Low Demand Questions QUESTIONSHEET 1

The list gives some structures in the blood and circulatory system.

heart artery red blood cell ventricle capillary plasma vein white blood cell platelets

(a) Which of these structures

(i) can destroy bacteria?

.....[1]

(ii) carries carbon dioxide?

.....[1]

(iii) pumps blood around the body?

.....[1]

(iv) carries blood to organs?

.....[1]

(v) carries blood from organs?

.....[1]

(vi) carries oxygen?

.....[1]

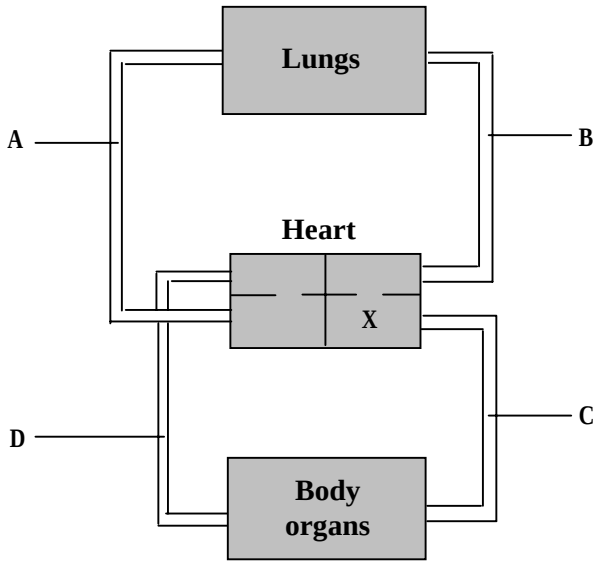
(b) Name the type of blood vessel which has valves.

.....[1]

TOTAL / 7

Low Demand Questions QUESTIONSHEET 2

The diagram shows a plan of part of the circulation



(a) Name the type of blood vessel labelled

(i) C.

.....[1]

(ii) D.

.....[1]

(b) In which direction does blood in vessel A travel?

.....[1]

(c) Which of the four blood vessels contains most oxygen?

.....[1]

(d) What happens to the amount of oxygen in the blood as it passes through the body organs?

.....[1]

(e) What is the chamber of the heart labelled X?
Choose your answer from the list

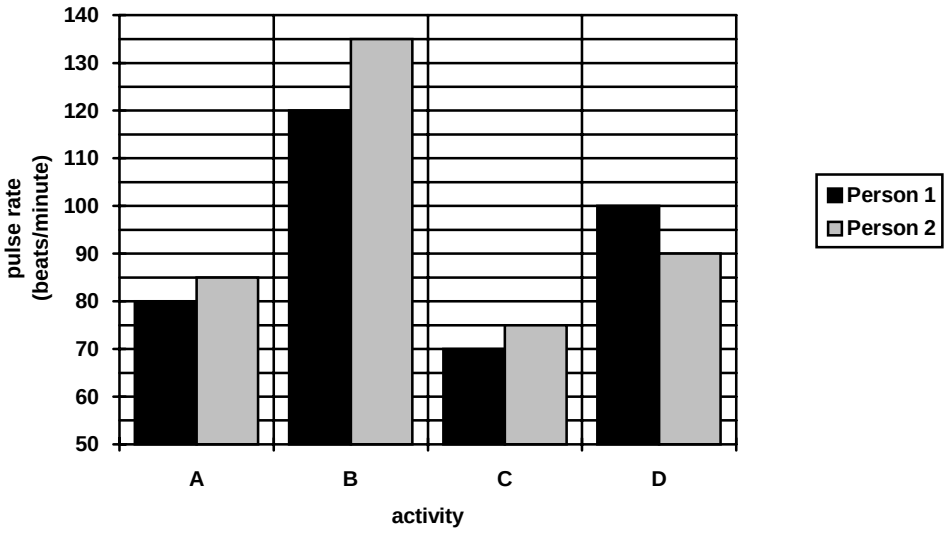
right ventricle **left atrium** **left ventricle** **right atrium**

.....[1]

TOTAL / 6

Low Demand Questions QUESTIONSHEET 3

The bar chart shows the pulse rates of two people immediately after four types of activity.



(a) What was the pulse rate

(i) of person 1 after activity A?

.....[1]

(ii) of person 2 after activity C?

.....[1]

(b) During which activity was there the greatest difference in the pulse rate of the two people?

