Enfield County School for Girls

A LEVEL BIOLOGY TRANSITION UNIT

Introduction

Welcome to A-Level Biology at Enfield County School for Girls

Congratulations! All being well with GCSE results, you will be embarking on a rewarding and exciting A-level Biology course in September. Nothing less than a deeper understanding of your very existence is on offer. You're going to love it!

The transition to A Level is always a challenging one. To help make this transition smoother and give you the best possible start, we have prepared this booklet for you. It is important that you read through this booklet and then complete all the questions. The tasks cover GCSE topics which you should have already covered. You will need a secure knowledge of these topics before you start the course in September. Completing this booklet also demonstrates your commitment to working hard on this Biology A level course.

To help you complete the tasks, the following resources may be useful:

- http://www.bbc.co.uk/schools/gcsebitesize/
- http://www.s-cool.co.uk/gcse
- Any GCSE Additional Science/Biology revision guide
- Your own old GCSE Science/Biology exercise books
- Head Start to AS Biology Published by CGP

Complete the activities in this booklet so you can get an idea about what Biology A level is and the level of challenge you are expected to be able to cope with. If you decide to take up Biology for one of your A levels then these tasks must be completed and shown to your teacher in your first Biology A level lesson.

Enjoy the summer and all being well we look forward to seeing you in your Biology lessons!

Course Outline

The Biology course you are studying is **AQA Biology**,

If you want to, you can access course information directly from AQA at

http://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402

What we expect of you

We expect you to agree to the following expectations:

- **Attend all lessons** unless you have a genuine medical or personal reason for absence (and give advance notice of any unavoidable planned absence).
- **Complete** any missing work/establish assignments and deadlines if you have been absent.
- Be **punctual** to all lessons and remain for the full duration.
- Be **ready to learn** at the start of every lesson.
- Display a **positive attitude** and participate fully in lessons.
- **Meet all deadlines** by handing in all work on time.
- **Actively seek assistance** from your teachers as soon as you are aware that you have problems with set work or any other aspect of the course.
- Be aware of and **utilise fully all of the resources** that are available in the department and the school to help you to succeed in the course.
- **Spend a *minimum* of one hour Biology study time outside of class for every hour that you spend in class (i.e. a minimum of 5 hours a week).**
- Regularly **read through and supplement your notes** by using both the textbook and other general reading.
- **Attend any extra- curricular sessions** which are offered by your teachers.

These guidelines have been drawn up based on our previous experience and based on what previous students have told us. By following these we hope to develop and maintain a highly motivated learning environment from which you will experience the best of what Biology has to offer you at Enfield County.

Name_____

Task 1 Exam technique

In order to be successful in A- level Biology exam technique is essential. A key area of exam technique is in understanding the command words in the question.

1. Define the following keywords:

a) Describe

b) Explain

c) Suggest

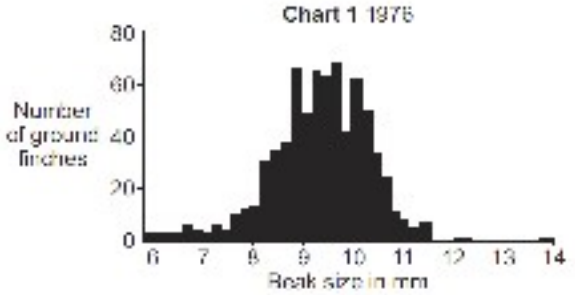
d) Evaluate

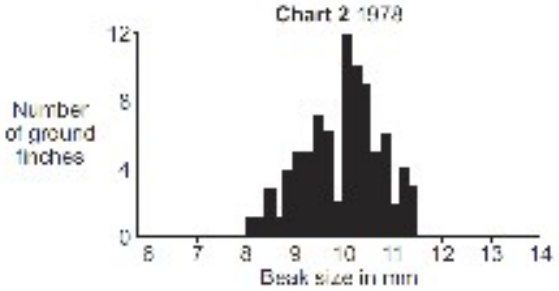
2. The Galapagos Islands are in the Pacific Ocean, 1400 km from South America. A type of bird called a ground finch lives on the islands.

