

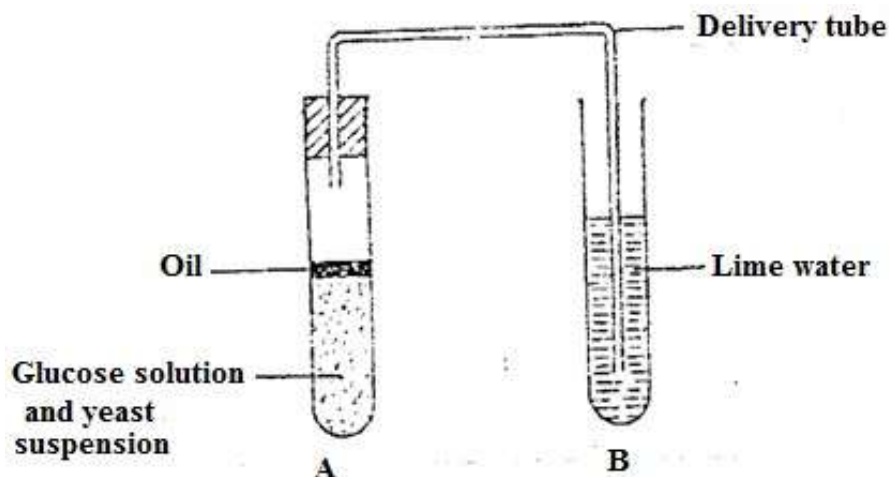
FORM FOUR CLUSTER KCSE MODEL13

BIOLOGY PAPER 2 QUESTIONS

SECTION A (40 Marks)

Answer all questions

1. The diagram below shows a set – up that was used to demonstrate Fermentation.



Glucose solution was boiled and oil added on top of it. The glucose solution was then allowed to cool before suspension.

a) Why was the glucose solution boiled before adding the yeast suspension?

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b) What was the importance of cooling the glucose solution before adding the yeast suspension?

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c) What was the use of oil in the experiment?

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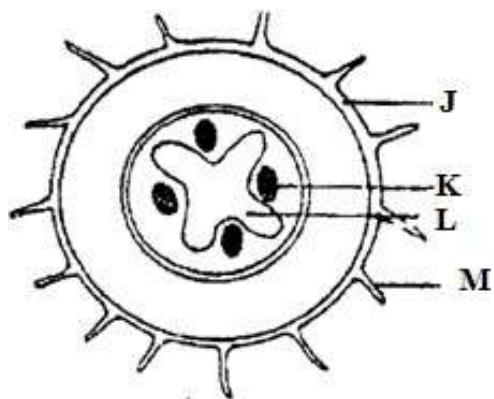
d) What observation would be made in the test tube B at the end of the experiment?

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.....

e) Suggest a control for this experiment.

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.....

2. The diagram below represents a transverse section through a plant organ



a) From which plant organ was the section obtained?

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b) Give two reasons for your answer in (a) above.

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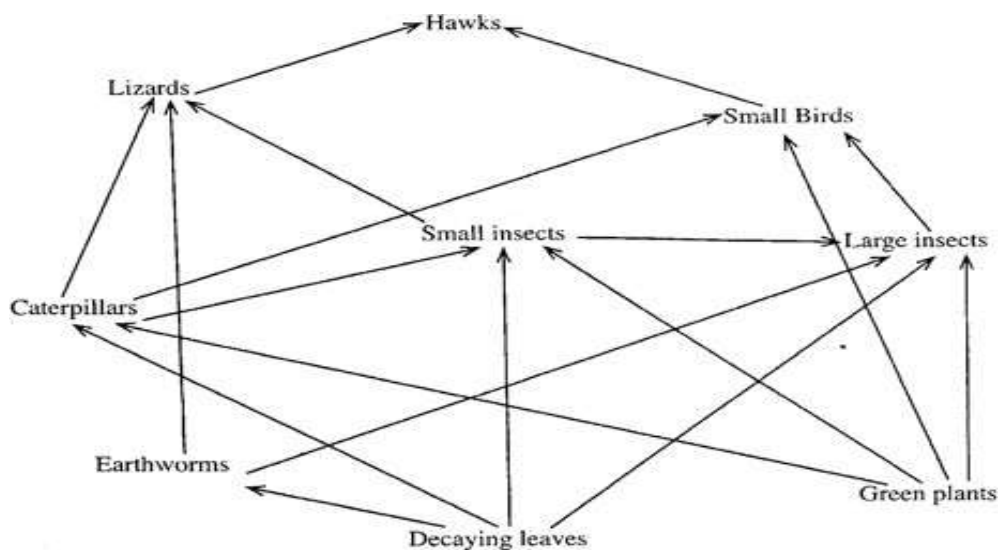
c) Name the parts labelled J, K and L.