.....[1]

(c) The four activities were walking. standing, running and sitting down. Match these activities to the letters A, B, C and D on the bar chart.

.....

.....

.....

.....[4]

(d) Why does the pulse rate increase during exercise?

.....

.....

.....[3]

TOTAL / 10

Low Demand Questions QUESTIONSHEET 4

Three students measured their pulse rates before a game of squash. They measured their pulse rates again after the game every minute for 5 minutes. The table shows their results.

	Pulse rate /beats per minute		
	Student A	**Student B**	**Student C**
Before exercise	72	65	75
1 minute after	170	144	178
2 minutes after	142	115	132
3 minutes after	96	70	105
4 minutes after	82	65	92
5 minutes after	75	65	84

(a) Which student had the highest pulse rate after the game of squash?

.....[1]

(b)(i) What is meant by recovery time?

.....[1]

(ii) How long was student B's recovery time?

.....[1]

(c)(i) Which of the three students was the fittest?

.....[1]

(ii) Give two reasons for your answer.

.....

.....[2]

(d) Which of the three students would take longest to recover from the game of squash?

.....[1]

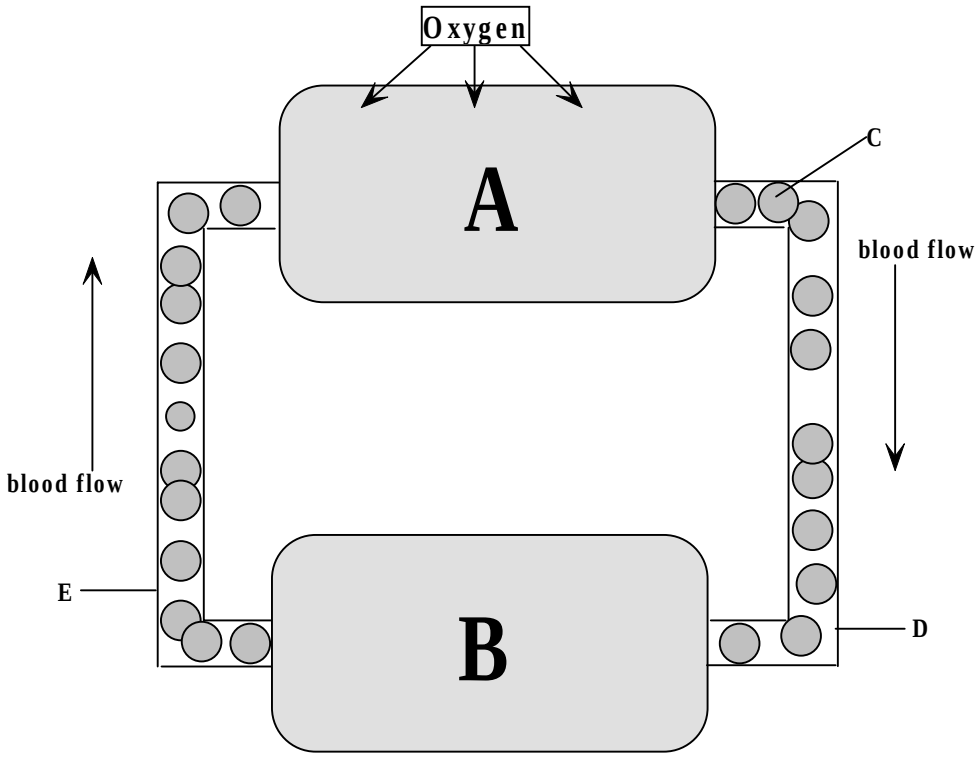
TOTAL / 7

Medium Demand Questions QUESTIONSHEET 5

(a) Why does the body need oxygen?

.....[1]

(b) The diagram shows the passage of oxygen around the body.



(i) Which organ does A represent?

.....[1]

(ii) What happens to oxygen in organ A?

.....[1]

(iii) Name the cells labelled C.

.....[1]

(iv) What do the cells labelled C do?

.....

.....[2]

(Continued...)

QUESTIONSHEET 5 CONTINUED

(v) B represents the organs of the body. What happens to the oxygen in the blood in the body organs?

.....[1]

(vi) By what process does oxygen leave the blood?

.....[1]

(vii) Name the type of blood vessel which connects the blood vessels labelled D and E.

