

**FORM 3 TERM 3 APRIL 2022**  
**BIOLOGY PAPER 2**

1) During an ecological study, form three students encountered three plant species: X, Y and Z. The students recorded the main features of each plant species, as shown below

X: - Leaves with broad lamina and with large air spaces

- Many stomata on the upper epidermis

Y: - Leaves with broad lamina

- Long flexible stems with tendrils

Z: - Large buttress roots

- Pneumatophores

(a) State the possible habitat of each plant

X..... (1 mark)

Y..... (1 mark)

Z..... (1 mark)

(b) State the significance of the following:

(i) Numerous stomata on the upper epidermis in plant X (1 mark)

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(ii) Broad leaves in plant Y (1 mark)

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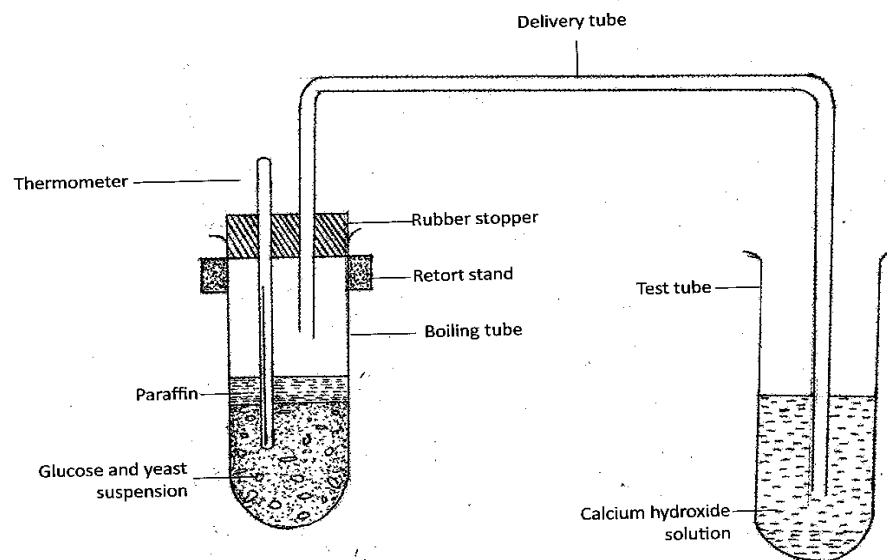
(iii) Buttress roots in plant Z

(1 mark)

(c) Give two problems faced by plant X in its habitat

(2 marks)

2) The set up below illustrates an experiment to demonstrate a certain biological process, before the addition of the yeast suspension the glucose solution was first boiled and then cooled at 40°C.



a) What was the aim of the experiment? (1mk)

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b) What observations would you make in the tubes a few minutes after the experiment begun (2mks)

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c) Explain the observations made in (b) above (2mks)

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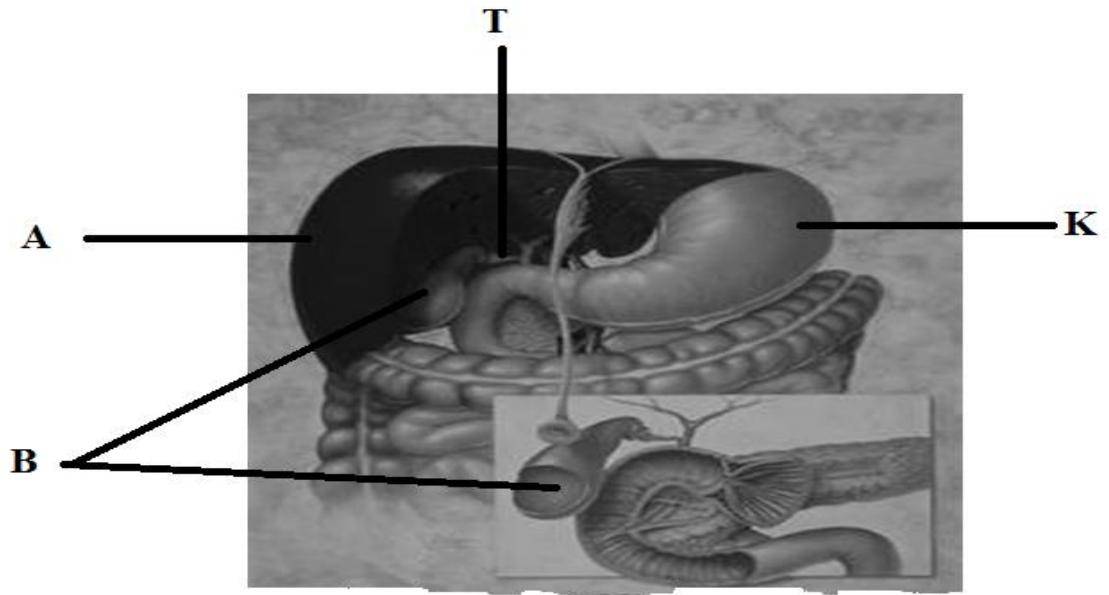
d) Why was glucose solution boiled before cooling at 40°C (1mk)

