Name……. Comb……..

P530/1

BIOLOGY

(Theory)

Paper1

April. 2025

1½hours

Uganda Advanced Certificate of Education

SPRING TEST 2

S.5

BIOLOGY

Paper 1

1 hour 30 minutes

INSTRUCTIONS:

This paper consists of two sections A and B.

Attempt all items in section A choose one item from section B.

Answers to section A items should be written in the spaces provided.

Answers to section B item should be written on the answer sheet provided.

You are advised to present your answers neatly and logically, illustrating them with diagrams where necessary.

SECTION A

Attempt all items

Item 1

Sarah, a high school biology student, was excited about her new sunflower plant. She placed it in a sunny spot, watered it regularly, and ensured it had enough nutrients. However, after a few weeks, she noticed that the plant's leaves were wilting, and its growth had slowed down.

Concerned, Sarah decided to investigate. She examined the roots and found that they appeared weak and brown instead of firm and white. She also noticed that the stem was not as firm as it used to be.

After some research, Sarah suspected that something was wrong with her plant's vascular tissues.

Tasks

(a) With a reason identify the plant tissues that are most likely to be damaged in Sarah's plant.

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(b) How are sclerenchyma tissues adapted to carryout their functions?

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(c) Distinguish between sclerenchyma and collenchyma tissues.

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Item 2

Sarah is studying the effects of hunger on the human body. She discovered that when a person does not eat food on time, his/her blood glucose decreases below normal resulting into the pancreas producing glucagon hormone to convert stored glycogen to glucose and in some cases fats to glucose. Sarah stated that this phenomenon is referred to as negative feedback mechanism under the control of homeostatic system.

(a) Based on this scenario, identify and explain the three main components of the homeostatic system at work.

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Why is important for an organism to have a homeostatic system?

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Give characteristics of an efficient homeostatic system?

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SECTION B

Attempt one question from this section

Item 3

Emma and Liam, two agriculture students, were conducting an experiment on two different crop plants. They planted **G. nuts and maize** in a field and observed their growth. Since it was dry and hot conditions the G. nut plants were wilting during **day and showed slow growth rate, while maize plants were thriving**. Curious about why this happened, they researched by reading theory about photosynthesis, and found out that plants have organelles that trap sunlight and convert it into chemical energy which they use to make their own food. Found out that G. nuts are C3 plants and grow better in relatively cool environments with low temperatures due to the enzymes they have.

(a) Describe the structure of the organelles talked about in the scenario.
(b) Explain how the above plants convert sunlight energy into chemicals energy which they use to make food.

Item 4

During a village sensitization program on the dangers of malnutrition, the district nutritionist advised the locals to feed on a balanced diet, and emphasized inclusion of enough proteins in the diet. He explained that feeding on a balanced diet with enough proteins would reduce the cases of deficiency diseases like kwashiorkor.

(a) Explain the importance of feeding on proteins as emphasized by the nutritionist to the body.
(b) Using your knowledge of chemicals of life, describe how human body proteins are formed from the proteins they eat.

END