Unit R023

Understanding body systems and disorders

In this unit you will study three different body systems, the digestive, cardiovascular and respiratory systems. You will need to explain their **structure (what the bits are)** and **function (what it does)**, and how the **structure links to the function**.

You will then find out about **disorders** that can affect each system, and explain the **symptoms, diagnosis** and **treatment.**

You will produce a range of materials suitable to be on display in a local health centre, to inform and advise the public about the workings of some of their body systems. This can include posters, leaflets and booklets.

You may find the following resources helpful:

Frog/Health and Social care/KS4/Cambridge National Certificate/Body Systems – you will find PowerPoints on each of the systems to get you started.

A really good detailed interactive site:

http://www.innerbody.com/

How the digestive system works:

https://www.niddk.nih.gov/health-information/digestive-diseases/digestive-system-how-it-works

How the Cardiovascular system works:

https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0072434/

https://www.bhf.org.uk/heart-health/how-your-heart-works/your-heart-and-circulation

How the respiratory system works:

https://www.livescience.com/26825-human-body-system-respiration-infographic.html

https://www.webmd.com/lung/how-we-breathe

Disorders of the body:

https://www.nhs.uk/Conditions/Pages/hub.aspx

Remember, ALL your work must be in your own words.

Don't forget to update your bibliography!!

The digestive system

In this task you will produce some material suitable for your display to explain the **structure** and **function** of the **digestive system**. You must also show that you understand how the structure links to the function.

Before you start, have a look at how you will be **marked**. Make sure you know what you have to do to get into the higher mark bands.

MB1: 1 - 3 marks	MB2: 4 - 6 marks	MB3: 7 - 8 marks
Demonstrates **basic** knowledge of how the digestive system works. Provides **basic** information to illustrate the structure of the digestive system making **few** links between structure and function. Provides a **basic** description of the system functionality making **limited** use of terminology but demonstrating a **basic** understanding. [1 2 3]	Demonstrates **sound** knowledge of how the digestive system works. Provides **clear** information to illustrate the structure of the digestive system making **some** links between structure and function. Provides a **clear** description of the system functionality, making **some** effective use of terminology and demonstrating a **sound** understanding. [4 5 6]	Demonstrates **detailed** knowledge of how the digestive system works. Provides **detailed and coherent** information to illustrate the structure of the digestive system making **many** links between structure and function. Provides a **comprehensive** description of the system functionality, **effectively** using terminology which demonstrates a **clear and thorough** understanding. [7 8]

For top marks you need **detail**! You must make **many links** between structure and function. You need to use **appropriate terminology** to show your understanding.

Step 1 – <u>Create a detailed poster showing the structure of the digestive system</u>.

You are not allowed to use pre labelled diagrams; you must label your diagram yourself. You must include all of the major organs and structures involved in digestion, starting at the mouth and ending at the other end!!

To achieve marks in the higher band, you need to make **many links** between the **structures** and their **function**. **For example,' the small intestine is lined with hair like projections called villi, which increase the surface area so more nutrients can be absorbed into the blood stream to produce energy for the body.'**

You must use correct terminology to explain your structures, and label as many important structures as you can. **Remember, all your work must be in your own words!!**

Key structures to include:

buccal cavity	**salivary glands**	**saliva**	**oesophagus**
stomach	**rugae**	**duodenum**	**small intestine (ileum and jejunum)**
villi	**pancreas**	**liver**	**bile duct**
gall bladder	**large intestine (colon)**	**rectum**	**sphincters**

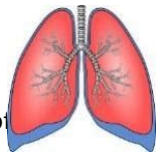
Step 2 – <u>Explain the function of the digestive system</u>.

A good way to do this is to tell the story of your food! Start with taking a bite of your favourite food, and using lots of detail and appropriate terminology, explain how the food is gradually broken down as it passes through the digestive system until it is in a form suitable for passing into the bloodstream for use as energy in the cells, or eliminated from the body as waste.
For higher marks this must be a comprehensive description, so make sure you are describing every step of the journey. Make sure you explain the function of each of the structures on your diagram, and explain the following **key processes:**

the function and type of enzymes in the saliva, stomach and pancreatic juices.	**peristalsis**	**mechanical digestion**
chemical digestion	**the role of the liver**	**absorption in the small intestine**

Step 3 - <u>Now update your bibliography with any information sources you used</u>.

The respiratory system



In this task you will produce some material suitable for your display to explain the **structure** and **function** of the **respiratory system**. You must also show that you understand how the structure links to the function.

Before you start, have a look at how you will be **marked**. Make sure you know what you have to do to get into the higher mark bands.

