

FORM FOUR CLUSTER KCSE MODEL 7

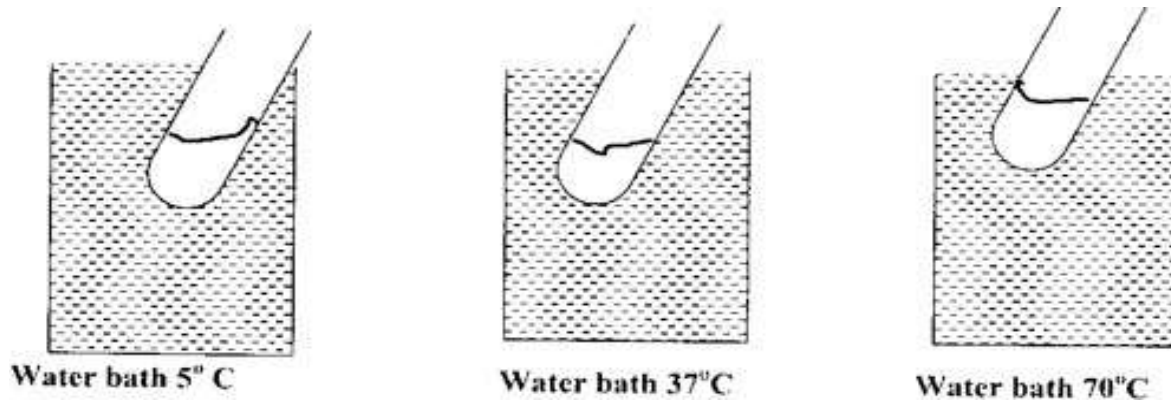
BIOLOGY PAPER 1 QUESTIONS

1. Why does energy decrease as we move from lower trophic levels to higher trophic levels?

2. a) The photosynthetic tissue is composed of specialized cells name the cells

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3. Three tubes each containing 1 ml saliva and 1 ml water were incubated in water baths at different temperatures as shown in the diagrams below for 30minutes. Another tube containing 1 ml starch solution was incubated for the same length of time in each water bath. The contents of the tubes in each water bath was then mixed and incubated for a further 30 minutes. The content of each tube in each water bath was then tested for starch using iodine solution.



a) What was the aim of the experiment?

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b) Why was it necessary to incubate the tubes for 30minutes before mixing their contents?

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c) State the colour changes you would expect to observe after adding iodine solution?

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4. State two differences between a dicot. leaf and a monocot. leaf. (2mks)

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5. How are the palisade cells adapted for their functions?

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6. a) Name the membrane that covers the root of a mammalian tooth.

b) What is the significance of horny pad in a herbivore dentition?

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c) The walls of the duodenum and ileum contain intestinal glands called crypts of lieberkulia and Brunners glandin digestion the role of each gland in the digestion

7. In which ways does transpiration benefit a plant?

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8. A 200cm³ sample of air was treated with pyrogallic acid. This reduced its volume to 168cm³. Potassium hydroxide was then added and the volume of the gas reduced further to 160cm³. a) What was the role of Pyrogallic acid?

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b) What was the role of Potassium hydroxide?

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c) Calculate the percentage of Oxygen and percentage of Carbon (iv) oxide.

9. a) Name three classes of animals that excrete their nitrogenous waste products mainly in the form of uric acid.

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b) Give two advantages of excreting nitrogenous waste products in the form of uric acid as compared to urea

10. . State three types of a sexual reproduction in organisms

11. List two diseases caused by gene mutations and one disease caused by chromosomal mutation.

a) Gene mutation

b) Chromosomal mutation

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12. State the functions of the following parts of the mammalian ear.