.....[1]

TOTAL / 9

Medium Demand Questions QUESTIONSHEET 6

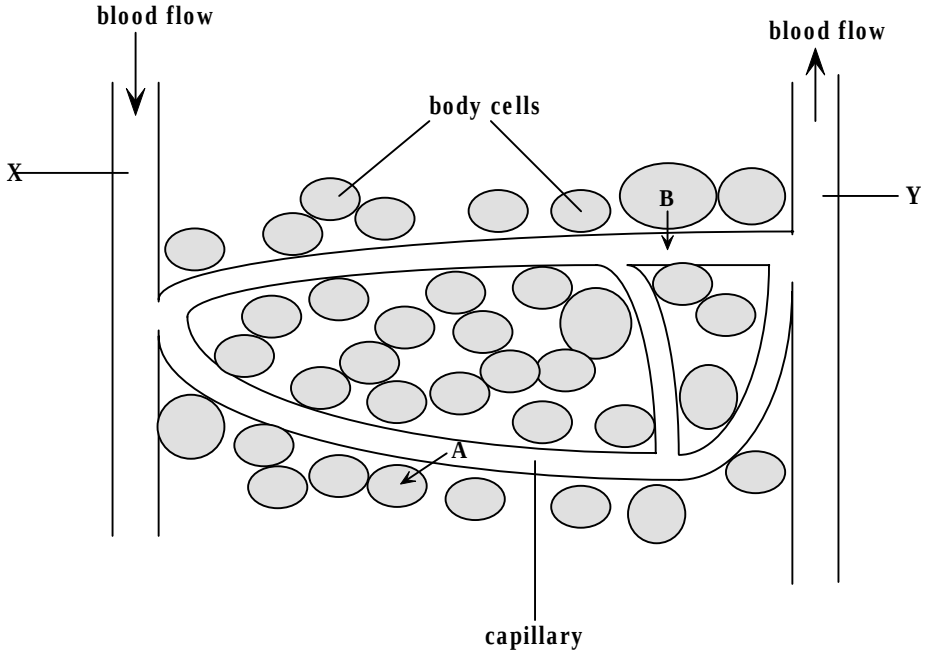
The table gives a list of statements concerned with arteries, veins and capillaries. Tick (√) the correct box to indicate which statement applies to which type of blood vessel.

Statement	Arteries	Veins	Capillaries
Carry blood at high pressure			
Usually carry blood with a high oxygen concentration			
Allow substances to pass through their walls into cells			
Have valves			
Carry blood away from organs			
Have walls which are one cell thick			
Are in close contact with cells of the body			
Have a thick muscular wall			
Pick up oxygen from the alveoli in the lungs			
Usually carry blood rich in carbon dioxide to the heart			
Supply the heart muscle with oxygen			

TOTAL / 11

Medium Demand Questions QUESTIONSHEET 7

The diagram shows a capillary in a tissue.



(a) Name a gas moving in the direction shown by arrow A.

.....[1]

(b) What do the cells use this gas for?

.....[1]

(c) Name two substances moving in the direction shown by arrow B.

.....

.....[2]

(d) State two properties of capillary walls which allow substances to pass through them easily.

.....

.....[2]

(e) Name the types of blood vessel labelled

(i) X. .....[1]

(ii) Y. .....[1]

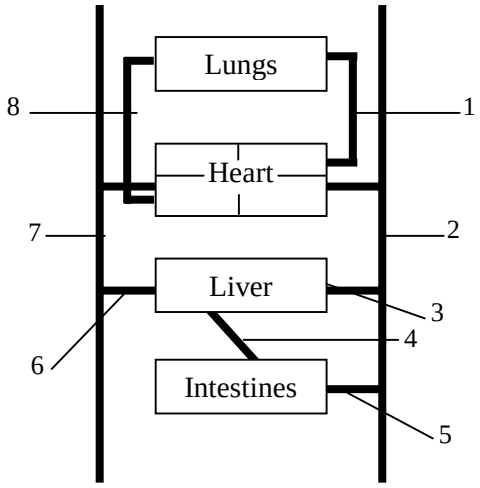
(f) Which of the three blood vessels X, Y or the capillary carries blood at the highest pressure?

.....[1]

TOTAL / 9

Medium Demand Questions QUESTIONSHEET 8

The diagram shows a plan of part of the blood circulation.



(a) Which of the blood vessels 1, 2, 3, 4, 5, 6, 7 or 8,

(i) supplies blood to the lungs?