MB1: 1 - 3 marks	MB2: 4 - 6 marks	MB3: 7 - 8 marks
Demonstrates **basic** knowledge of how the respiratory system works. Provides **basic** information to illustrate the structure of the respiratory system making **few** links between structure and function. Provides a **basic** description of the system functionality making **limited** use of terminology but demonstrating a **basic** understanding. [1 2 3]	Demonstrates **sound** knowledge of how the respiratory system works. Provides **clear** information to illustrate the structure of the respiratory system making **some** links between structure and function. Provides a **clear** description of the system functionality, making **some** effective use of terminology and demonstrating a **sound** understanding. [4 5 6]	Demonstrates **detailed** knowledge of how the respiratory system works. Provides **clear and coherent** information to illustrate the structure of the respiratory system making **many** links between structure and function. Provides a **comprehensive** description of the system functionality, **effectively** using terminology which demonstrates a **clear and thorough** understanding. [7 8]

Step 4 – **Create a detailed poster/leaflet/booklet showing the structure of the respiratory system**.

Again, you are not allowed to use pre labelled diagrams; you must label your diagram yourself. You must include all of the major organs and structures involved in the respiratory system; you may need to show some of the structures inside the lungs separately to get enough detail in.

To achieve marks in the higher band, you need to make **many links** between the **structures** and their **function**. **For example, 'the alveoli have very thin walls to allow gasseous exchange to happen where the oxygen diffuses into the blood'**

You must use correct terminology to explain your structures, and label as many important structures as you can. **Remember, all your work must be in your own words!!**

Key structures to include:

Nasal cavity	**sinuses**	**larynx**	**trachea**
cilia	**bronchi**	**bronchioles**	**lungs**
alveoli	**diaphragm**	**Intercostal muscles**	

Step 5 – **Explain the function of the respiratory system.**

You need to explain in detail the process by which the body takes in air and removes waste gasses. You will need to explain how the three major parts of the respiratory system function: the airway, the lungs, and the muscles of respiration.

For higher marks this must be a comprehensive description, so make sure you are describing every step of the process. Make sure you explain the function of each of the structures on your diagram, and explain the following **key processes:**

The function of cilia	**The role of the cartilage rings in the trachea**	**Gaseous exchange in the alveoli**
Diffusion	**The function of the muscles of respiration**	

Step 6 - **Now update your bibliography with any information sources you used.**

The cardiovascular system

In this task you will produce some material suitable for your display to explain the **structure** and **function** of the **cardiovascular system**. You must also show that you understand how the structure links to the function.

Before you start, have a look at how you will be **marked**. Make sure you know what you have to do to get into the higher mark bands.

MB1: 1 - 3 marks	MB2: 4 - 6 marks	MB3: 7 - 8 marks
Demonstrates **basic** knowledge of how the cardiovascular system works. Provides **basic** information to illustrate the structure of the cardiovascular system making **few** links between structure and function. Provides a **basic** description of the system functionality making **limited** use of terminology but demonstrating a **basic** understanding. [1 2 3]	Demonstrates **sound** knowledge of how the cardiovascular system works. Provides **clear** information to illustrate the structure of the cardiovascular system making **some** links between structure and function. Provides a **clear** description of the system functionality, making **some** effective use of terminology and demonstrating a **sound** understanding. [4 5 6]	Demonstrates **detailed** knowledge of how the cardiovascular system works. Provides **detailed and coherent** information to illustrate the structure of the cardiovascular system making **many** links between structure and function. Provides a **comprehensive** description of the system functionality, **effectively** using terminology which demonstrates a **clear and thorough** understanding. [7 8]

Step 7 – **<u>Create a detailed poster/leaflet/booklet showing the structure of the cardiovascular system</u>**.

Again, you are not allowed to use pre labelled diagrams; you must label your diagram yourself. You must include all of the major organs and structures involved in the cardiovascular system; you may need to do a separate diagram of the **heart, blood vessels** and a diagram of the **system as a whole.**

To achieve marks in the higher band, you need to make **many links** between the **structures** and their **function**. **For example, 'the walls of the left ventricle has a thicker muscle wall than the right ventricle. This is because the left ventricle has to pump blood all the way around the body, but the right ventricle only has to pump it to the lungs. The blood in arteries is under higher pressure than blood in the veins.'**

You must use correct terminology to explain your structures, and label as many important structures as you can. **Remember, all your work must be in your own words!!**

Key structures to include:

superior vena cava	**inferior vena cava**	**right atrium**	**right ventricle**
valves	**left ventricle**	**left atrium**	**pulmonary artery**
pulmonary vein	**aorta**	**Sinoatrial node**	

Step 8 – **<u>Explain the function of the cardiovascular system</u>.**

You need to explain in detail the process by which the **heart pumps blood** round the body, and what the **blood contains**. Also explain the correct **flow of blood through the heart**, and the location and function of the **major arteries, veins and capillaries**. You will need to describe **blood pressure**, and the systems role in **regulating body temperature**.

