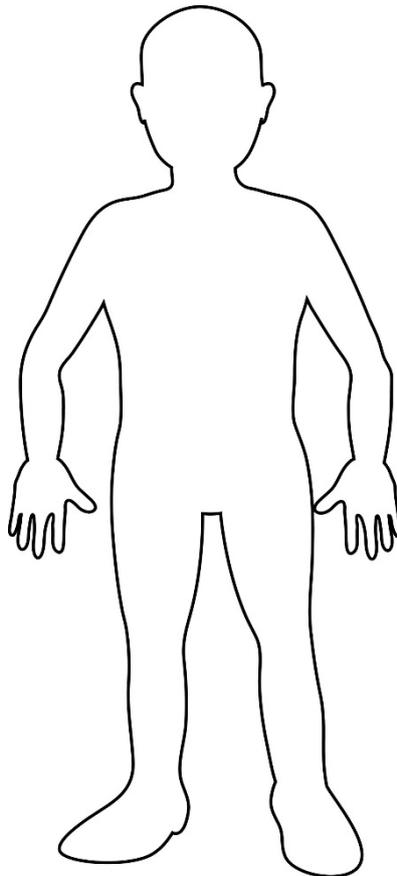
KEY LEARNING POINTS – Assess as you go!

	R	A	G
To make the body function cells are organised into tissues which are organised into organs then organ systems.			
A tissue is a group of cells with similar structures doing the same job.			
Organs are groups of similar tissues doing similar jobs, e.g. heart, liver.			
Organs make up organ systems, such as the circulatory system.			
Blood (tissue) contains white and red blood cells (cells) pumped around the body by the heart (organ).			

### Essential Questions

On the body outline below use a pencil to draw in and label the positions of the brain, heart, kidney, stomach, lungs and liver.

For each one state their function (job).



CORE

1. Organise the following from smallest to largest and give an example of each from the human body:  
Organ            Cell            Organ system            Tissue            Organism
2. From the circulatory system name one organ, one tissue and one cell.

EXTEND

1. **Describe** the role of white and red blood cells with notes about the adaptations that make them good at their jobs.
2. **Explain** the route taken by blood around the body.

You should be able to give definitions for the following words:

Key word	Definition
Blood	
Brain	
Carbon dioxide	
Heart	
Kidneys	
Liver	
Organ	
Oxygen	
Red blood cells	
Reproductive organs	
Tissue	
White blood cells	

### B1.3 Human Digestive System

KEY LEARNING POINTS – Assess as you go!

Digestion breaks down large food particles into small particles that can be absorbed from the small intestine into the bloodstream.	R	A	G
The digestive system consists of mouth, gut, stomach, liver, gall bladder, pancreas, small intestine and large intestine. You need to be able to label these on a diagram.	R	A	G
Digestion starts in the mouth and continues in the stomach (protein digestion) and small intestine.	R	A	G
Chemicals called enzymes speed up (catalyse) digestion.	R	A	G
Each food needs a different type of enzyme.	R	A	G
Human enzymes work best at 37 °C and are also sensitive to pH.	R	A	G

#### Essential Questions

1. What is the order of organs that food passes through as it is digested?
2. Why are enzymes important in the digestive system?
3. Why do you need to digest food?

