

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Q1.

- (a) The equation describes the process of photosynthesis.

carbon dioxide + _____ + light energy $\longrightarrow$ glucose + _____

- (i) Write in the names of the **two** missing substances.

(2)

- (ii) Name the green substance which absorbs the light energy.

(1)

- (b) (i) In bright sunlight, the concentration of carbon dioxide in the air can limit the rate of photosynthesis. Explain what this means.

(2)

- (ii) Give **one** environmental factor, other than light intensity and carbon dioxide concentration, which can limit the rate of photosynthesis.

(1)

(Total 6 marks)

Q2.

The table shows the amounts of energy used in running and in walking at different speeds by people of different body masses.

Activity	Energy used in kilojoules per hour			
	34 kg person	50 kg person	70 kg person	90 kg person
Running, 9 km per hour	1530	1850	2770	3700
Running, 11 km per hour	2140	2560	3860	5120
Running, 16 km per hour	2980	3570	5380	7140
Walking, 3 km per hour	530	670	1010	1340
Walking, 5 km per hour	740	880	1340	1760
Walking, 7 km per hour	1030	1240	1850	2480

(a) Describe **two** patterns you can see in the data.

1. _____

2. _____

(2)

(b) Our breathing rate is much higher when running than when walking.

Explain the advantage of this to the body.

(3)

(Total 5 marks)

Q3.

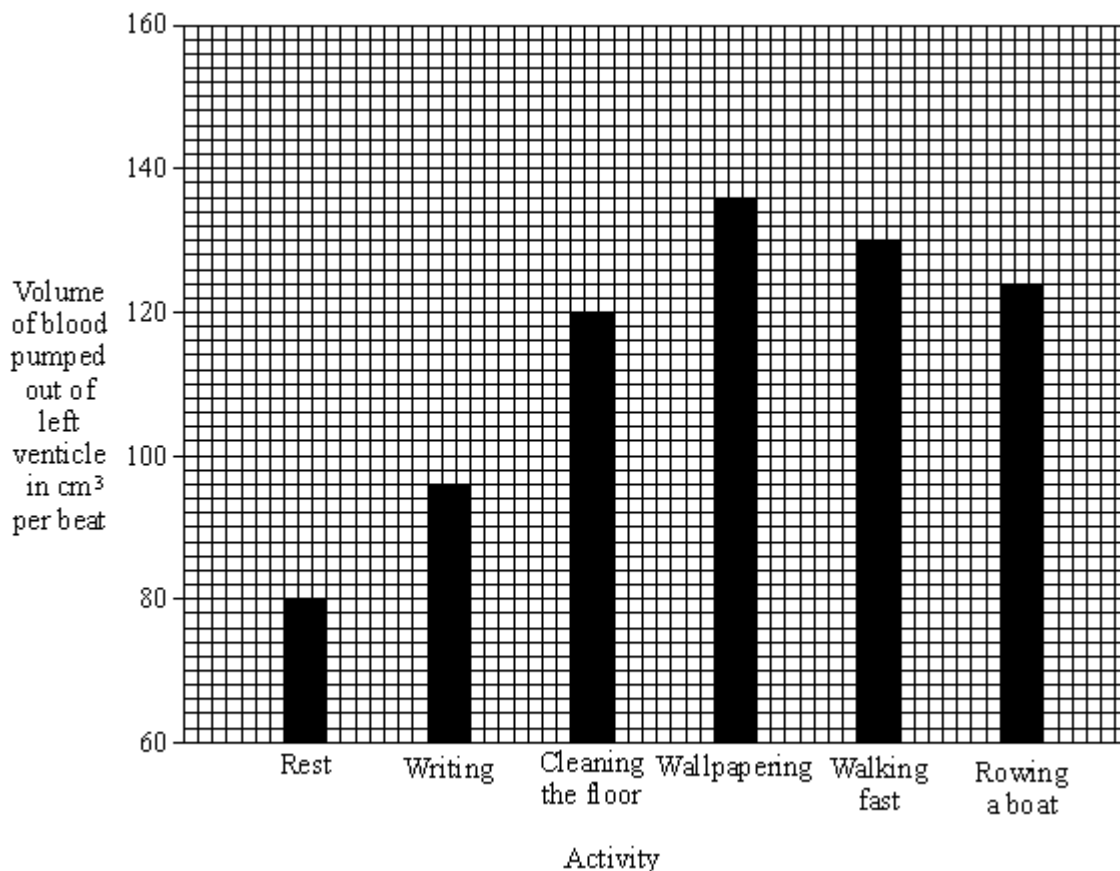
Regular exercise is important, as it helps to maintain an efficient supply of blood to the muscles, the heart and the lungs. This is helped by an increase in the heart rate during exercise.