The flow of blood through the heart	**The function of arteries and veins**	**The function of the blood**
How the systems helps regulate body temperature.	**Blood pressure**	**Electrical regulation of the heart**

Step 9 - **<u>Now update your bibliography with any information sources you used</u>.**

IBS, Ulcerative colitis, Coeliac disease, Crohn's disease, Gastroesophageal reflux disease (GERD) Gallstones

Disorders of the digestive system

You must now show that you understand how one disorder can affect the digestive system. Have a look at the mark grid below:

MB1: 1 - 3 marks	MB2: 4 – 5 marks	MB3: 6 - 7 marks
Provides a **basic** list of the symptoms for disorders associated with the digestive system giving **basic** reasons for **some** of the symptoms. Provides a **basic** list of the methods of diagnosis. There may be **few**, if any, links made between disorders and the structure and/or functionality of the system. **[1 2 3]**	Provides a **sound** description of the symptoms for disorders associated with the digestive system giving reasons for **many** of the symptoms. Provides a **sound** list of the methods of diagnosis. There may be **some** links made between disorders and the structure and/or functionality of the system. **[4 5]**	Provides a **detailed** description of the symptoms of disorders associated with the digestive system, giving **detailed** reasons for **most** of the symptoms. Provides a **comprehensive** list of the methods of diagnosis. There are likely to be links made between disorders and the structure and/or functionality of the system. **[6 7]**

Once again, for higher marks you need to make many links between the effects of disorder and the structure/function of the system. In other words, what does the disorder actually do to the body?

Step 1: **How does the disorder affect the body?** You must explain in detail how the disorder affects the body and how it functions.

Step 2: **Symptoms:** For your chosen disorder, give a detailed description of how it affects the person, and the what the **symptoms** are. You must give **reasons** for why the symptoms exist.

Step 3: **Diagnosis:** You must then give a comprehensive explanation of the ways that the disorder will be **diagnosed**. This means what tests would the doctor do to find out what is wrong? This may involve blood tests, examinations, scans etc.

Examples: Irritable bowel syndrome (IBS)

This is a symptom.

A **symptom** of IBS is cramping pains. This is because the intestine is not moving the food through in a regular rhythm, which causes pain. As the muscles contract irregularly, it causes cramps. Pain is thought to be caused by an increased sensitivity to movements of the guut, and the build up of gas.

This is the reason why the symptom exists.

Stroke, heart attack, angina, heart block, coronary artery disease

Disorders of the Cardiovascular system

You must now show that you understand how one disorder can affect the cardiovascular system. Have a look at the mark grid below:

MB1: 1 - 3 marks	MB2: 4 – 5 marks	MB3: 6 - 7 marks
Provides a **basic** list of the symptoms for disorders associated with the cardiovascular system giving **basic** reasons for **some** of the symptoms. Provides a **basic** list of the methods of diagnosis. There may be **few**, if any, links made between disorders and the structure and/or functionality of the system. [1 2 3]	Provides a **sound** description of the symptoms for disorders associated with the cardiovascular system giving reasons for **many** of the symptoms. Provides a **sound** list of the methods of diagnosis. There may be **some** links made between disorders and the structure and/or functionality of the system. [4 5]	Provides a **detailed** description of the symptoms of disorders associated with the cardiovascular system, giving detailed reasons for **most** of the symptoms. Provides a **comprehensive** list of the methods of diagnosis. There are likely to be links made between disorders and the structure and/or functionality of the system. [6 7]

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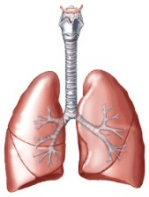
Examples: Stroke

This is a symptom.

A **symptom** of stroke is inability to speak. This is caused by the blood not reaching the area of the brain that allows us to process speech and language, due to either a blockage or a bleed. As the cells will not be receiving oxygen they will die, and the person will be unable to speak properly.

This is the reason why the symptom exists.



Asthma, COPD, Emphysema, Chronic Bronchitis, Pneumonia.

Disorders of the respiratory system

You must now show that you understand how one disorder can affect the respiratory system. Have a look at the mark grid below:

MB1: 1 - 3 marks	MB2: 4 – 5 marks	MB3: 6 - 7 marks
Provides a **basic** list of the symptoms for disorders associated with the respiratory system giving **basic** reasons for **some** of the symptoms. Provides a **basic** list of the methods of diagnosis. There may be **few**, if any, links made between disorders and the structure and/or functionality of the system. [1 2 3]	Provides a **sound** description of the symptoms for disorders associated with the respiratory system giving reasons for **many** of the symptoms. Provides a **sound** list of the methods of diagnosis. There may be **some** links made between disorders and the structure and/or functionality of the system. [4 5]	Provides a **detailed** description of the symptoms of disorders associated with the respiratory system, giving detailed reasons for **most** of the symptoms. Provides a **comprehensive** list of the methods of diagnosis. There are likely to be links made between disorders and the structure and/or functionality of the system. [6 7]

Once again, for higher marks you need to make many links between the effects of disorder and the structure/function of the system. In other words, what does the disorder actually do to the body?

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Step 3: **Diagnosis:** You must then give a comprehensive explanation of the ways that the disorder will be **diagnosed**. This means what tests would the doctor do to find out what is wrong? This may involve blood tests, examinations, scans etc.

Examples: bronchitis

This is the symptom.

A **bronchitis** of stroke is a bad cough. This is caused by the infection causing irritation to the lining of the lungs, and a build up of mucus. Coughing is the bodies way of expelling this foreign matter.

This is the reason why the symptom exists.