Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

This question is about photosynthesis.

(a) Plants make glucose during photosynthesis. Some of the glucose is changed into insoluble starch.

What happens to this starch?

Tick (✓) **one** box.

The starch is converted into oxygen. ☐

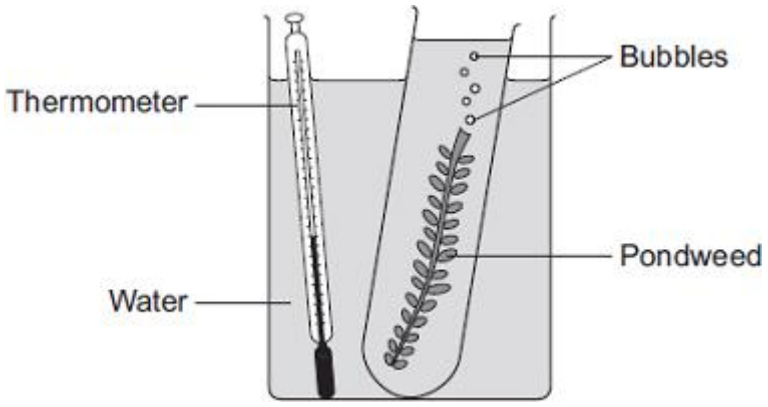
The starch is stored for use later. ☐

The starch is used to make the leaf green. ☐

(1)

(b) A student investigated the effect of temperature on the rate of photosynthesis in pondweed.

The diagram shows the way the experiment was set up.



(i) The student needed to control some variables to make the investigation fair.

State **two** variables the student needed to control in this investigation.

1. _____

2. _____

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(2)

(ii) The bubbles of gas are only produced while photosynthesis is taking place.

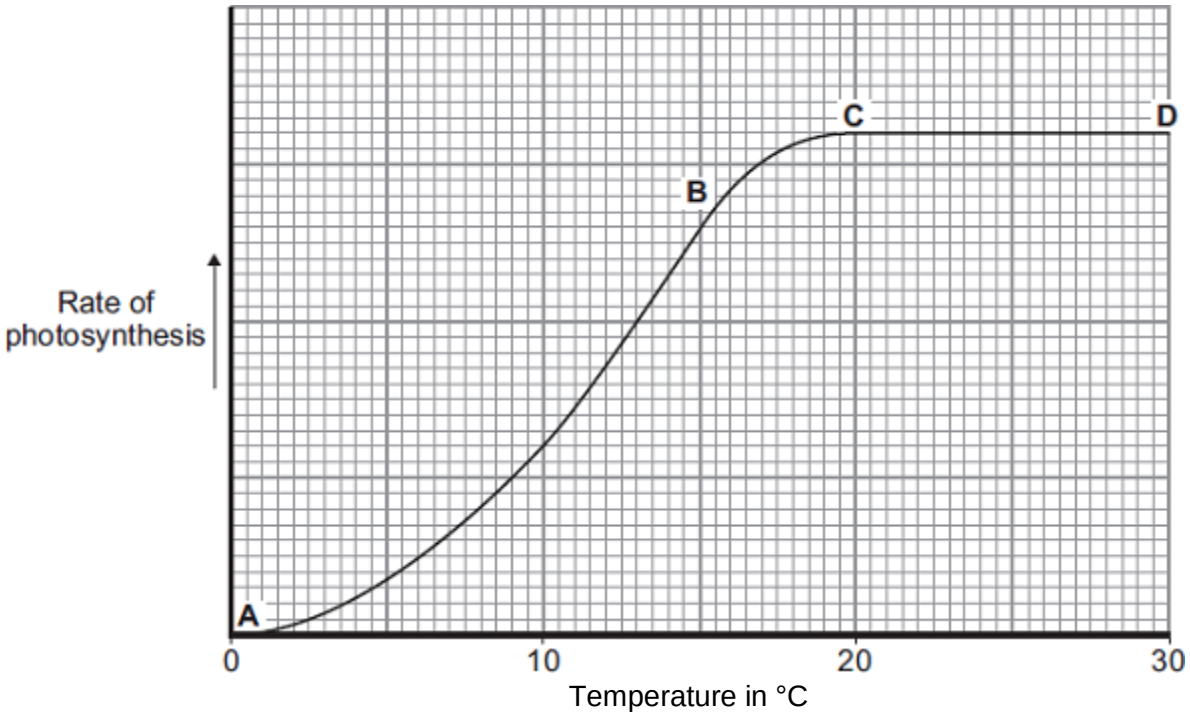
What **two** measurements would the student make to calculate the rate of photosynthesis?