The picture shows a ground finch.

The size of the seeds the ground finch can eat depends upon the size of the beak. To eat large seeds, a large beak is needed.

The bar charts show the sizes of the beaks of ground finches on one island, in 1976 and in 1978.





2 (a) The population of the ground finches and their beak sizes changed between 1976 and 1978.

Describe these changes.

2 b) In 1977 there was very little rain on the island. The lack of rain affected the seeds that the finches ate.

The table shows how the seeds were affected.

Year	Mean number of seeds per m^2	Mean mass of each seed in mg
1976	8.5	3.5
1978	2.8	4.2

Suggest an explanation for the changes in beak sizes between 1976 and 1978.

Task 2 Enzymes & the digestive system

1. Match each part of the body to its correct function:

Part of the body	Function
The large intestine	Makes digestive enzymes, and is where digested food is absorbed into the blood
The oesophagus	Contains teeth to cut and grind food
The mouth	Is where water is absorbed
The stomach	Joins the mouth with the stomach
The small intestine	Makes digestive enzymes and acid
The liver	Makes insulin and digestive enzymes
The pancreas	Makes bile

2. What are the functions of digestive enzymes?

3. How does chewing food help to speed up digestion?

4. Complete the following table:

Enzyme	Where is this enzyme produced?	What food group does the enzyme break down?	What are the products of the breakdown?
Carbohydrase			
Amylase			
Protease			
Lipase			

5. Which one of the following structures is not part of the alimentary canal?

(a) duodenum (c) liver (b) mouth (d) stomach:

6. What name is given to the muscular contraction which moves food along the alimentary canal?

7. Are the contents of the stomach (a) acid, (b) alkaline,{c) neutral?

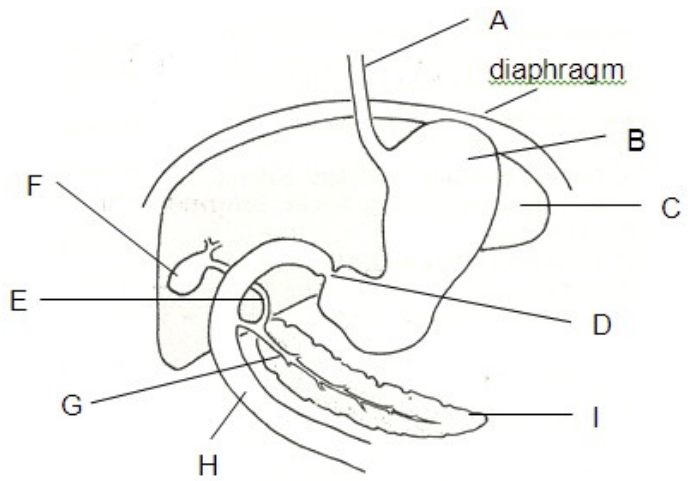
8. What is the function of bile in digestion?

9. How is the surface area of the small intestine increased?

10. Describe how you would test for:

Fat	Starch	Protein

11. Name the structures labelled A to I.



A _____

B _____

C _____

D _____

E _____

F _____

G _____

H _____

I _____

12. Find out what the following mean and give one example for each one:

a) Monosaccharide

b) Disaccharide

c) Polysaccharide

Task 3: Factors affecting enzymes

1. What two things affect the activity of enzyme?

2. Enzymes in the human body have an optimum of 37ºC.
What does this mean?

3. What is the minimum amount of energy required for a reaction to take place called?

4. How do enzymes speed up chemical reactions?

5. If an enzyme-controlled reaction normally takes place at 10ºC, in general terms how will the reaction be affected by:

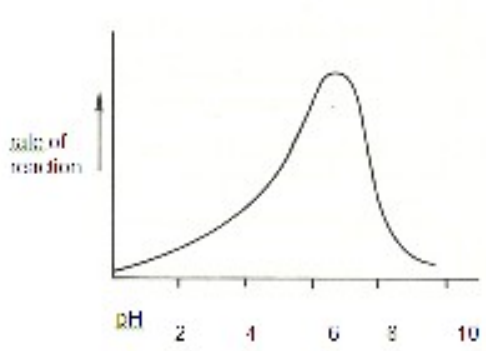
(a) a fall in temperature to 2°C

(b) a rise in temperature to 20°C.