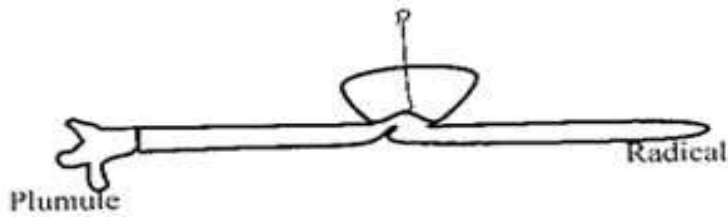
a) Eustachian tube

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b) Semi circular canals

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13. . A seedling with a straight plumule and a straight radical was pinned horizontally in a dark box shown below.



a) What observation would be made to the seedling after two weeks? (2mks)

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b) State the responses shown by the plumule and radical respectively.

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c) Why was the experiment carried out using a dark box?

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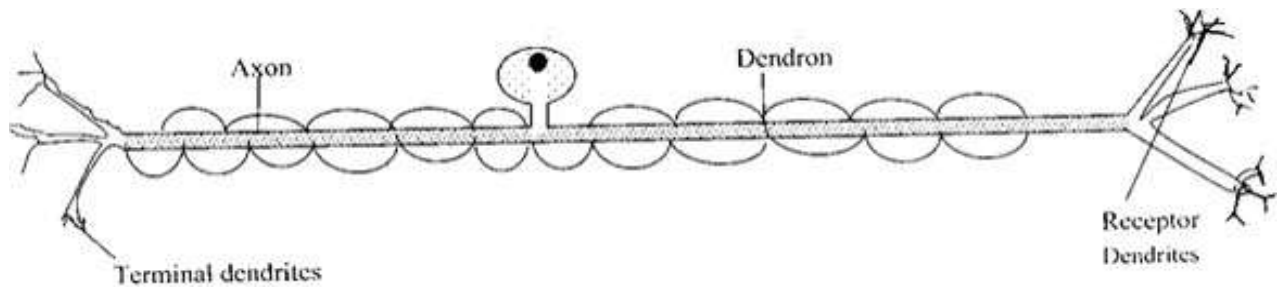
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14. Explain why taking an under dose of antibiotics may lead to the build up of a population of resistance bacteria

15. . Fertilization in flowering plants is said to be "double fertilization" Explain;

16. 15. Fertilization in flowering plants is said to be "double fertilization" Explain

17. Study the diagram of nerve cell shown below and answer the questions that follow.



a) Giving a reason, state the identity of the nerve cell.

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b) With use of an arrow show the direction of impulse flow on the diagram.

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18. . Explain the following observation: When the body temperature rises, the erector pili muscles in a mammal relax where as the superficial blood vessels dilate.

19. a) Name the group of organisms that is responsible for recycling of nutrients in an ecosystem.

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b) Give two examples of the organisms you have named in 19(a) above.

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20. Name the micro-organisms that cause the following diseases of man:

a) Whooping cough

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b) Typhoid

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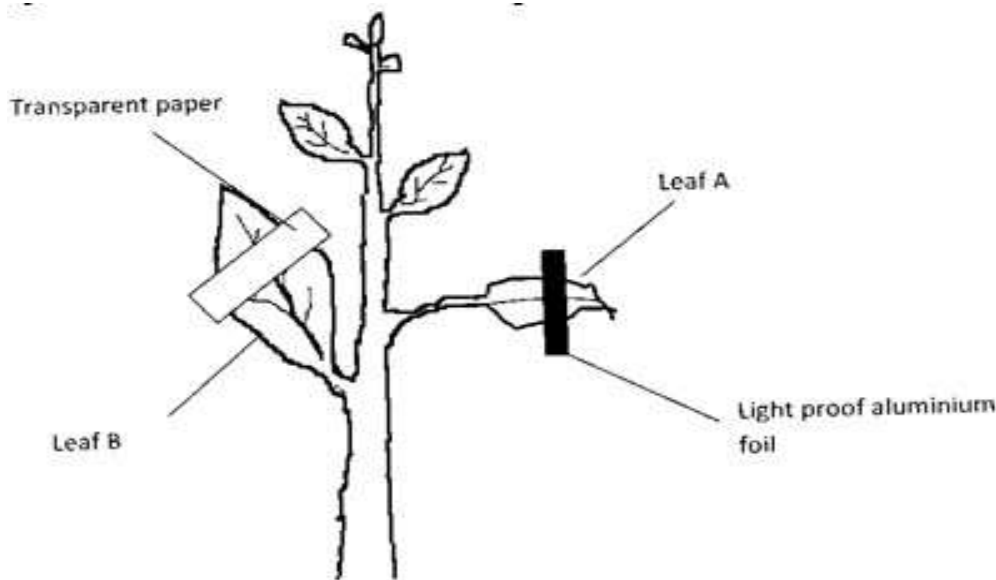
21. State any two adverse effects of deforestation on the environment