.....

d) State two functions of the part labelled M.

.....

3. The diagram below represents a food web in a certain ecosystem.



a) Name the trophic level occupied by each of the following:

i) Caterpillars:

.....

ii) Small insects.

.....

b) From the food web, construct a food chain which end with lizards as a tertiary customer.

.....

c)

i) Which organisms have the least biomass in this ecosystem?

.....

ii) Explain the answer in (c) (i) above.

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4. a) What is diffusion

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b) How do the following factors affect the rate of diffusion?

i) Diffusion gradient

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ii) Surface area volume ratio

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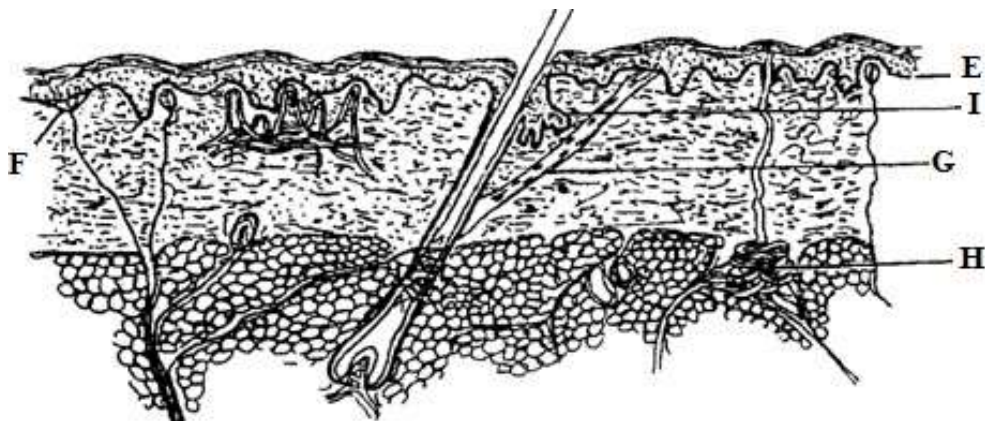
iii) Temperature

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.....

c) Outline three roles of active transport in the human body.

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.....

5. a) The diagram below shows a section through the mammalian skin.



Name the parts labelled E, F and G.

E.....

F.....

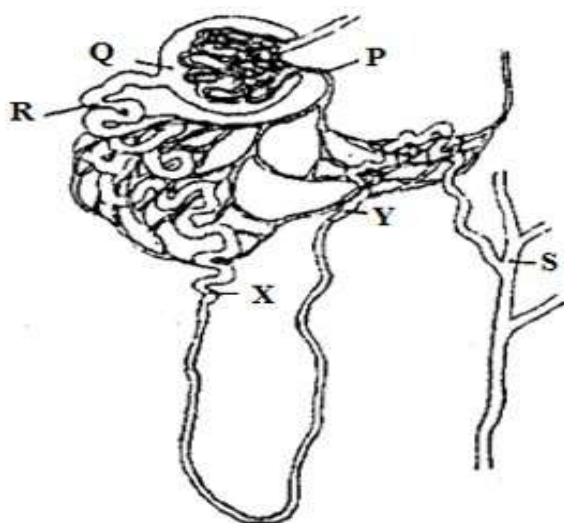
G.....

