MOI HIGH SCHOOL KABARAK

Kenya Certificate of Secondary Education

443/ 1 Biology - Paper 1 (Theory)

POST MOCK, 2024

T3- 2024 – Time 2 hours

Name …… Adm Number……..

Candidate's Signature ……..…….. Date ……

Instructions to candidates

a) *Write your name and class in the spaces provided above.*

b) *Append your signature and write the date of examination in the spaces provided above.*

c) *Spelling errors especially of* ***biological*** *terms shall be penalized*

d) *Answer* ***ALL*** *questions in the spaces provided.*

e) *Candidates should answer the questions in English*

f) Candidates should check the question paper to ascertain that all the pages are printed and no questions are missing

Question	Maximum score	Candidate's score
1 – 29	80	

21123456789

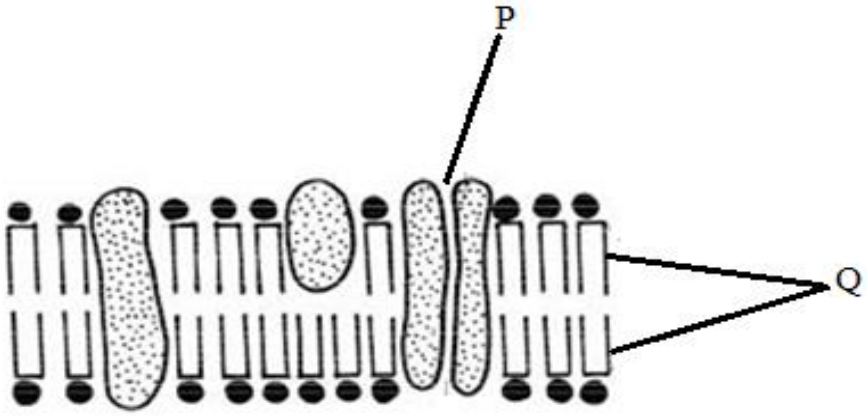
1. a) Flowering plants can be divided into two groups; monocotyledons and cotyledons.

Complete the table below to state the differences between these two types of flowering plants. (2 marks)

Difference	**Monocotyledons**	**Dicotyledons**
Pattern of leaf veins		
Number of petals present		

b) Explain why division Pteridophyta is considered more advanced than division Bryophyta. (2marks)

2. The diagram shown represents part of a cell.



a) Identify the structure (1 mark)

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b) Label the following parts: (2 marks)

P……

Q…….

3. i) Explain the role of enzymes in respiration. (1mark)

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ii) Give a word equation for aerobic respiration. (1mark)

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iii) Explain two disadvantages of anaerobic respiration. (2marks)

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4) The number and distribution of the stomata on three different leaves are as shown in the table below

leaf	Number of stomata	
	Upper epidermis	Lower epidermis
A	300	0
B	150	200
C	02	13

a) Suggest the possible habitat of the plants from which the leaves A and C were obtained. (2marks)

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b) Suggest the modification found in the stomata of leaf C. (1mark)

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5. Moulting is shedding of the exoskeleton of arthropods such as houseflies to allow for growth.

a) Name the hormone that leads to the formation of the larval cuticle. (1 mark)

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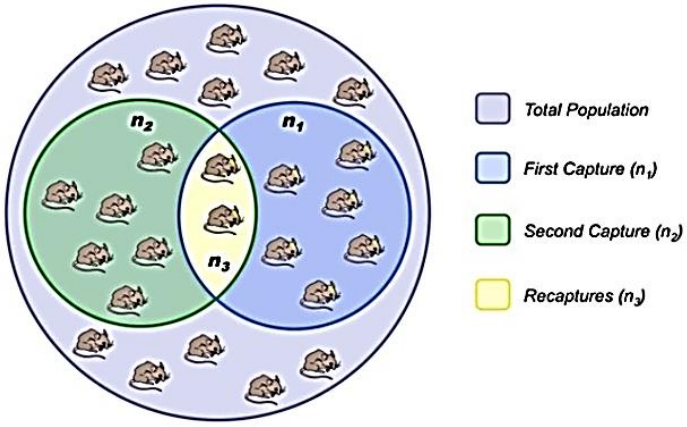
b) Sketch the life cycle of the housefly. (2mks)

6. The illustration below shows a method of estimating populations of organisms in an ecosystem.



a) Which method is illustrated above? (1mk)

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b) Calculate the population of the organisms under study. (2mks)

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7 a) The equation below represents the reaction that leads to the formation of a lipid molecule.

