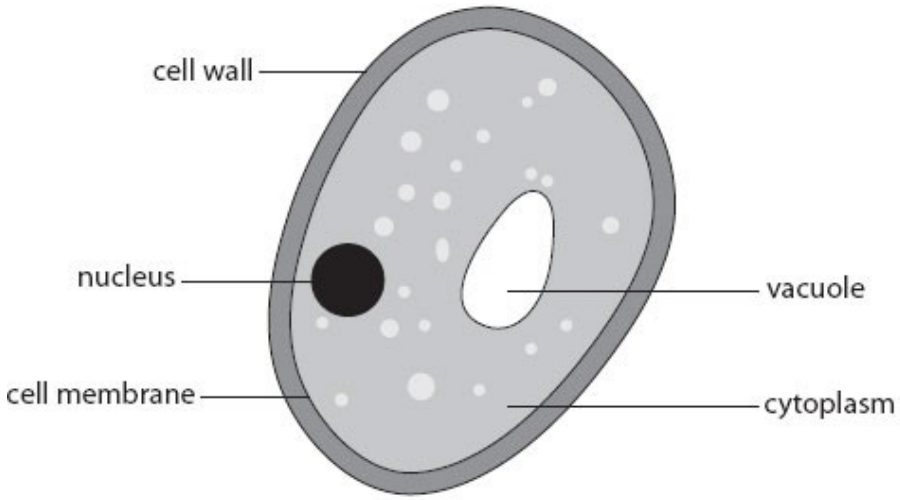
A Level Biology Summer Work

These questions are taken from the Biology GCSE specification and relate to the topics covered in A Level Biology. Please complete the following questions to refresh your knowledge from KS4.

1.



a **i** State **two** ways in which the structure of this yeast cell differs from the structure of a bacterial cell.

(2 marks)

ii Plant cells can produce glucose.

Suggest why yeast cells cannot produce glucose.

(1 mark)

2. The table shows the number of different components found in the blood of a healthy person and the blood of two other people.

	number of components per dm^3 of blood		
component of blood	healthy person	person A	person B
red blood cells	5×10^{12}	6×10^{12}	3×10^{12}
white blood cells	7×10^{9}	5×10^{10}	8×10^{10}
platelets	3×10^{11}	3×10^{11}	3×10^{11}

i Calculate the difference in the number of white blood cells per dm^3 of blood between the healthy person and person A.

(2 marks)

ii Describe the functions of white blood cells.

(2 marks)

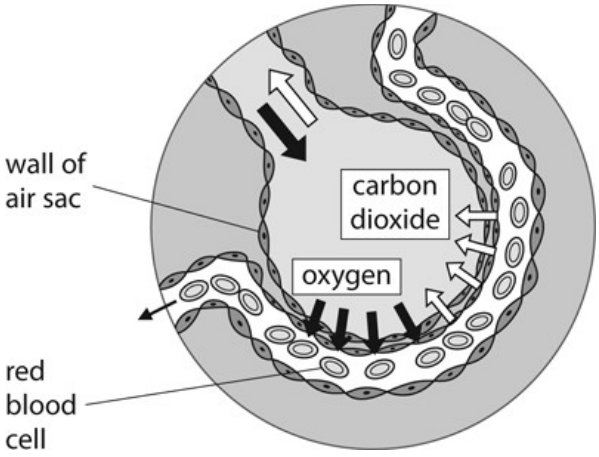
iii Person B has a low number of red blood cells compared to the healthy person.

Suggest an effect this may have on person B.

(1 mark)

3 a Gas exchange in the air sacs of the lungs takes place in a similar way to gas exchange between body cells and capillaries.

Each of these air sacs are surrounded by blood capillaries. The diagram shows one air sac.



i Describe how oxygen is transported from the air sac into the surrounding blood capillary.

(2 marks)

ii Complete the sentence by putting a cross (☒) in the box next to your answer.

The blood transports oxygen to body cells.

Oxygen is used by body cells when...

A energy is released during respiration ☐

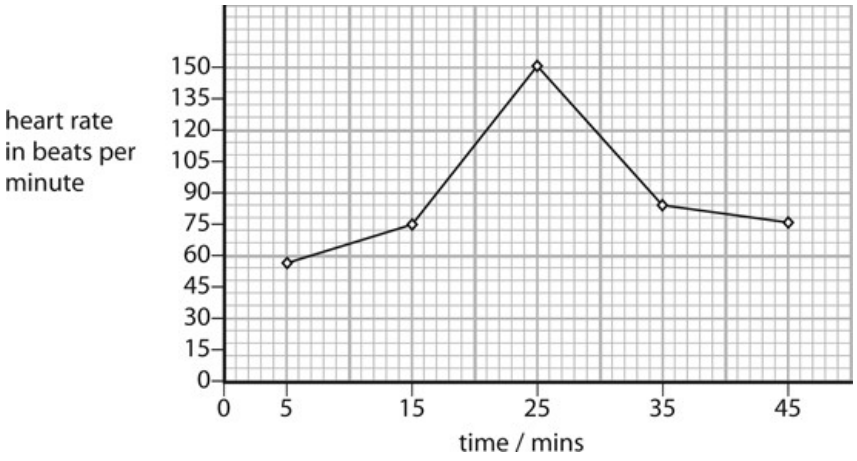
B energy is released from carbon dioxide ☐

C glucose is produced during respiration ☐

D energy is taken in during respiration ☐

(1 mark)

b The graph shows how the heart rate of a person changes during and after aerobic exercise.



i The volume of blood leaving the heart during one heart beat at 25 minutes is 0.07 dm^3.

The person's cardiac output can be calculated using the equation:

cardiac output = stroke volume × heart rate

Calculate the cardiac output of this person at 25 minutes.

(3 marks)

ii Explain the trend shown by the graph between 5 and 25 minutes.

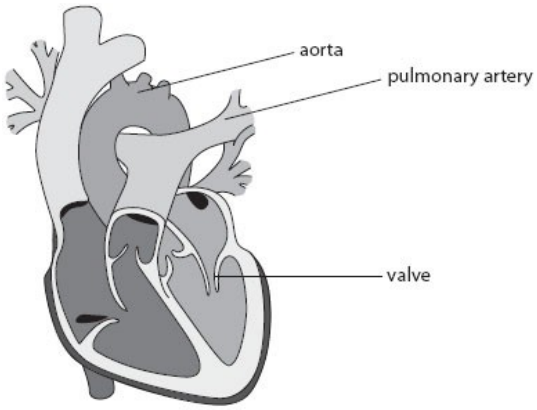
(3 marks)

c Anaerobic respiration takes place when the muscle cells are not supplied with enough oxygen.

Give the word equation for anaerobic respiration.

(1 mark)

6 This diagram shows a human heart.



a **i** Draw an arrow onto the diagram to show where oxygenated blood enters the heart.

(1 mark)

ii Suggest how the blood flowing through the pulmonary artery would be different from the blood flowing through the aorta.

(2 marks)

iii Describe the role of the valve labelled on the diagram.

(2 Marks)