.....[1]

(ii) supplies blood to the liver?

.....[1]

(iii) takes blood into the heart from the lungs?

.....[1]

(iv) has the highest concentration of oxygen?

.....[1]

(v) is the vena cava?

.....[1]

(vi) takes blood away from the intestines?

.....[1]

(vii) has the lowest concentration of carbon dioxide?

.....[1]

(viii) is an artery containing deoxygenated blood?

.....[1]

(b) State two ways in which the blood in vessel 4 differs from the blood in vessel 6.

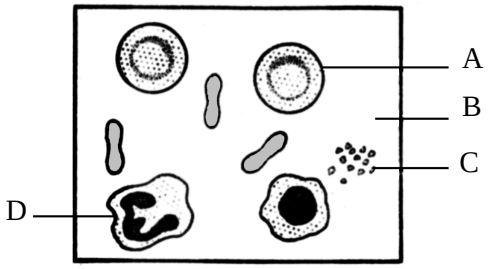
.....

.....[2]

TOTAL / 10

Medium Demand Questions QUESTIONSHEET 9

The diagram shows a sample of blood.



(a) Name the cells labelled A, C and D.

A. .....[1]

C. .....[1]

D. .....[1]

(b) Which of the structures

(i) represents the plasma?

.....[1]

(ii) can ingest bacteria?

.....[1]

(iii) carries glucose?

.....[1]

(iv) contains haemoglobin?

.....[1]

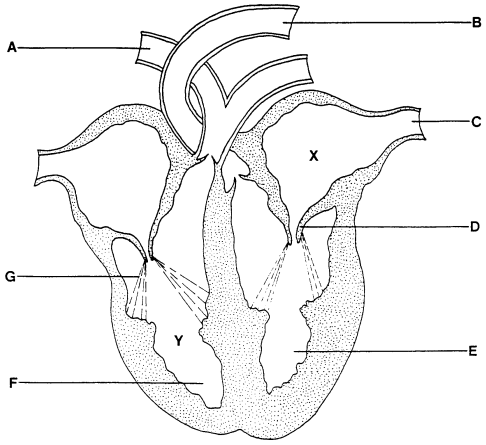
(v) is involved in blood clotting?

.....[1]

TOTAL / 8

Medium Demand Questions QUESTIONSHEET 10

The diagram shows a vertical section of the heart.



(a) Name the blood vessels labelled A, B and C.

A. .....[1]

B. .....[1]

C. .....[1]

(b) Match one of the letters from the diagram with each of the following:

(i) a chamber which pumps blood to the body organs.

.....[1]

(ii) a blood vessel which carries blood to the lungs.

.....[1]

(iii) a valve which prevents blood flowing back into the left atrium.

.....[1]

(iv) a chamber which pumps blood to the lungs.

.....[1]

(v) tendons which support the valves.

.....[1]

(c) Describe the relative oxygen content of the blood at points X and Y on the diagram.

.....

.....[2]

TOTAL / 10

GCSE BIOLOGY **CIRCULATION**

Medium Demand Questions QUESTIONSHEET 11

The diagram below represents cross-sectional areas through an artery, a vein and a capillary.

A B C

(a) Arteries take blood away from the heart.

(i) Which letter represents an artery?

.....[1]

(ii) Explain how arteries are adapted for their function.

.....

.....[2]

(b) (i) What is the function of the veins?

.....[1]

(ii) Which diagram represents a vein?

.....[1]

(c) (i) What is the name of the vessels that carry blood to every cell in the body?

.....[1]

(ii) Explain why it is important to take blood to every cell.

.....

.....

.....[3]

(iii) How are the walls of these blood vessels adapted for their function?

.....

.....[2]

(d) (i) Which of the three blood vessels, A, B, or C has valves?

.....[1]

(ii) What is the function of valves?

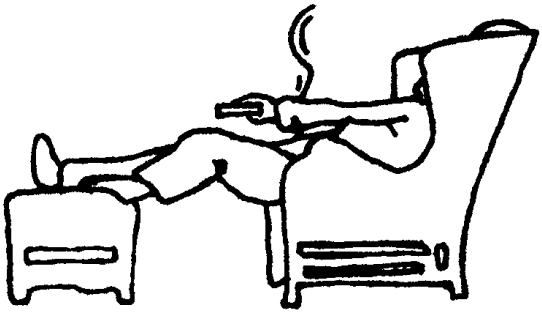
.....