State ONE function in each case of substances secreted by the structures labelled.

i) H.....

ii) I

b) The diagram below represents a mammalian nephron



- i) Name the Structure labelled P.....
- Portion of the nephron between point X and Y.....
- ii) Name the process that takes place at point Q.....
- iii) Name one substance present at point R but absent at point S in a healthy mammal.
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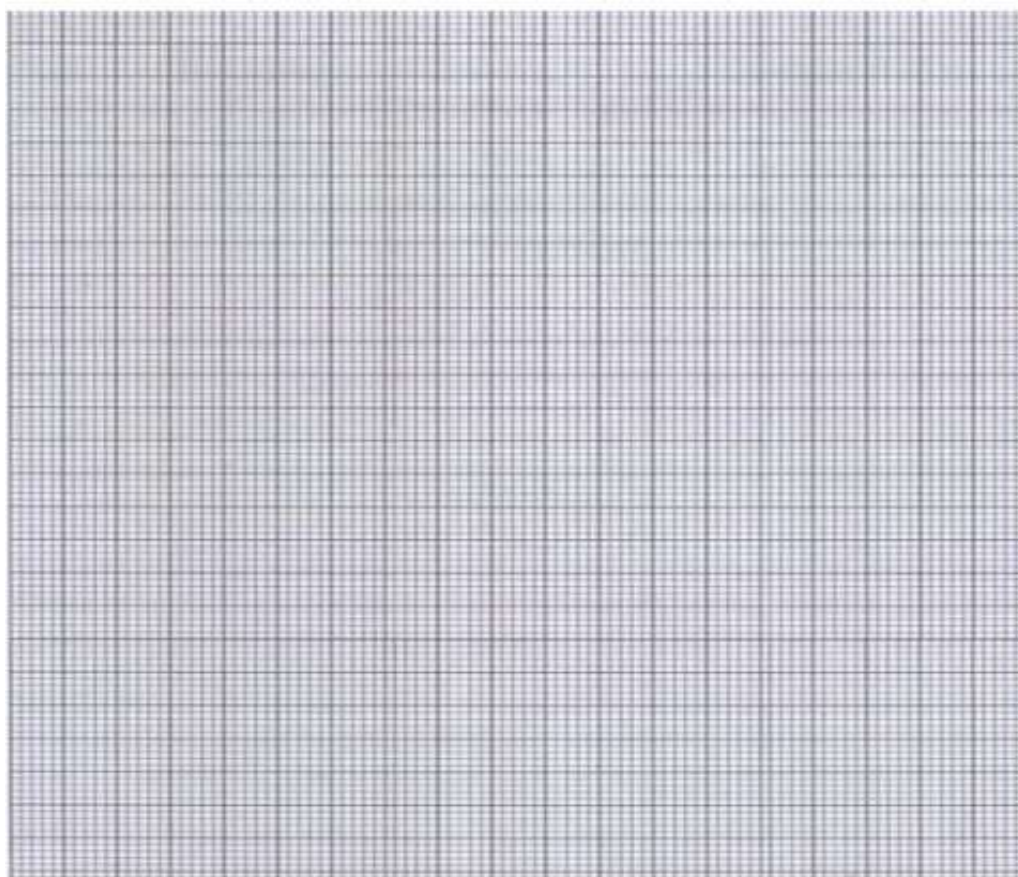
SECTION B (40 Marks)

Question 6 (Compulsory) and either question 7 or 8

6. a) An experiment was carried out to investigate the effect of temperature on the rate of reaction catalyzed by an enzyme. The results are shown in the table below.

Temperature ($^{\circ}\text{C}$)	Rate of reaction in mg of products per unit time
5	0.2
10	0.5
15	0.8
20	1.1
25	1.5
30	2.1
35	3.0
40	3.7
45	3.4
50	2.8
55	2.1
60	1.1

On the grid provided draw a graph of rate of reaction against temperature.



b) When was the rate of reaction 2.6mg of product per unit time?

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c) Account for the shape of the graph between

i) 50C and 400C

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ii) 450C and 600C

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d) Other than temperature name two ways in which the rate of reaction between 50C and 400C could be increased.

e) i) Name one digestive enzymes in the human body which works best in acidic condition.

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.....

ii) How is the acidic condition for the enzyme named in (e) (i) above attained?

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.....

f) The acidic conditions in (e) (ii) above is later neutralized

i) Where does the neutralization take place?

.....
.....

ii) Name the substance responsible for neutralization

.....
.....

7. Describe the process of fertilization in flowering plants.

8. Describe the role of the liver in homeostasis in the human body.