Plant Nutrition

Question Paper 7

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Plant Nutrition
Paper Type	(Extended) Theory Paper
Booklet	Question Paper 7

Time Allowed: **42 minutes**

Score: **/35**

Percentage: **/100**

1 Ahmed entered a very dark room. His irises responded by changing the pupil size and gradually he could see shapes of objects in the room. Dust in the air made him sneeze. Suddenly the door slammed shut, causing his heart beat to speed up. He switched on the light to find the door and he grabbed the door handle……

(a) Complete the table by stating two voluntary actions and two involuntary actions described in the text above.

voluntary actions	involuntary actions
1.	1. ....
2.	2. ....

[4]

(b) Actions are caused by the stimulation of effectors.

(i) Name the two different types of effector in the body.

1. .....

2. ..... [2]

(ii) State the type of neurone that stimulates effectors.

..... [1]

(c) Plants also respond to stimuli such as light.

(i) State the name of the response of plants to light.

..... [1]

Ahmed was provided with several young plant shoots and a sample of auxin.

(ii) Describe an experiment he could carry out to show that auxin causes bending of a shoot.

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..... [4]

(iii) Explain the mechanism that results in a shoot bending towards light.

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..... [3]

(d) Synthetic plant hormones behave in a similar way to auxins. Describe how synthetic plant hormones are effective as weedkillers.

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..... [2]

[Total: 17]

2 Crop production in many areas of the world needs the application of large volumes of water. However, when the water evaporates from the soil, traces of salts are left behind. After several years, the soil becomes too salty for most plants to grow in it.

(a) (i) State three functions of water in plants.

1. .....

2. .....

3. ..... [3]

(ii) With reference to the water potential gradient, explain why plants may die when grown in salty soil.

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..... [3]

(b) Some plants are able to pump salts out of their roots.

(i) Name the process plants could use to pump salts out of their roots.

..... [1]

(ii) Suggest how the process named in **(i)** could affect the rate of growth of the plants if the process was operating all the time.

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..... [2]

(iii) Plants need mineral salts for normal, healthy growth. Complete the table by naming two minerals that plants need and stating their functions.

mineral		function
1	.....	.....
		.....
2	.....	.....
		.....

[4]

(c) An article in a school science magazine stated, 'Many plants contain genes which enable them to pump salts out of their roots. These genes can be made more active by genetic engineering, enabling the plants to remove salts before the plants are damaged.'

Explain whether you think that the process described in the article above **is** an example of genetic engineering.

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..... [3]

(d) Some scientists believe that washing the salts out of the soil using even more water is a better alternative to genetic engineering.

State two problems that could be caused by washing the soil with extra water.

1. .....

2. ..... [2]

[Total:18]