.....[2]

TOTAL / 14

Medium Demand Questions QUESTIONSHEET 12

The heart has its own supply of blood vessels called coronary arteries, and veins. Sometimes a coronary artery gets blocked with fatty deposits. This can lead to a heart attack. In this country one in five is likely to have symptoms of coronary heart disease before the age of 65.



(a)(i) What type of tissue is the heart mainly made up of?

.....[1]

(ii) What is the function of this tissue?

.....[1]

(iii) The coronary artery carries oxygen and glucose to the heart.
What does the tissue need these for?

.....[1]

(b)(i) What will happen to the blood supply to the heart if the coronary arteries get blocked.

.....[1]

(ii) What will be the effect on the heart if the coronary arteries are blocked.

.....

.....[3]

(c) The man in the picture above has coronary heart disease. Suggest three pieces of advice you could give him to help prevent the risk of an heart attack.

.....

.....

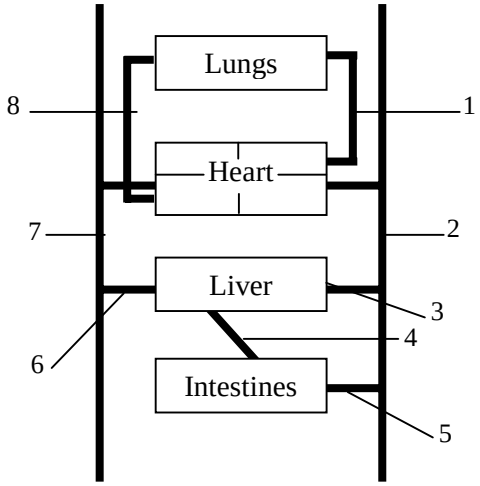
.....

.....[3]

TOTAL / 10

High Demand Questions QUESTIONSHEET 13

The diagram shows a plan of part of the blood circulation.



(a) As blood travels around the body it picks up substances from various organs.
Name one substance the blood picks up from

(i) the small intestine.

.....[1]

(ii) the large intestine.

.....[1]

(iii) adrenal glands.

.....[1]

(iv) the lungs.

.....[1]

(b) Mammals have a double circulatory system.
Explain what this means.

.....

.....[2]

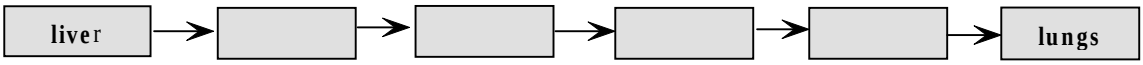
(Continued...)

QUESTIONSHEET 13 CONTINUED

(c) Complete the following table to show whether the blood vessels 1, 3, 4, 6 and 7 contain oxygenated or deoxygenated blood. Place a tick (✓) in the appropriate box.
The first one has been completed as an example. [4]

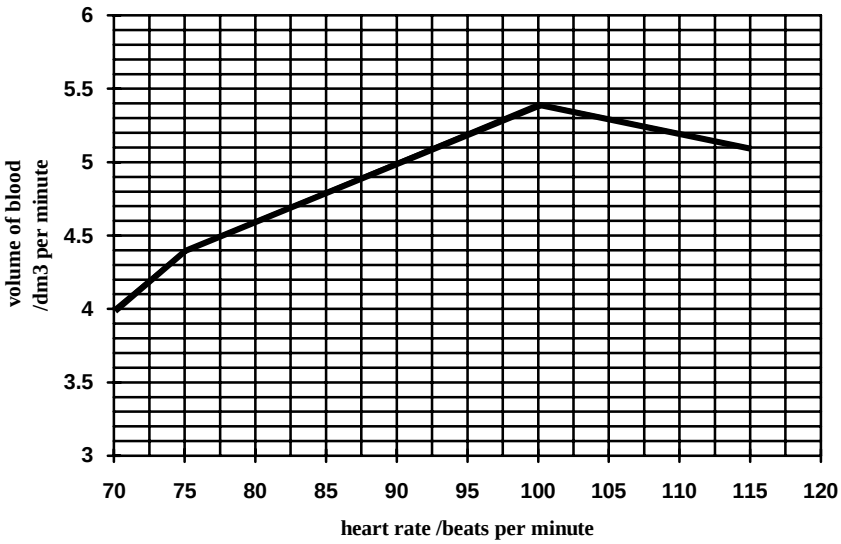
Blood vessel	Oxygenated blood	Deoxygenated blood
1	✓	
3		
4		
6		
7		

(d) Use the numbers and the name of the organs from the diagram to complete the following sequence showing the path of blood from the liver to the lungs. [4]



High Demand Questions QUESTIONSHEET 14

The graph shows the effect of changes in the heart rate on the volume of blood pumped by the left ventricle.