1. _____

2. _____

(2)

(c) The graph shows the effect of temperature on the rate of photosynthesis in the pondweed.



(i) Name the factor that limits the rate of photosynthesis between the points labelled **A** and **B** on the graph.

_____

(1)

(ii) Suggest which factor, carbon dioxide, oxygen or water, might limit the rate of photosynthesis between the points labelled **C** and **D** on the graph.

_____

(1)

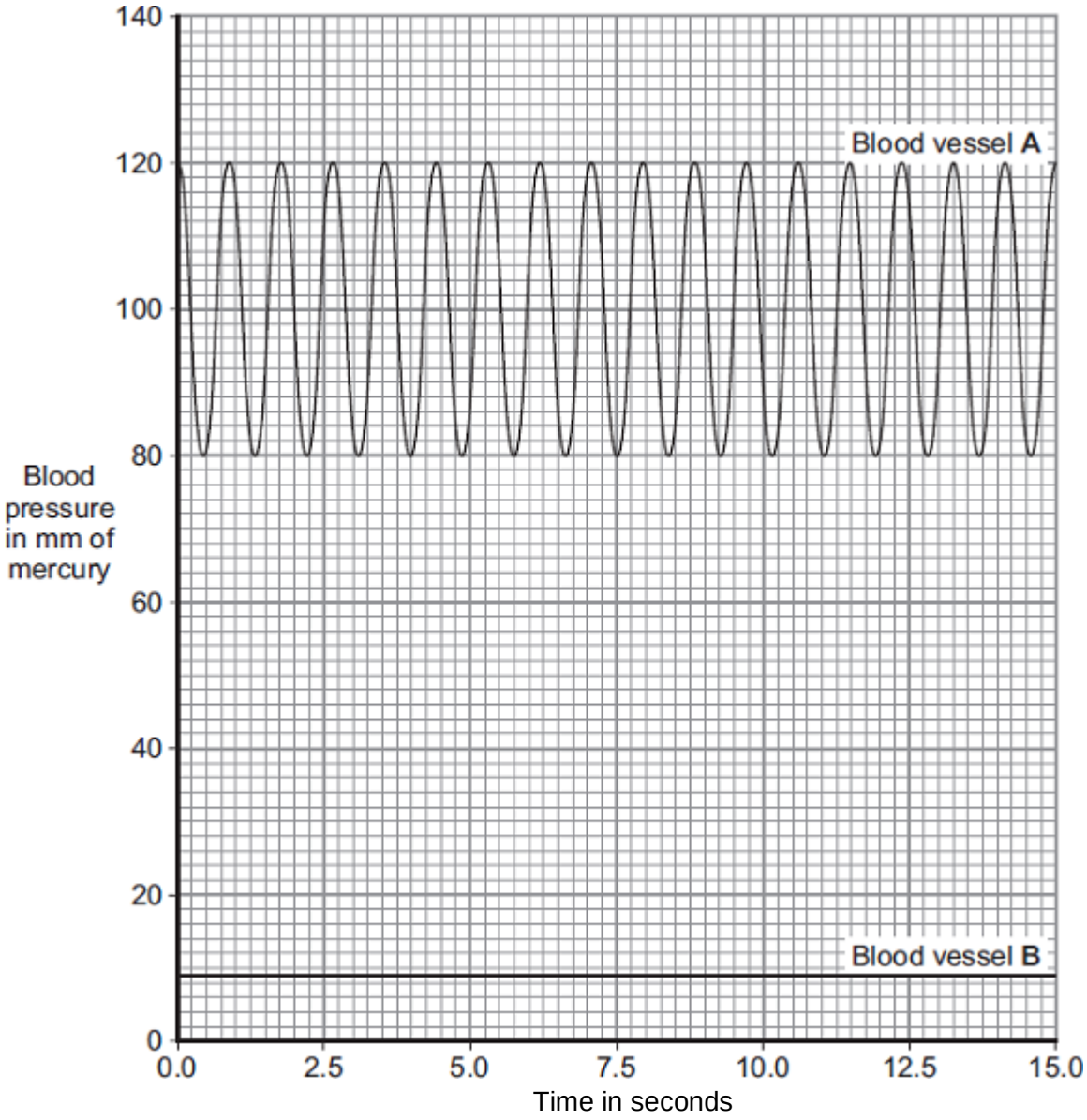
(Total 7 marks)

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Q2.

The heart pumps the blood around the body. This causes blood to leave the heart at high pressure.

The graph shows blood pressure measurements for a person at rest.
The blood pressure was measured in an artery and in a vein.



(a) Which blood vessel, **A** or **B**, is the artery?

