Plant and animal responses – 2021/20 GCE Biology A Component 01

1. Nov/2021/Paper_H420/1/No.19(b)

(b) Terrariums are popular for growing houseplants.

A terrarium is a glass container containing soil and small plants.

Once established, a terrarium can be sealed and the plants will be able to grow for months or even years despite not being in contact with the outside atmosphere.

The terrarium maintains moist conditions for the plants.

(i) Suggest **one** other reason why the plants in a sealed terrarium continue to grow.

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..... **[1]**

(ii) Cacti are popular house plants.

Suggest why cacti do **not** grow well in a terrarium.

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..... **[1]**

2. Nov/2021/Paper_H420/03/No.3(c, d, e)

(c) Callose production reduces the spread of pathogens in plants. The table below lists pathogens that infect plants together with features of the pathogens and examples of the diseases they cause.

Complete the table below by writing the correct answers in the empty boxes.

Type of pathogen	Pathogen has membrane-bound organelles	Pathogen has a cell wall	Example of a plant disease caused by the pathogen
	yes	yes	black sigatoka
			ring rot
virus	no	no	

[3]

(d) Many plants have defensive responses to herbivores.

State **one** example of a response that plants use against herbivory.

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..... **[1]**

(e) Many crop plants are eaten by herbivorous insects. Humans use insecticides to reduce the consumption of crop plants by insects.

Explain why an insecticide might be less effective after being used for many years.

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..... **[1]**

3. Nov/2020/Paper_H420/03/No.3(b. c, d)

(b) The solution in which the seedlings were grown contained various dissolved ions.

The table below lists two of the functions of these ions in the seedlings.

Complete the table below with the **formula** of each ion.

Function	Formula of ion
Supplies elements that form part of the structure of amino acids and nucleotides	
Forms part of the structure of DNA and phospholipids	

[2]

(c) The students also investigated the effect of plant hormone concentration on root growth.

(i) State the name of a plant hormone that would be expected to affect root growth.

..... **[1]**

(ii) In the investigation, the students controlled light, temperature and mineral concentration.

State one **other** factor that the students should have controlled in this investigation.

..... **[1]**

(d) The growth of plant roots is thought to be controlled by specialised cells called statocytes.

One hypothesis for how a statocyte controls root growth involves small organelles called amyloplasts and is shown in Fig. 3.2.

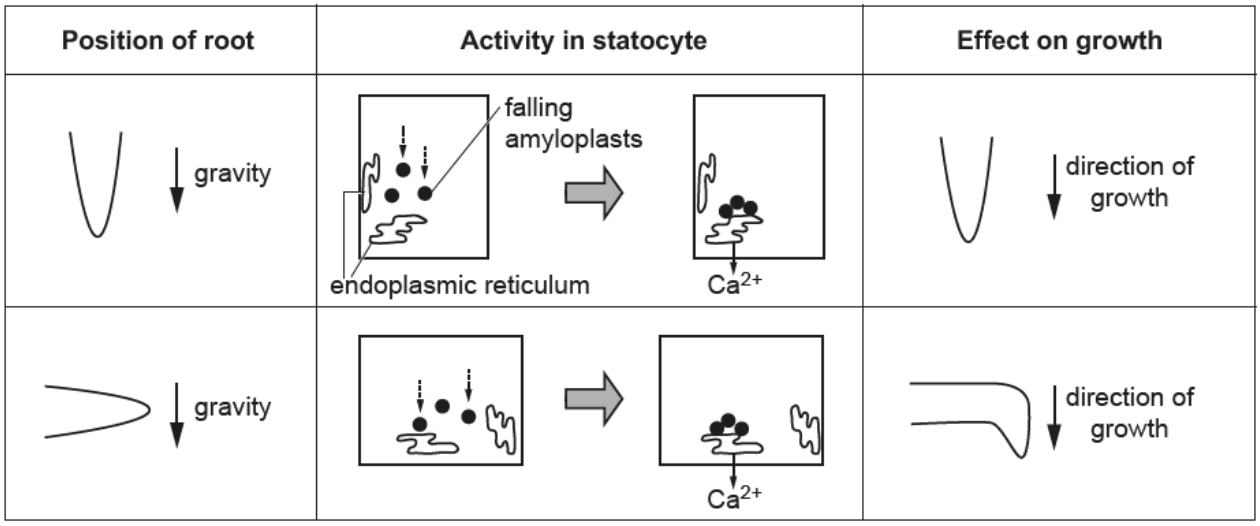

Fig. 3.2

What can you conclude from the information in Fig. 3.2 about how a statocyte controls root growth?

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..... **[2]**