

MANGU MOCK TRIAL 3

BIOLOGY

231/2

PAPER 2 (THEORY)

TIME: 2 HOURS

NAME.....

SCHOOL..... SIGN.....

INDEX NO..... ADM NO.....

Kenya Certificate of Secondary Education.

INSTRUCTIONS TO CANDIDATES

- a) Write your **name** and **index number** in the spaces provided above
- b) Sign and write the date of examination in the spaces provided
- c) Answer all questions in section A
- d) In section B answer **question 6 (compulsory)** and either question 7 or 8

FOR EXAMINERS USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
SECTION A		
1.	8	
2.	8	
3.	8	
4.	8	
5.	8	
SECTION B		
6.	20	
7.	20	
8.	20	
TOTAL	80	

SECTION A:

Answer all the questions in the spaces provided.

1. A biological washing powder contains an enzyme. The enzyme removes stain such as blood from clothes by digestion when the clothes are soaked in water with no powder.

(a) What is an enzyme? **(2mks)**

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(b) Identify two possible enzymes that are found in the washing powder above. **(2mks)**

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(c) Would the stains be removed faster with the powder in water at 30°C or 15°C. **(1mk)**

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(d) Explain your answer in (c) above **(2mks)**

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(e) Why would boiling the clothes socked with the washing powder do not remove the stains? **(2mks)**

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2. A couple had three children, the mother had blood group A and the father had blood group B. While one of the children had blood group O

a)(i) What were the genotypes of the parents. **(1mks)**

(ii) What was the genotype of the child with blood group O **(1mk)**

b) Work out using genetic crosses the genotypes of the other children. (4mks)

c) Which child can receive blood from any member of the family? (1mk)

d) State the percentage of children who can donate blood to all blood groups. (1mk)

3. Distinguish between pyramid of numbers and pyramid of biomass. (2mks)

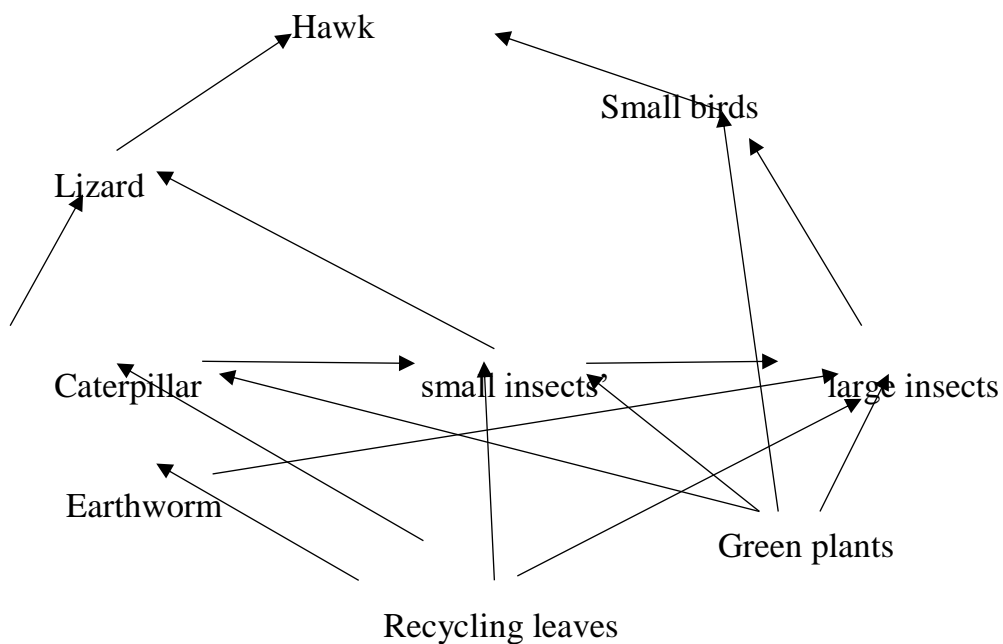
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b) From an ecological study, students formed the following food web.