(c) a rise in temperature to 65°C?

6. If an enzyme is denatured, why does it no longer work?

7. The graph shows the rate of an enzyme reaction at different levels of acidity or alkalinity (pH).



From the graph, what is the optimum pH for this enzyme?

(a) pH 2 (c) pH 10

(b) pH 7 (d) none of these.

8. A protein-digesting enzyme when mixed with starch solution would:

(a) have no action (c) produce glucose

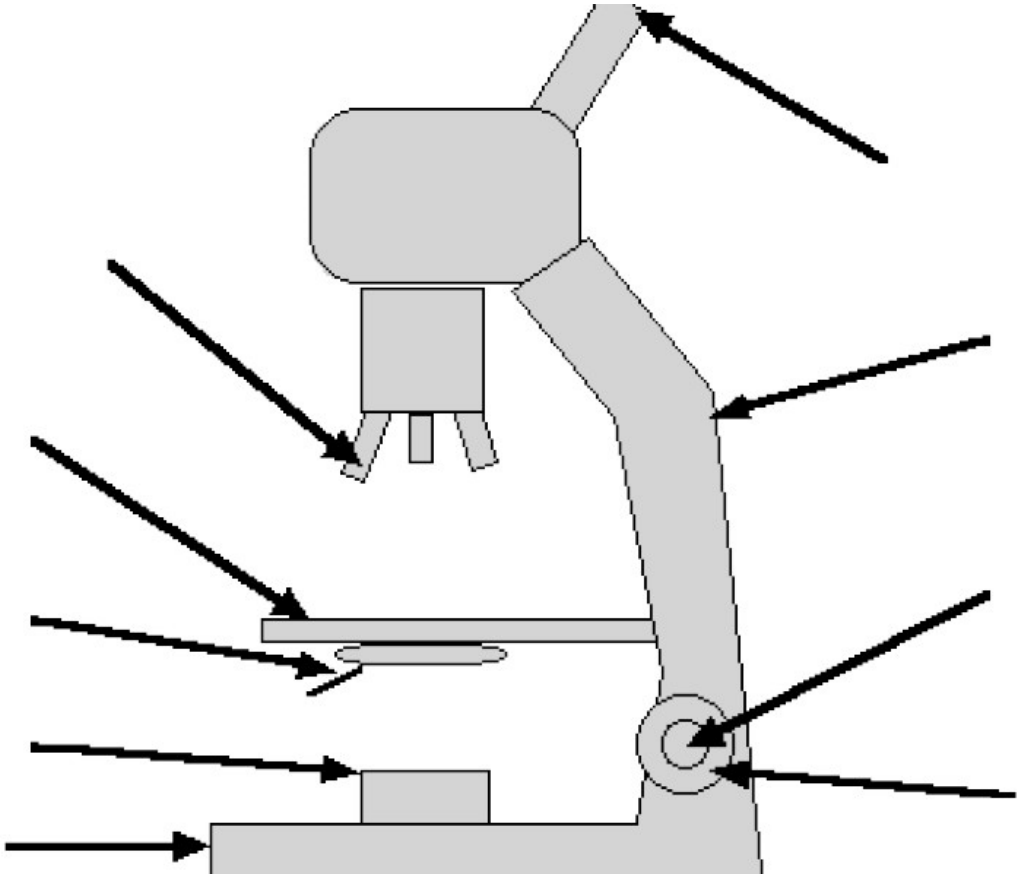
(b) produce amino acids (d) digest the starch?