22. a) What is meant by the term "Oxygen debt"?

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b) Write a word equation to show how lactic acid is formed

23. A form one student set up an experiment shown below to investigate an aspect of photosynthesis.



Use it to answer the questions that follow.

After exposure to sunlight for six hours, leaves A and B were tested for starch

a) What was the aim of the above experiment?

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b) What are the results for starch test in leaves A and B?

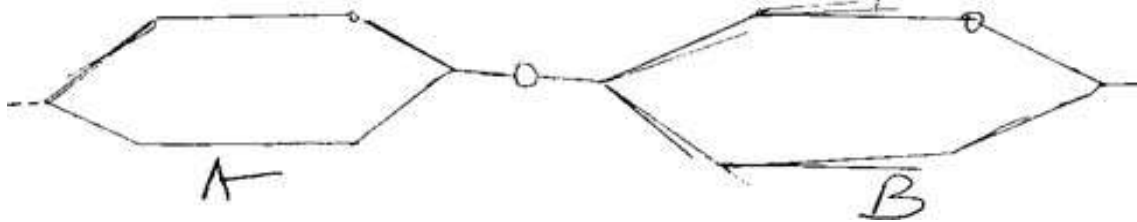
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24. The table below shows the concentration of Sodium and Iodine in a pond water and cell sap of an aquatic plant

Ion	Conc. in pond water (ppm)	Conc. in cell sap (ppm)
Sodium	120	70
Iodine	0.2	400

Suggest the process through which each of the ions is taken up by the plant and give your reasons.

25. The diagram below shows a simple structure of a disaccharide, study it and Answer the questions that follow.



a) State the chemical reaction that forms the disaccharide

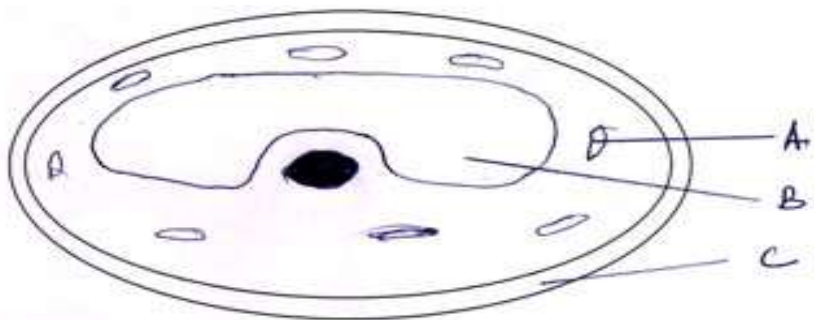
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b) If the disaccharide is sucrose name the monosaccharides A and B

A.....

B.....

26. The figure below is a diagram of a cell as seen under the light microscope.



a) Name the three structures that show that this is a plant cell and not an animal cell.

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b) What is the name of the chemical compound found in the structure labeled C?

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c) Name the part labeled A and B.

A

B

27. State two distinguishing characteristics of members of the class Arachnida.

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28. Name the type of joint found between the following bones.

i) Atlas and Axis

ii) Ulna and Humerus