#### CORE

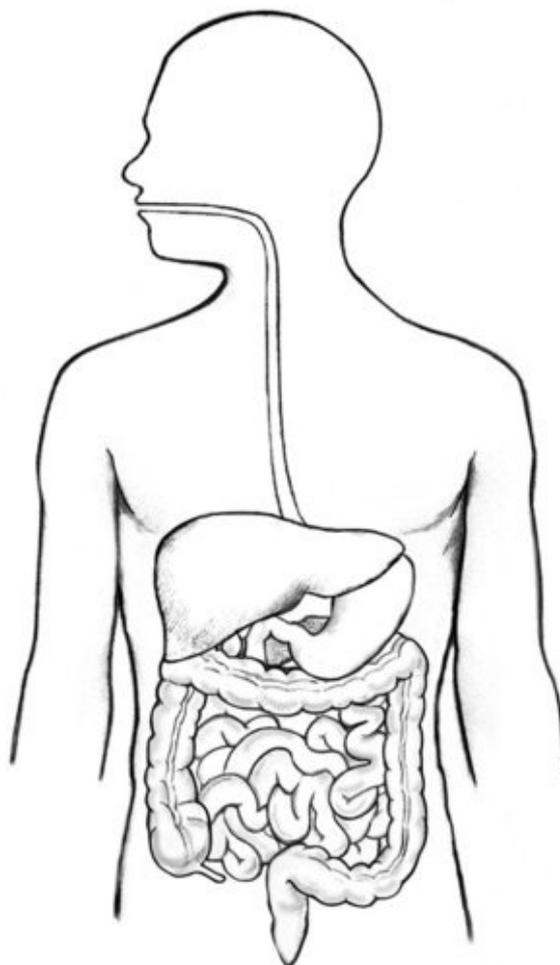
Practise labelling the organs of the digestive system on a simple diagram. See the one on the next page.

#### EXTEND

What does the body do with the food it digests? Be precise and give details.

You should be able to give definitions for the following words:

Key word	Definition
Absorbed	
Digestion	
Enzyme	
Gall bladder	
Gullet	
Small intestine	
Large intestine	
Liver	
Pancreas	
Saliva	
Salivary glands	
Stomach	



## B1.4 Respiration

KEY LEARNING POINTS – Assess as you go!

Respiration is a chemical reaction which takes place in all living cells.	R	A	G
The word equation for the reaction is: Glucose + Oxygen → Carbon dioxide + Water + Energy	R	A	G
Glucose is another word for a type of sugar; it comes from what you eat.	R	A	G
Oxygen comes from the air you breathe and carbon dioxide is returned to the air.	R	A	G
The energy from respiration is needed for all living processes.	R	A	G

### Essential Questions

1. Where does respiration take place?
2. Are breathing and respiration the same thing? Explain your answer.
3. Name three things that the energy produced from respiration is used for in your body.

#### CORE

Practise writing the word equation for respiration.

**Challenge yourself** - add where the reactants have come from and where the products go.

#### EXTEND

Explain the role of breathing in respiration.

You should be able to give definitions for the following words:

Key word	Definition
Respiration	

## B1.5 Lifestyle and Health

KEY LEARNING POINTS – Assess as you go!

A balanced diet must contain all the major food groups. This includes proteins, carbohydrates and fats.	R	A	G
Your lifestyle choices are linked to your health, for example smoking can lead to cancer, a lack of exercise to obesity and drinking too much alcohol to liver problems.	R	A	G
Being overweight increases your chances of suffering from Type 2 diabetes.	R	A	G
You can assess your fitness by measuring pulse rate before and after exercise.	R	A	G
When you exercise your muscles need more energy from respiration.	R	A	G
When you exercise, you breathe deeper or harder and your heart pumps blood more quickly.	R	A	G

### Essential Questions

1. What lifestyle choice is associated with a higher risk of Type 2 diabetes?
2. Which of your organs will be most affected by smoking?
3. How can you measure your own pulse rate?

#### CORE

Describe how food can lead to health problems.

#### EXTEND

Describe and explain what happens to your breathing rate and heart rate when you exercise.

You should be able to give definitions for the following words:

Key word	Definition
Pulse	
Pulse rate	

## B1.6 Infectious Disease

KEY LEARNING POINTS – Assess as you go!