9. What are the 2 models for enzyme action?

10. In enzyme inhibition there are 2 inhibitors, find out what these are called.

Task 4: Microscopes& Organelles

1. Label the microscope below:



2. Find out the difference between light microscopes and electron microscopes.

Light microscopes	Electron microscopes

3. You will be using lots of new scientific vocabulary on the biology course find out the meanings of the following keywords:

a) Resolution

b) Magnification

c) Nucleolus

d) Golgi apparatus

e) Lysosome

f) Ribosome

g) Rough endoplasmic reticulum

4. You must know the following units of measurement when working with microscopes. They are all in comparison to a metre. Complete the table below.

Unit	Symbol	Equivalent in metres
kilometre	km	10^{3}
metre		
	mm	10^{-3}
micrometre		10^{-6}
nanometre	nm	

5. Place a tick in the box to indicate where the organelle is found. Some organelles can be found in both plant and animal cells.

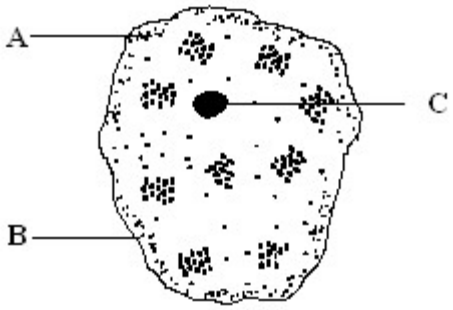
Organelle	Plant Cell	Animal Cell
Cell Wall		
Chloroplast		
Cytoplasm		
Endoplasmic reticulum		
Golgi apparatus		
Lysosome		
Nucleolus		
Nucleus		
Plasma		
Ribosome		
Vacuole		
Mitochondria		

6. Cells are categorised as either prokaryotes or eukaryotes. Find out what this means and give 1 example for each of these categories.

