Practice Question Set For GCSE
**Subject : Biology**
**Paper-1 Topic: B1 Cell Biology**

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**Name of the Student**:_____
**Max. Marks : 21 Marks** **Time : 21 Minutes**

Q1.

Plants exchange substances with the environment.

(a) Plant roots absorb water mainly by osmosis.
Plant roots absorb ions mainly by active transport.

Explain why roots need to use the two different methods to absorb water and ions.

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**(4)**

(b) What is meant by the *transpiration stream*?

_____

_____

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_____

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_____

**(3)**

(c) Students investigated the loss of water vapour from leaves.

The students:

- cut some leaves off a plant
- measured the mass of these leaves every 30 minutes for 180 minutes.

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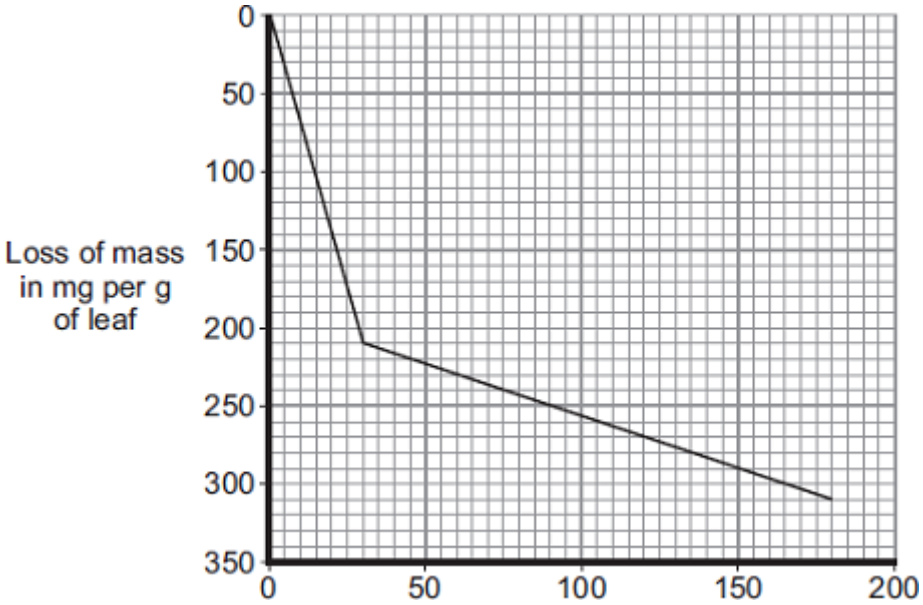
The graph shows the students' results.




(i) The rate of mass loss in the first 30 minutes was 7 milligrams per gram of leaf per minute.

Calculate the rate of mass loss between 30 minutes and 180 minutes.

_____

_____

Rate of mass loss = _____ milligrams per gram of leaf per minute

**(2)**

(ii) The rate of mass loss between 0 and 30 minutes was very different from the rate of mass loss between 30 and 180 minutes.

Suggest an explanation for the difference between the two rates.

_____

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**(2)**

**(Total 11 marks)**

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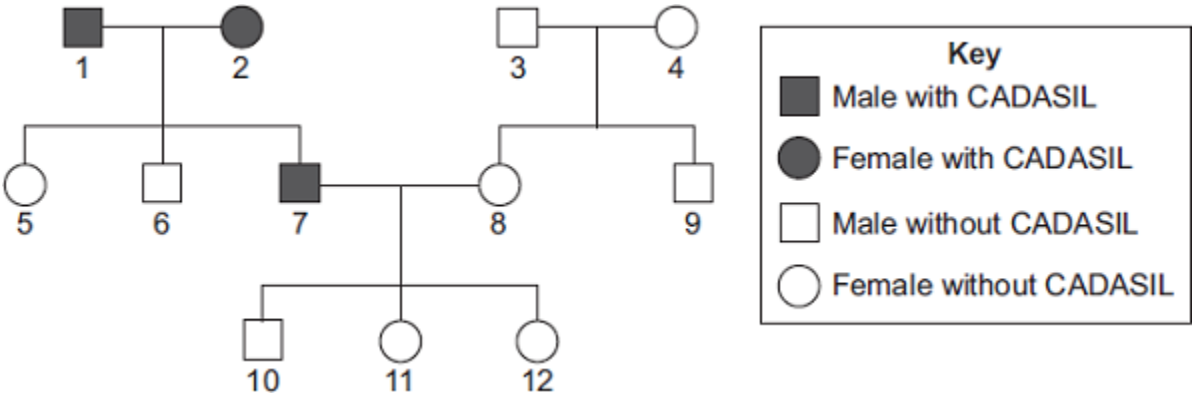
Q2.

CADASIL is an inherited disorder caused by a dominant allele.

CADASIL leads to weakening of blood vessels in the brain.

The diagram shows the inheritance of CADASIL in one family.




(a) CADASIL is caused by a *dominant allele*.

(i) What is a *dominant allele*?

_____

_____

**(1)**

(ii) What is the evidence in the diagram that CADASIL is caused by a dominant allele?

_____

_____

**(1)**

(iii) Person **7** has CADASIL.

Is person **7** homozygous or heterozygous for the CADASIL allele?

Give evidence for your answer from the diagram.

_____

_____

**(1)**

(b) Persons **7** and **8** are planning to have another baby.
Use a genetic diagram to find the probability that the new baby will develop into a person with CADASIL.

Use the following symbols to represent alleles.

**D** = allele for CADASIL
**d** = allele for not having CADASIL

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Probability = _____

**(4)**

(c) Scientists are trying to develop a treatment for CADASIL using stem cells.

Specially treated stem cells would be injected into the damaged part of the brain.

(i) Why do the scientists use stem cells?

_____

_____

_____

_____

**(2)**

(ii) Embryonic stem cells can be obtained by removing a few cells from a human embryo. In 2006, scientists in Japan discovered how to change adult skin cells into stem cells. Suggest **one** advantage of using stem cells from adult skin cells.

_____

_____

**(1)**

**(Total 10 marks)**

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