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e) How can you set up a control experiment for the above (1mk)

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3) . Use the photograph of mammalian digestive system and associated organs to answer the questions that follow.



(i) Name the structures marked **A**, **B**, **K** and **T**. (4marks)

**A**.....

**B**.....

**K**.....

**T**.....

(ii) Name an acid found in the structure labelled **K**. (1mark)

.....

(iii) Name the juice stored in the structure labelled **B** and give its function. (2marks)

Juice.....

Function.....

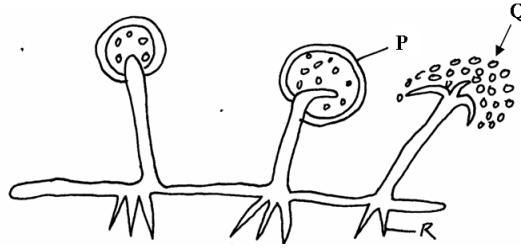
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(iv) Label with letter **D** part where function named in (iii) above takes place. ( 1 mark)

4) The diagram below represents a mature bread mould (Rhizopus)



(a) Name the structures P, Q and R (3mks)

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(b) What is the function of the structure P? (1mk)

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(c) State **two** economic importances of moulds (2mks)

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(d) (i) Name the kingdom to which bread mould belong (1mk)

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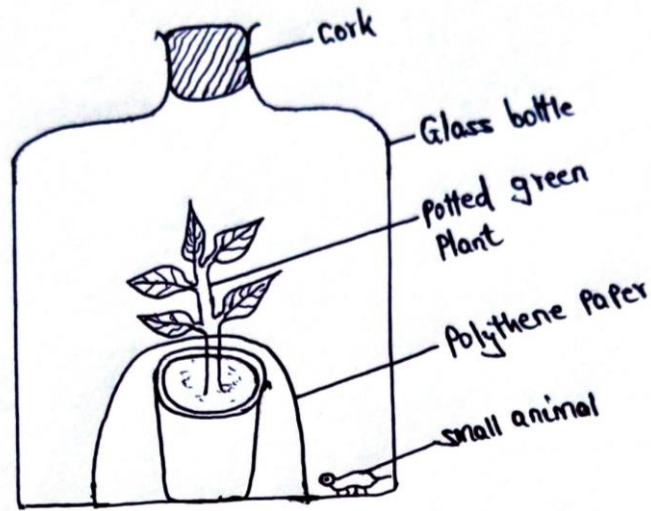
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(ii) List down **one** general characteristic of member of the kingdom named in d (i) above.

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5) An experiment was set up to investigate a factor in autotrophism in green plants.



Vaseline was applied at joint between the cork and the mouth of glass bottle and set up was left under sunlight for 6 hours.

a) Why was it necessary;

i) To apply Vaseline (1mk)

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.....

ii) To cover the pot with polythene paper (1mk)

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iii) What was the purpose of including the small animals? Give two reasons. (2mks)

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b) i) What would happen to the small animal if the set up was left over night in darkness

(1mk)

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ii) Account for the answer in b (i) above (1mk)

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c) State the respiratory surface of the following organism

(2mks)