Prokaryote	Eukaryote

7. The diagram shows an animal cell

a) Name each labelled part and give its function



A Name _____

Function_____

_____

B Name_____

Function_____

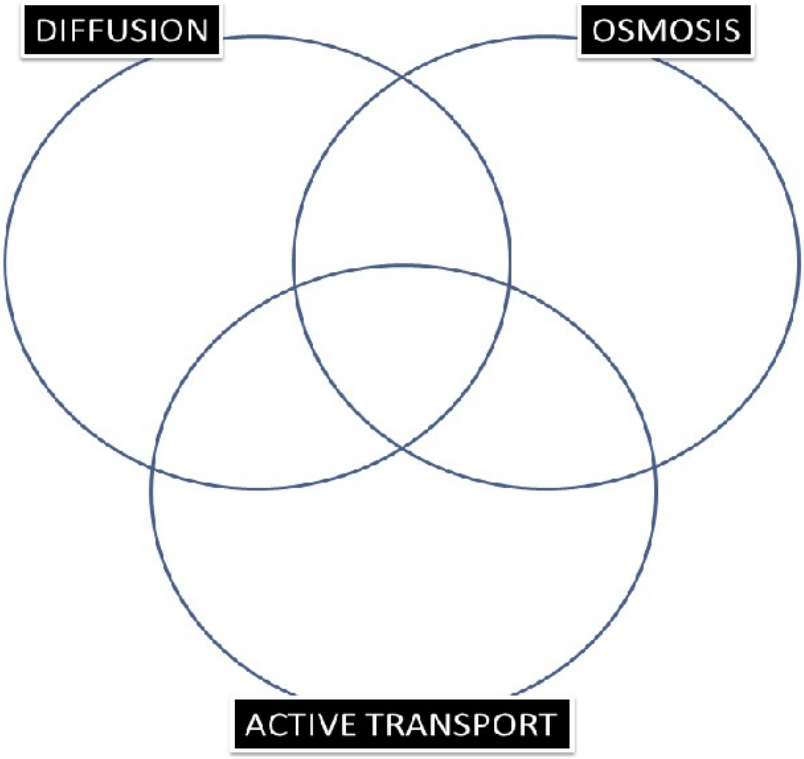
_____

C Name_____

Function _____

Task 5: Movement across membranes

1. Place the following features in the correct part of the Venn Diagram using the letters given.

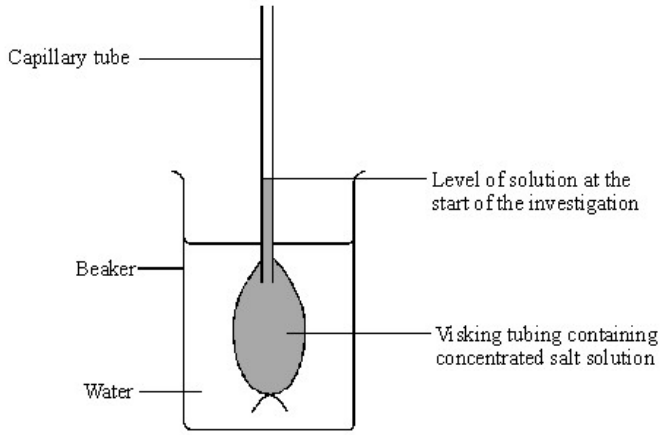


A	Involves water only
B	Requires energy
C	Is passive
D	Movement of particles
E	How minerals get into root hair cells
F	High to low concentration
G	Against a concentration gradient

2. Why does active transport require energy?

3. What is this energy in the form of?

4. Some students set up the experiment below to investigate osmosis



a) What is osmosis?

b) What will happen to the water level in the capillary tube during the investigation? Explain why this happens

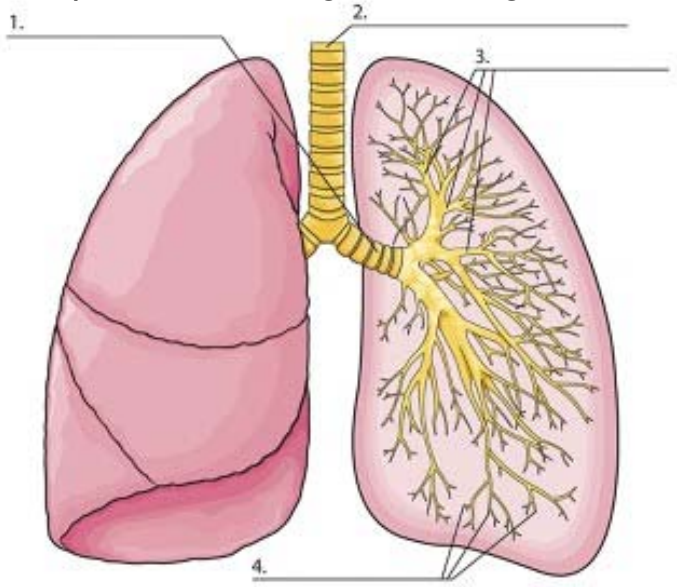
c) Describe two examples where osmosis is used in living things