(a) What was the volume of blood pumped by the left ventricle when the heart rate was 80 beats per minute?

.....[1]

(b) By how much did the volume of blood pumped by the left ventricle increase when the heart rate increased from 70 to 85 beats per minute?

.....[1]

(c) Calculate the volume of blood pumped out at each heart beat when the heart rate was 100 beats per minute.

.....

.....[2]

(d) Use the graph to estimate the volume of blood pumped when the heart rate is 120 beats per minute.

.....[1]

(e) Describe how the volume of blood pumped by the left ventricle changes as the heart rate increases.

.....

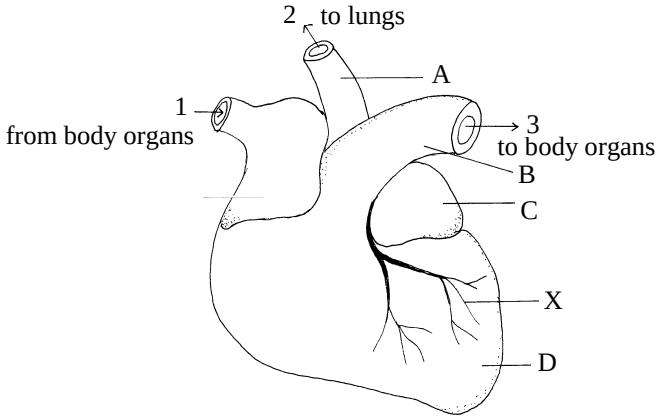
.....

.....[3]

TOTAL / 8

High Demand Questions QUESTIONSHEET 15

The diagram shows an external view of the heart.



(a) Name the structures labelled A, B, C and D;

A. .....[1]

B. .....[1]

C. .....[1]

D. .....[1]

(b) The arrows on the diagram show the direction of blood flow into and out of the heart. List the structures, in the correct sequence, through which the blood passes in moving from 1 to 2.

.....

.....

.....

.....[4]

(c) Give one difference between the blood entering at 1 and leaving at 3.

.....[1]

(d)(i) What is the name of the blood vessels labelled X.

.....[1]

(ii) What is the function of these blood vessels?

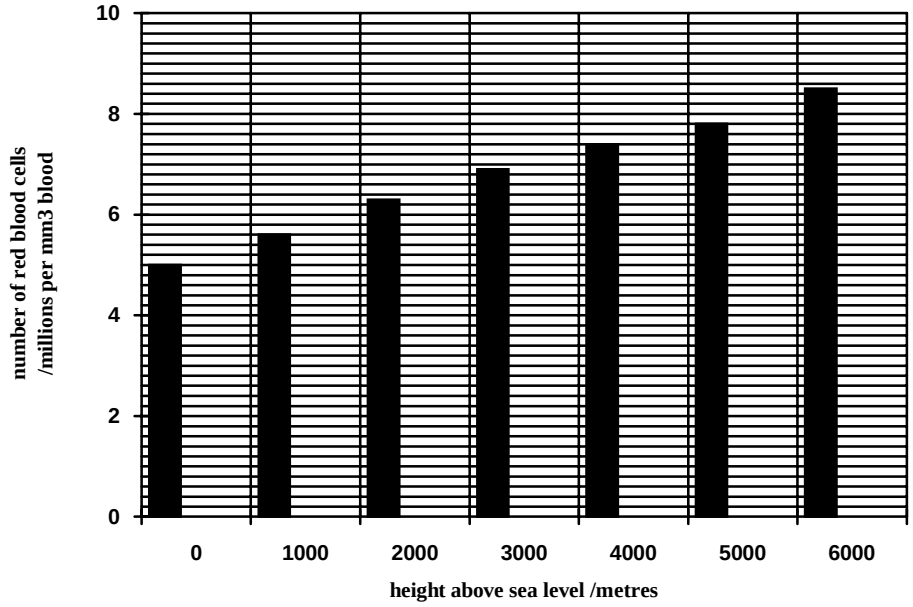
.....