Explain why it is necessary for the heart rate to increase during exercise.

(Total 4 marks)

Q4.

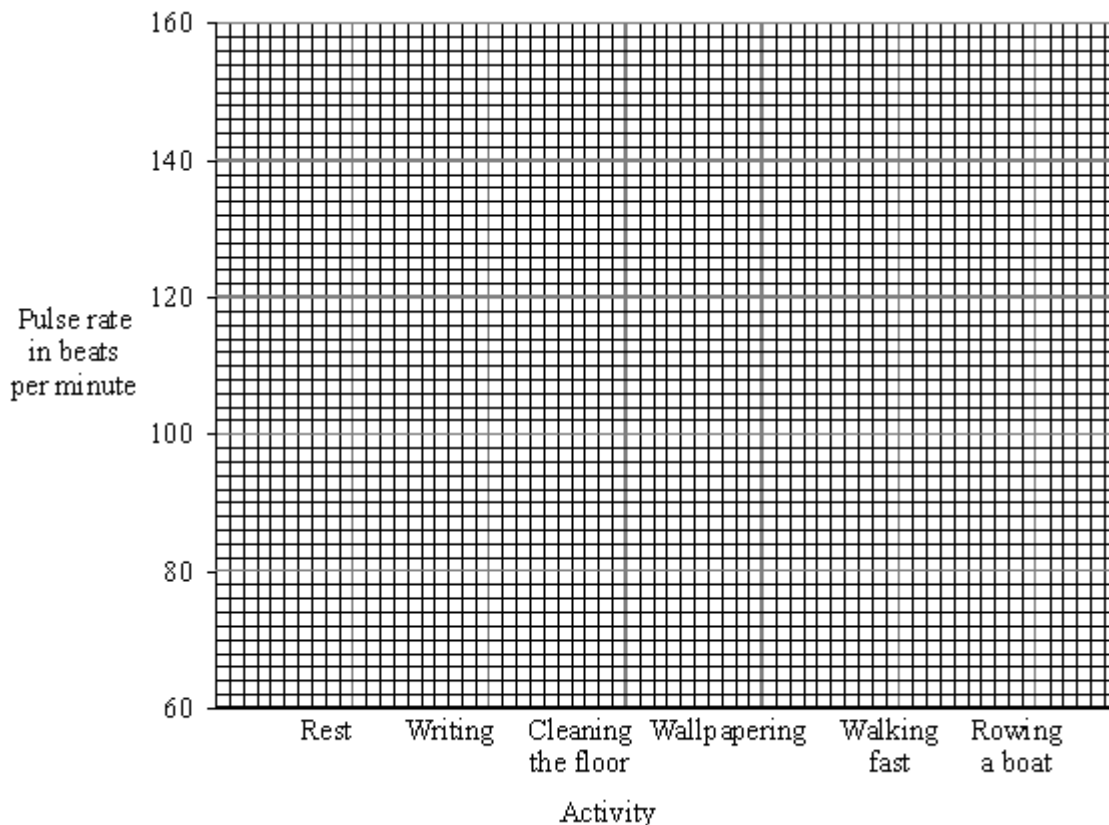
- (a) The volume of blood pumped out of the left ventricle at each beat was measured for a person during six different activities. These activities showed an increasing energy demand, with rest requiring the least energy and rowing a boat the most. The results of these measurements are shown on the bar chart.



- (i) The pulse rate was also measured for the person during the same activities. The table shows the results that were obtained.

Activity	Pulse rate in beats per minute
Rest	70
Writing	85
Cleaning the floor	100
Wallpapering	120
Walking fast	132
Rowing a boat	153

On the graph paper below draw a bar chart of the results obtained for the measurements of the pulse rate.



(2)

- (ii) Undertaking activities with increasing energy demand has an effect on the volume of blood pumped from the left ventricle (per beat) and on the pulse rate. What do the bar charts show these effects to be? Use only information shown in the bar charts in your answer.

(2)

- (b) The pulse rate changed when the activity changed. Explain the reason for this.

(2)
(Total 6 marks)