Blood vessel _____

Give **two** reasons for your answer.

Reason 1 _____

_____

Reason 2 _____

_____

(2)

(b) Use information from the graph to answer these questions.

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(i) How many times did the heart beat in 15 seconds? _____

(1)

(ii) Use your answer from part (b)(i) to calculate the person's heart rate per minute.

_____

_____

Heart rate = _____ beats per minute

(1)

(c) During exercise, the heart rate increases.

The increased heart rate supplies useful substances to the muscles at a faster rate.

Name **two** useful substances that must be supplied to the muscles at a faster rate during exercise.

1. _____

2. _____

(2)

(Total 6 marks)

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Q3.

One factor that may affect body mass is *metabolic rate*.

(a) (i) What is meant by *metabolic rate* ?

_____

_____

(1)

(ii) Metabolic rate is affected by the amount of activity a person does.

Give **two** other factors that may affect a person's metabolic rate.

1. _____

_____

2. _____

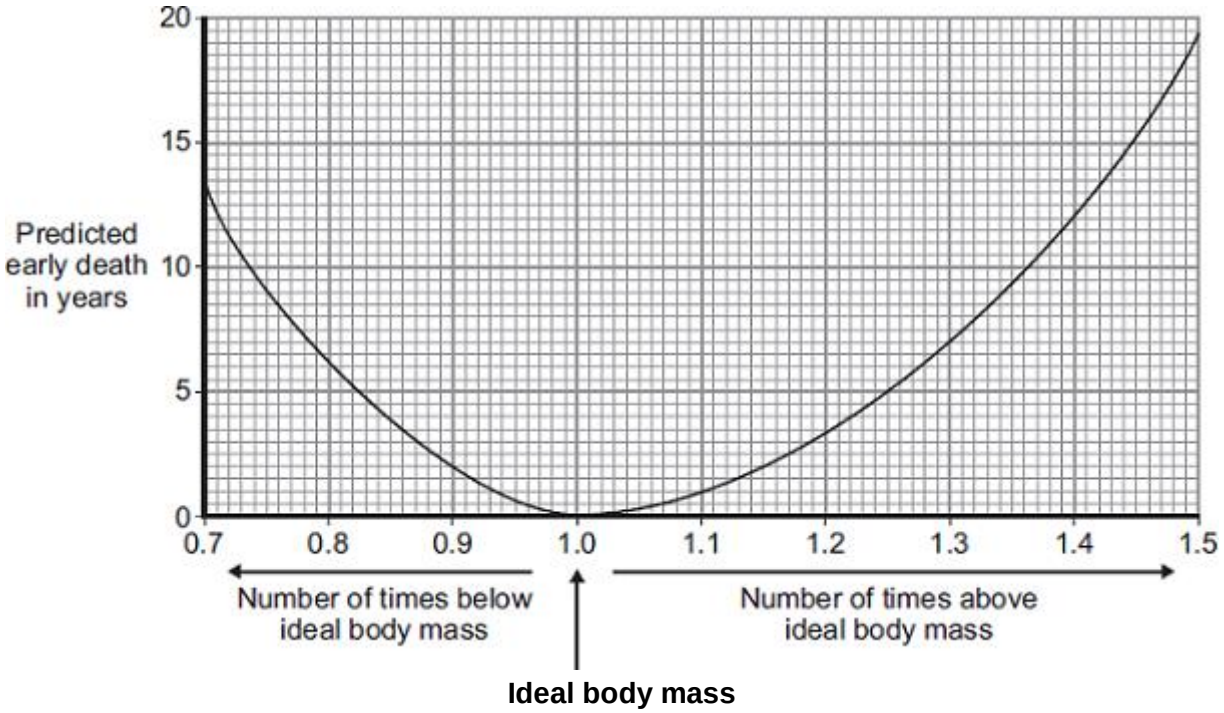
_____

(2)

(b) Predicted early death is the number of years that a person will die before the mean age of death for the whole population. The predicted early death of a person is affected by their body mass.

Scientists have calculated the effect of body mass on predicted early death.

The graph shows the results of the scientists' calculations.



The number of times above or below ideal body mass is given by the equation:

$$\frac{\text{Actual body mass}}{\text{Ideal body mass}}$$

In the UK the mean age of death for women is 82.

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A woman has a body mass of 70 kg. The woman's ideal body mass is 56 kg.

(i) Use the information from the graph to predict the age of this woman when she dies.

_____

_____

_____

Age at death = _____ years

(2)

(ii) The woman could live longer by changing her lifestyle.

Give **two** changes she should make.

1. _____

_____

2. _____

_____

(2)

(Total 7 marks)

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