Task 6: Gas Exchange

1. Where does gas exchange take place?

2. Describe how the lungs are adapted for gas exchange

3. Label the parts of the lung in the diagram below:



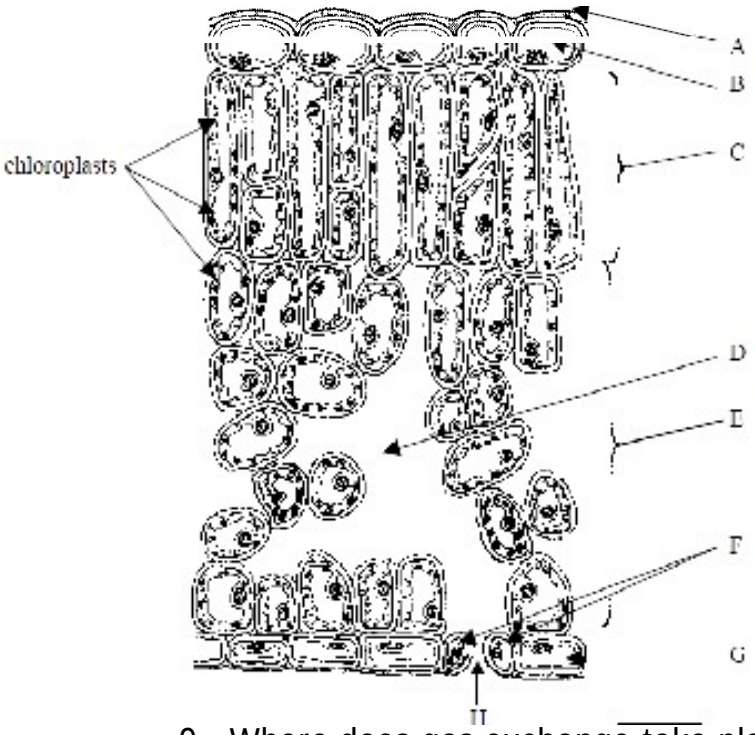
4. Describe the process of breathing in (inspiration)

5. Smoking causes emphysema, what is emphysema?

6. Tuberculosis is caused by two species of bacteria. Find out the name for both these bacteria.

7. Pulmonary ventilation is the total volume of air that is moved into the lungs in one minute. Find out the equation for pulmonary ventilation.