An infectious disease is one that can be passed from one person to the next via contact, sneezing and coughing, sharing needles, sexual intercourse.	R	A	G
These diseases are caused by microscopic pathogens. e.g. bacteria and viruses.	R	A	G
Infectious bacteria make us ill when they produce toxins.	R	A	G
Examples of illnesses caused by bacteria include sore throats, tetanus and meningitis.	R	A	G
Viruses are smaller than bacteria. They reproduce inside other living cells (host cells).	R	A	G
All viruses cause illness. Viral illnesses include the common cold, influenza, chicken pox, measles and AIDS.	R	A	G

### Essential Questions

1. What is a pathogen?
2. How do bacteria make us ill?
3. What makes a disease infectious?

#### CORE

Describe two different causes of infectious illness.

#### EXTEND

Explain why viruses are more difficult to treat than bacterial illnesses.

You should be able to give definitions for the following words:

Key word	Definition
Bacteria	
Pathogen	
Toxin	
Virus	

## B1.7 White Blood Cells and Vaccination

KEY LEARNING POINTS – Assess as you go!

The first line of defence against infection is stopping the pathogen getting into your body.	R	A	G
The second line of defence is from white blood cells (called phagocytes) that ingest bacteria.			
The third line of defence is from another type of white blood cells (called lymphocytes) that produce antibodies.			
Vaccinations use tiny amounts of the dead or inactive pathogen to get the body ready to fight by having pre-made antibodies.			

### Essential Questions

1. State two ways that your body stops pathogens from getting inside the body?
2. Describe the second line of defence?
3. Which system are white blood cells a part of?

#### CORE

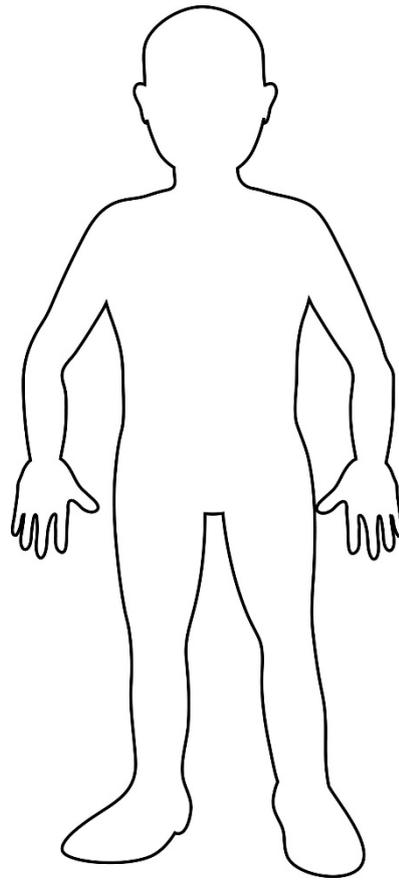
On the body outline (next page) label the different ways that the body stops pathogens getting into the body (the first line of defence).

#### EXTEND

Describe and explain how a vaccination works.

You should be able to give definitions for the following words:

Key word	Definition
Antibody	
Ingest	
Vaccination	
White blood cell	



## B1.8 Medicinal Drugs

KEY LEARNING POINTS – Assess as you go!

Drugs are chemicals that change the way the body works.	R	A	G
Medicinal drugs are designed and tested before they can be given to people. They are used to treat illness or infection.	R	A	G
If drugs are taken incorrectly people can become addicted; this means they feel they cannot cope without the drug. When they stop taking this drug the person may suffer withdrawal symptoms.	R	A	G
Antibiotics are a type of medicine that can kill bacteria. An example is penicillin.	R	A	G
Antibiotics cannot kill viruses.	R	A	G

### Essential Questions

1. What is a drug?
2. Why is Penicillin considered to be a medicinal drug?
3. What sort of pathogens can antibiotics kill??

#### CORE

Describe problems with not using drugs in the prescribed way.

#### EXTEND

Explain why antibiotics are not effective at killing viruses.

You should be able to give definitions for the following words:

Key word	Definition
Addictive	
Antibiotic	
Drug	
Penicillin	

## B1.9 The Nervous System

KEY LEARNING POINTS – Assess as you go!