i) Amoeba

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ii) Fish

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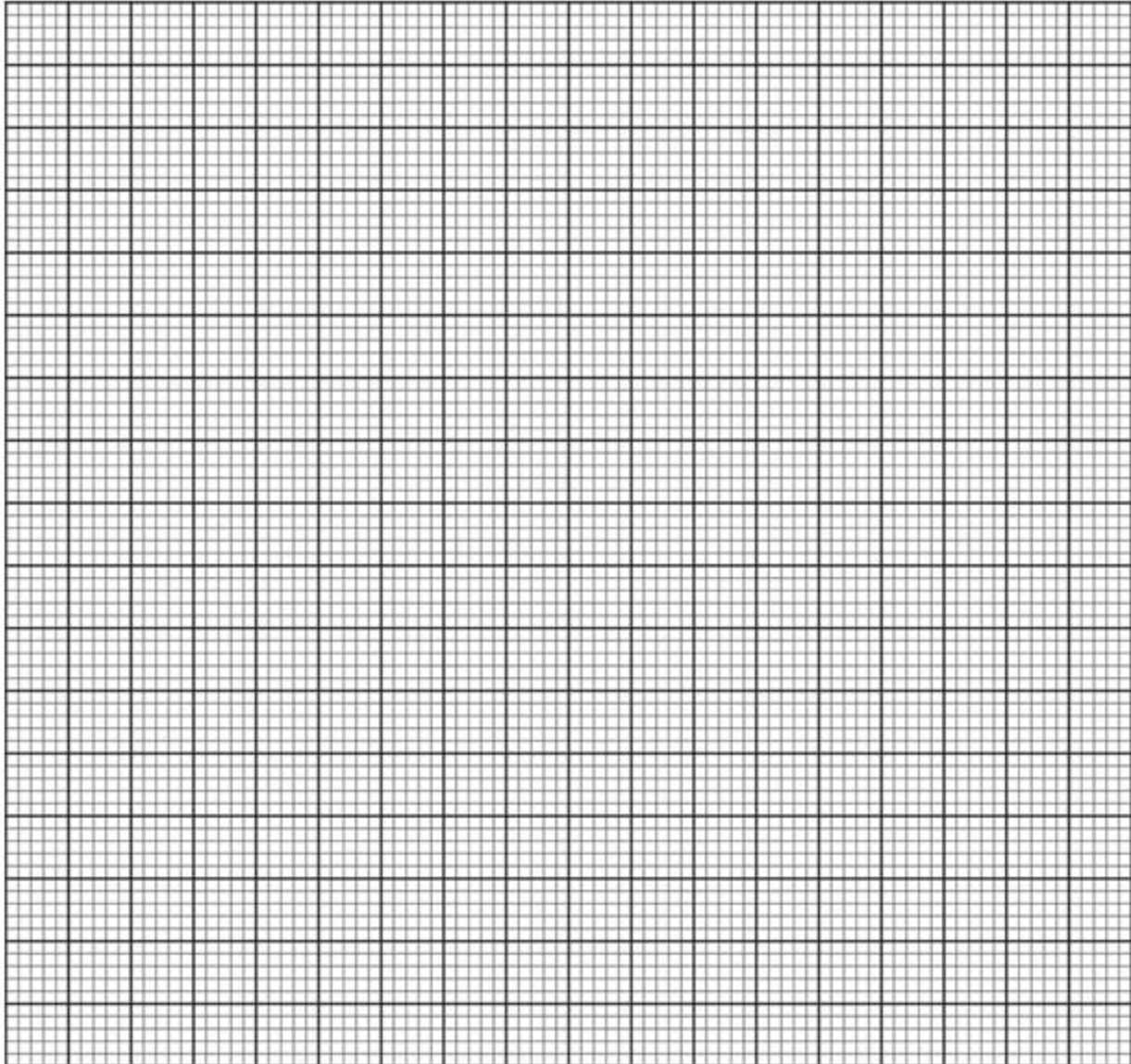
**SECTION B (40MARKS)**

Answer question 6 (compulsory) then choose any between question 7 and 8

6) A research was carried out to determine the trend of growth of some boys and girls. Their average mass in kilograms was taken separately for a period of 20 years and tabulated as shown in the table below.

Age	Average mass of boys (kg)	Average mass of girls (kg)
0	2.5	2.5
2	11.5	11.5
4	15.0	16.0
6	18.5	19.3
8	22.1	27.1
10	25.1	27.1
12	27.5	30.5
14	37.0	35.5
16	44.0	44.0
18	46.9	52.0
20	48.5	55

On the same axis draw a graph of the average mass of the girls and boys against age (7mks)



a) From graph, determine the:

i. Mass of boys at the age of 11 years (1mk)

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ii. Growth rate of girls between ages 13 and 15 (3mks)



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iii. Account for the change in the mass of girls during the age stated in ( ii) above (2mks)

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b) Explain the trend observed in the curves for both boys and girls (2mks)

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c) Why do girls above 10 years require intake of food that richer in iron than boys of the same age (2mks)

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d) Apart from using average mass to estimate growth in human beings name two other parameters that can be used (2mks)

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7) a) Describe the mechanism of inhalation and exhalation in mammals (14mks)

(b) Explain **three** factors that affect rate of breathing (6mks)

8) a) Describe the process of double fertilization in flowering plants. (15 mks)

b) Describe what happens to the various parts of a flower after fertilization. (5 mks)

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