8. The diagram below shows a vertical section of a leaf. Name structures A-F.



A _____

B _____

C _____

D _____

E _____

F _____

G _____

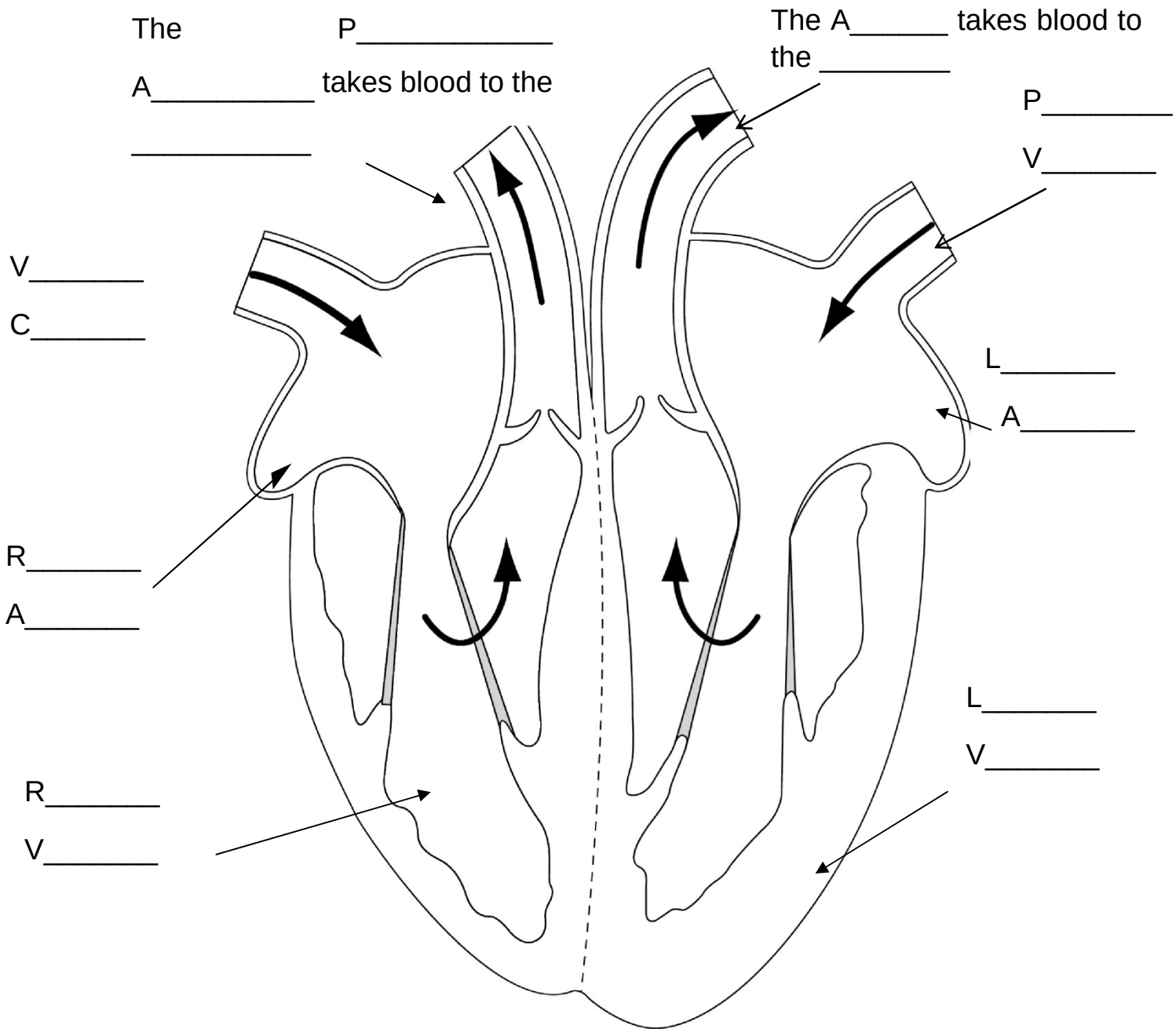
H _____

9. Where does gas exchange take place in a leaf?

10. What is the role of the stomata in gas exchange

Task 7: The Heart

1. Label the diagram and complete the gap fill exercise below.



2. Complete the passage below:

The heart is made out of _____ Muscle.It is a double _____ that squeezes the blood around the _____ and to the _____. The _____ sidepumps blood to the lungs to pick up _____. The _____ side pumps blood around the rest of the body.

3. Find out another term that is used for a heart attack

4. Which side of the heart is thicker and why?

5. Name the artery that only supplies the heart?

6. Name 3 blood vessels

7. Which blood vessel contains valves?

8. What are the functions of valves?

9. What causes heart disease?

Task 8: Causes of disease and immunity

1. What are the three main types of microorganisms?

2. What is a pathogen?

3. Define the term antigen

4. List 3 things that white blood cells do

5. What is the difference between an antibiotic and an antibody?

6. What is found in a vaccination?

7. Match the description on the left with the term on the right by writing the correct letter in each space.

1. a disease that destroys the immune system	a. active
2. disease-causing bacteria	b. antigens
3. traps pathogens in respiratory system	c. passive
4. proteins and chemicals that are foreign to the body	d. mucus
_____ 5. contains weakened antigens	e. lymphocytes
_____ 6. immunity occurring when your body makes its own antibodies	f. antibody
_____ 7. substance made in response to an antigen	g. enzymes
_____ 8. immunity occurring when antibodies are introduced from an outside source	h. pathogens
9. cells attacked by AIDS virus	i. vaccine
10. destroy pathogens in stomach, pancreas, and liver	j. AIDS

8. Find out what causes cholera and describe the symptoms of this disease.

9. Oral rehydration therapy is used to treat cholera. Find out what this rehydration solution contains.

10. What is the name of the chemical found in cigarettes that causes cancer?

11. Disease causing microorganisms gain entry into the body via one of its interfaces with the environment such as the skin. Name 2 other examples of interfaces through which microoganisms may gain entry into the body.

12. How do pathogens cause disease?

Task 9: Interpreting data& HSW

1. What is the difference between an independent variable and a dependent variable?

2. Which axis has the independent variable on a graph?

3. What term is used for the variable we keep the same throughout an investigation?

4. What is the sensitivity of a balance?

5. What does correlation mean?

6. What does the term directly proportional mean?

7. How can the reliability of an experiment be increased?

8. How can the pH of a solution be controlled?

9. What does standard deviation mean?