.....[2]

TOTAL / 12

High Demand Questions QUESTIONSHEET 16

The bar chart shows the number of red blood cells present in the blood of people living at different altitudes above sea level.



(a) What is the function of red blood cells?

.....

.....[2]

(b) How many red blood cells are present in a mm^3 of blood of

(i) someone living at sea level?

.....[1]

(ii) someone living at 5000 metres above sea level?

.....[1]

(c) As altitude increases the amount of oxygen in the air decreases.

(i) What is the relationship between the number of red blood cells and the height above sea level at which people live?

.....[1]

(ii) Explain the advantage of this change in the blood to people living at high altitudes.

.....

.....[2]

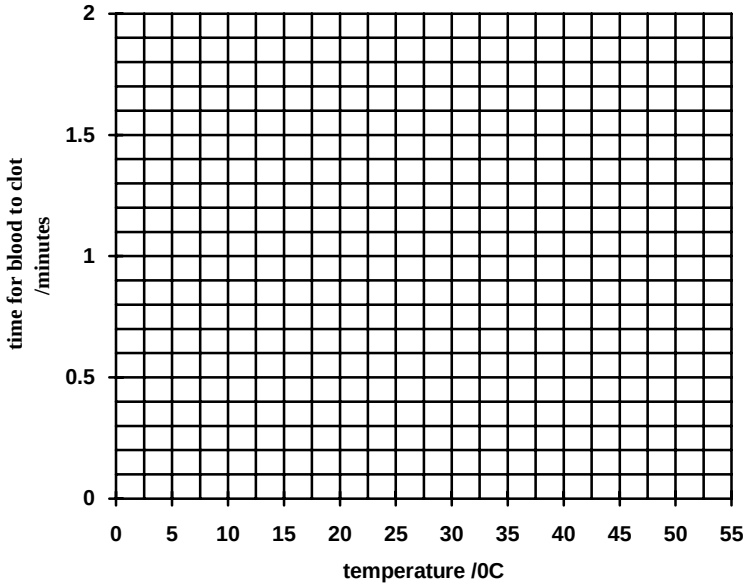
TOTAL / 7

High Demand Questions QUESTIONSHEET 17

(a) The table shows the time taken for the blood to clot at different temperatures.

Temperature /^{o}C	**Time for blood to clot /minutes**
5	1.6
15	1.2
25	0.8
35	0.5
45	1.8
55	Did not clot

(a) Plot a line graph of these figures on the grid below. [3]



(b) How much longer does it take for the blood to clot at 15^{o}C compared to 35 ^{o}C?

.....[1]

(c) At which temperature does the blood clot fastest?

.....[1]

(d) Describe the relationship between temperature and the time taken for the blood to clot.

.....

.....

.....

.....[4]

(e) Suggest why the blood did not clot at 55^{o}C.

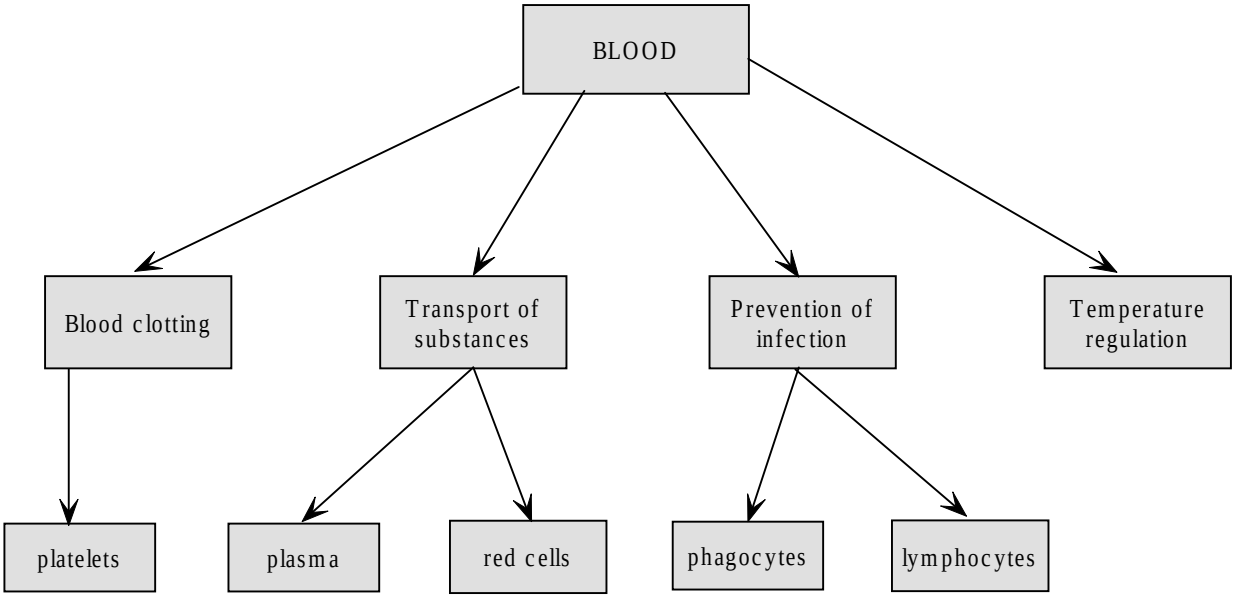
.....