Automatic actions in your body are controlled by the nervous system or the endocrine system (chemical responses).	R	A	G
Nerves send electrical signals along nerve cells to the brain which coordinates a response.	R	A	G
A reflex action happens without thinking about it and helps to keep you safe. An example is blinking to keep dust out of the eye.	R	A	G
A reflex action is very quick because the signal travels to the spinal cord instead of the brain.	R	A	G

### Essential Questions

1. What is an automatic action?
2. What is the difference between the type of signals / messages transferred by the nervous system and the endocrine system?
3. What is a reflex action?

#### CORE

Why are reflex actions important?

#### EXTEND

Describe the route taken by a nervous signal in a reflex action.

You should be able to give definitions for the following words:

Key word	Definition
Action	
Automatic	
Coordinated	
Reflex action	

## B1.10 The Endocrine System and Hormones

KEY LEARNING POINTS – Assess as you go!

The endocrine system coordinates responses using hormones secreted by glands.	R	A	G
Hormones are made in one place and travel through the blood to the place where they cause a response – this is called the target organ.			
Hormones are often described as ‘chemical messengers’.			
Sometimes hormones do not work properly. For example, insulin controls blood sugar level and if this goes wrong the person may suffer from diabetes.			

### Essential Questions

1. What is a hormone?
2. What is a target organ?
3. Name two organs where endocrine glands are found?

### CORE

Add the position of the pituitary gland, pancreas, adrenal glands and thyroid gland on the body outline on the next page.

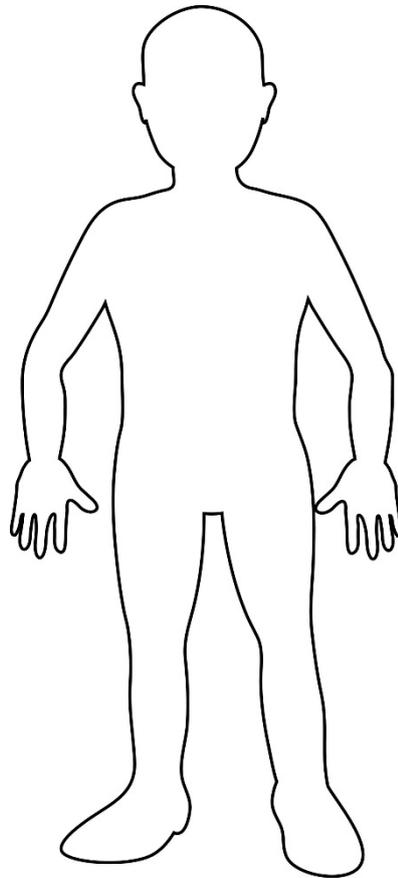
### EXTEND

Compare the responses made by nerves and hormones.

	<i>Nervous system</i>	<i>Endocrine system</i>
Fast or slow transmission?		
How is the information transmitted?		
How long does the response last?		
Is the response widespread or local?		

You should be able to give definitions for the following words:

Key word	glands	Definition
Coordinated		
Glands		
Hormones		
Secreted		
Target organ		



## B1.11 Hormonal Control of the Menstrual Cycle

KEY LEARNING POINTS – Assess as you go!

The menstrual cycle is the female fertility cycle which last about 28 days.	R	A	G
Hormones control the events in the menstrual cycle including egg release.			
Ovulation (egg release) is on day 14 of the cycle.			
Hormones can be used in contraception to control fertility.			

### Essential Questions

1. What controls the events of the menstrual cycle?
2. What are the two possible outcomes of the monthly menstrual cycle?
3. What is ovulation?

#### CORE

Use your notebook to help you recall the four main stages of the menstrual cycle.

#### EXTEND

How can female hormones be used in contraception and fertility?

You should be able to give definitions for the following words:

Key word	Definition
Egg	
Menstrual cycle	
Contraceptive	
Fertility	
Stimulate	