From the food web, construct two food chains with lizard as a tertiary consume. **(2mks)**

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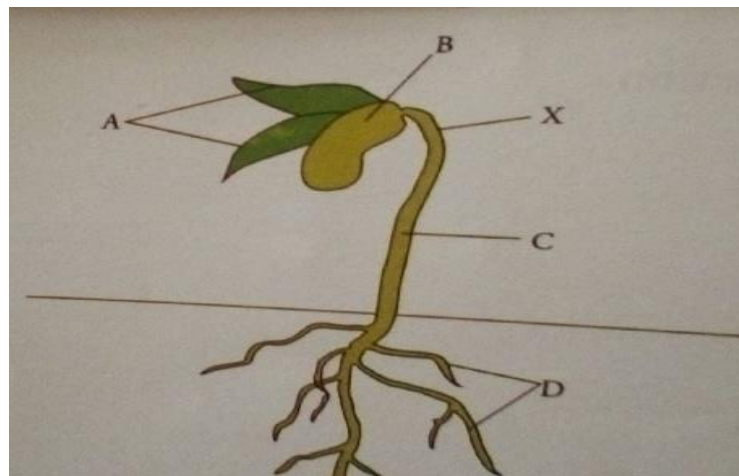
c)(i) Which organism has the least biomass in the ecosystem. **(1mks)**

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(ii) Give reasons for your answer **(3mks)**

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4. Examine the diagram below and answer the questions that follow.



(a) Name the parts labelled A- D. **(2mks)**

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(b) State the type of germination exhibited by the seedling above **(1mk)**

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(c) State two roles of water during germination. **(2mks)**

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(d) Explain how the part labelled x would strengthen. (3mks)

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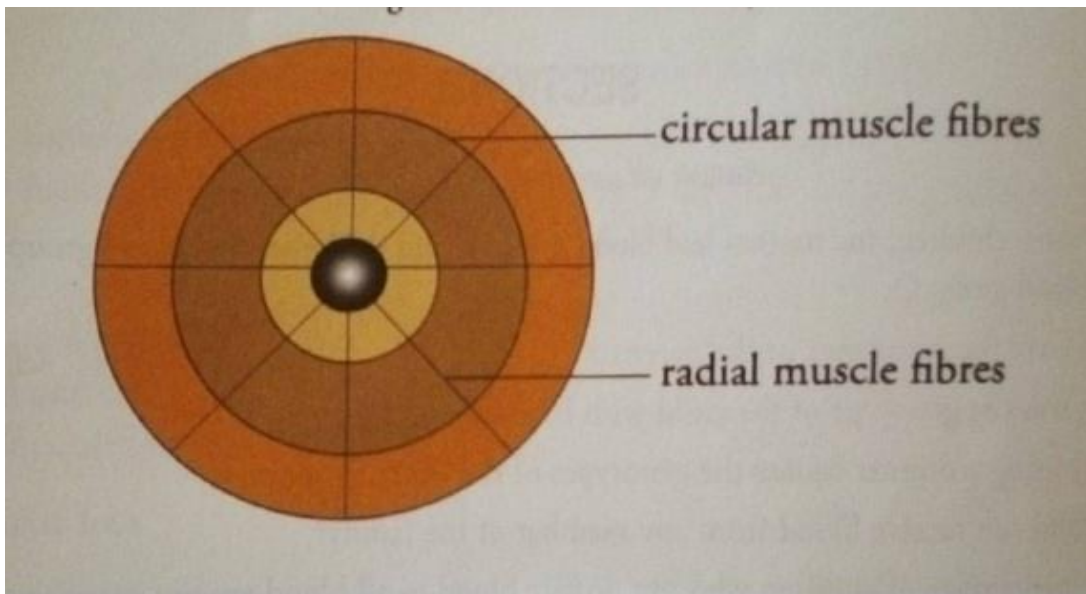
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5. The diagram below shows the internal arrangement of muscles in the eye.



(a) How is the pupil affected by contraction of ;

(i) Circular muscles (1mk)

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(ii) Radial muscles (1mk)

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(b) Where are light sensitive cells located in the eye. (1mk)

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(c) What is short sightedness?

(1mk)

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(d) Explain why cones have a higher visual acuity as compared to rods.

(2mks)

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SECTION B:

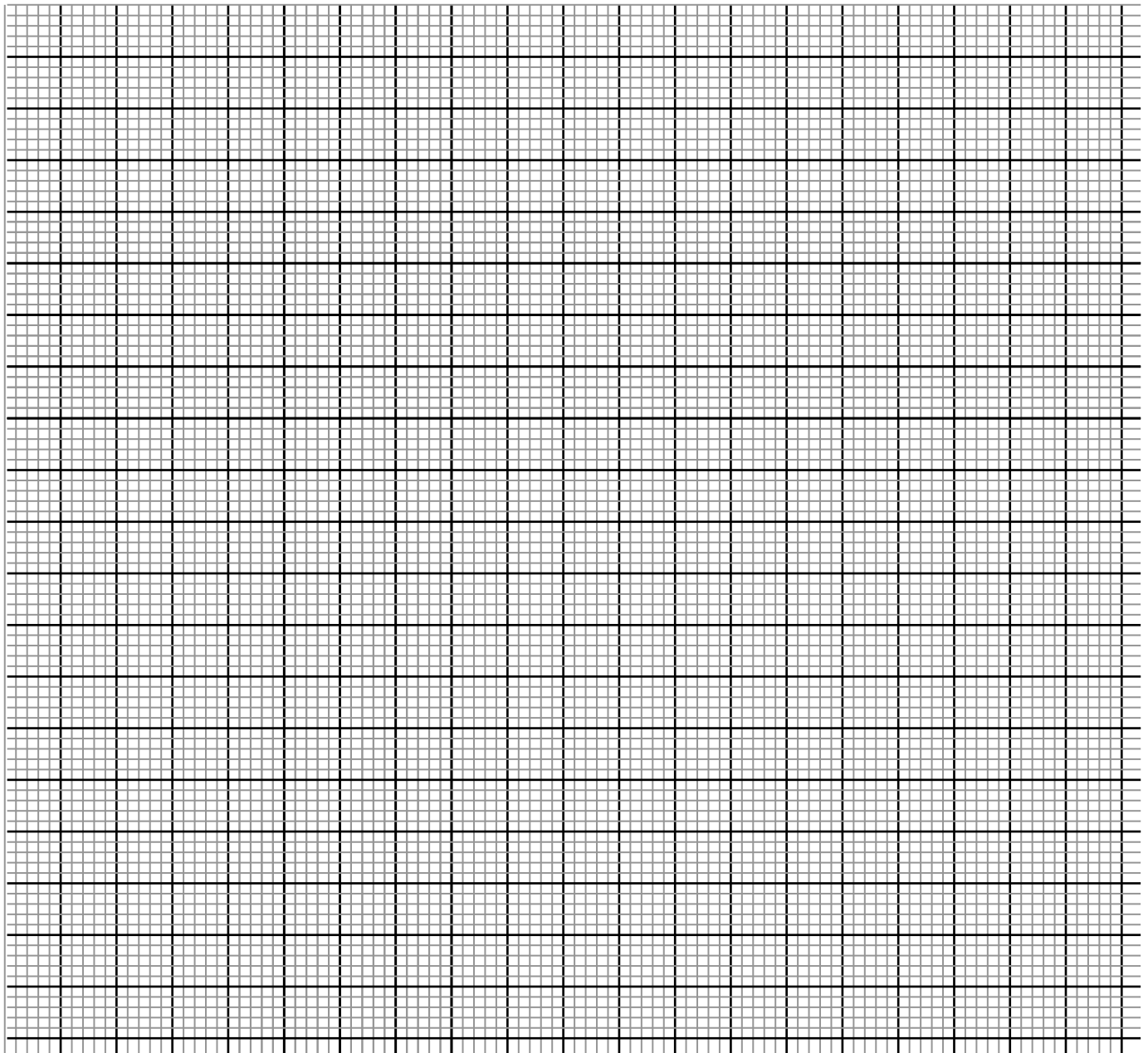
Answer question 6 and either question 7 or 8.

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

Temperature (°)	Rate of reaction in mg of product per unit time
5	0.2
10	0.6
15	0.9
20	1.2
25	1.6
30	2.2
35	3.1
40	3.8
45	3.5
50	2.9
55	2.2
60	1.2

a) Draw a graph of rate of reaction against temperature.

(6mks)



b) Determine when the rate of reaction is 2.5mg of product per unit time.

(2mks)

c) Account for the shape of the graph between:

(i) 5°C- 40°C

(2mks)

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(ii) 45°C – 60°C (2mks)

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d) Other than temperature give two other ways of increasing the rate of reaction between 5°C and 40°C. (2mks)

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e) (i) Identify a digestive enzyme in human that requires acidic conditions for its working. (1mk)

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(ii) Explain how the acidic conditions above is achieved (1mk)

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f) Enzyme in region of alimentary canal below the stomach requires alkaline conditions.

i) Name substances responsible for neutralization. (1mk)

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ii) Name the part of the alimentary canal where neutralization take place. (1mk)

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g) (i) What are enzyme cofactors? (1mk)

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(iii) Identify one metallic element used as enzyme cofactor. (1mk)

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7. (a) How is the human ear adapted to perform its functions? (20mks)

8. (a) Describe how the following supports the theory of evolution. (4mks)

(i) Geographical distribution of organisms

(ii) Comparative anatomy

(b) Describe how hormones regulate the menstrual cycle in human beings. (16mks)