.....[2]

TOTAL / 11

High Demand Questions QUESTIONSHEET 18

(a) The diagram shows some of the major functions of the blood.



(i) Name two substances carried by the plasma.

.....

.....[2]

(ii) How is oxygen carried in the red cells?

.....[1]

(iii) How does blood clotting protect against disease?

.....[1]

(iv) What is the role of phagocytes in preventing infection?

.....[1]

(v) What is the function of lymphocytes?

.....[1]

(b) Where are red cells produced?

.....[1]

TOTAL / 7

High Demand Questions QUESTIONSHEET 19

(a) As blood passes around the body substances enter and leave the blood.

Complete the following table to show where the four substances enter and leave the blood. Place a tick (✓) in the box to show in which part of the body a substance enters the blood and a (**x**) to show where the substance leaves the blood.
The first one has been completed as an example. [6]

	Part of the body				
Substance	**Liver**	**Kidney**	**Lungs**	**Cells**	**Intestines**
Oxygen			✓	**X**	
Carbon dioxide					
Glucose					
Urea					

(b) Give three differences between the structure of arteries and veins.

.....

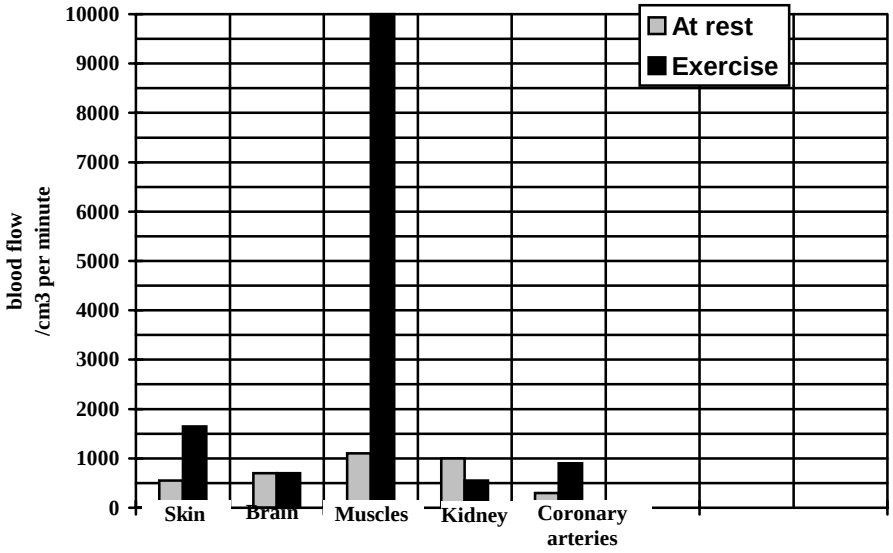
.....

.....[3]

TOTAL / 9

High Demand Questions QUESTIONSHEET 20

The bar chart shows the volume of blood flowing through various organs, at rest and during vigorous exercise



(a) In which body organ does the blood flow decrease during exercise?

.....[1]

(b) In which body organ does the blood flow remain constant?

.....[1]

(c) The total blood flow through all the organs during exercise is 13 900 cm^3 per minute.
Calculate the percentage of the total blood flow which goes through the muscles.

.....

.....[2]

(d) Explain why the blood flow to the muscles increases during exercise.

.....

.....

.....

.....[4]

(e) Why does the blood flow to the skin increase during exercise?

.....

.....

.....[3]

TOTAL / 11