Fatty acid + Glycerol $\rightarrow$ Triglyceride + Water

Name the reaction taking place. (1mk)

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b) Lactating mothers require extra amount of energy. Give a reason. (1mk)

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c) Suggest a change in diet to a person whose liver is damaged. (1mk)

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8. a) set of triplets were separated at birth and were brought up at different conditions.

The table below gives information about them when they met after 18 years.

Characteristic	James	John	Jacob
Weight	71kg	70kg	65kg

Height	1.82m	1.85m	1.75m
IQ	124	124	123
Blood group	A	O	A

(a) Which of the triplets could have been identical. (1mk)

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(b) Explain your answer in above. (2mks)

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9. A food sample was made into a suspension and a few drops of iodine solution was added into it. A blue black colour developed. A sample of the same food had no effect on Benedict's solution. Some millet seeds which had been soaked for 48 hours were crushed and mixed with the food suspension. The mixture was incubated in a warm water bath for 6 hours. After incubation, the sample gave negative results with iodine solution and positive results with Benedict's solution.

(a) What does the blue-black colour developed on addition of Iodine solution indicate? (1mk)

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(b) Account for the negative results with iodine solution after incubation. (1mk)

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(c) Why was it necessary to soak the millet seeds first in the second test? (1mk)

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(d) What is the role of the incubator in the above experiment? (1mk)

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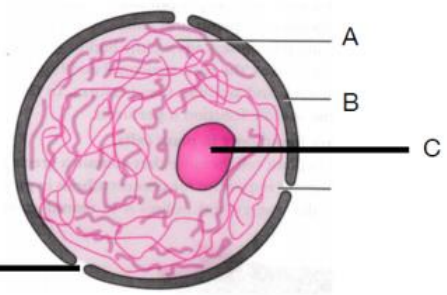
10. The diagram below shows cell structures



a) Name the structures labelled C and D. (2mks)

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b) State the functions of the structures. A, B (2mks)

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11. Study the process below and answer the questions that follow.

Glucose $\xrightarrow{\text{Process P}}$ Pyruvic acid + Energy

a) Name process **P**. (1mk)

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b) Name the part of a cell in which the process named in a) above occurs. (1mk)

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12. An experiment was carried out to investigate the effect of different concentrations of sodium chloride on human red blood cells. Equal amounts of blood were added to equal volumes of the salt solution but of different concentrations. The results are shown in the table below.

		Number of cells	
Set up	Sodium chloride concentration	At the start of the experiment	At the end of the experiment
A	0.9%	Normal	No change in number
B	0.3%	Normal	Fewer in Number

(a) Account for the results set up in A and B. (4mks)

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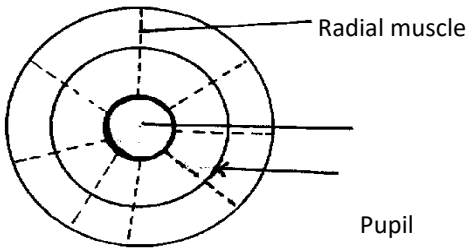
(b) If the experiment was repeated using 1.4% sodium chloride solution state the expected results with reference to the number of red blood cells. (1mk)

13. The diagram below shows a front view of the iris and pupil of the eye.



Complete the table below to show what happens to the structure shown when the eye is in. (4mks)

Structure	Darkness	Bright light
Radial muscles		
Circular muscles		

14. a) Why is sexual reproduction important in evolution of plants and animals (1mk)

b) The calyx cells of a certain plant has 22 chromosomes. State the number of chromosomes present in plants (2mks)

(i) Endosperm

(ii) Ovule cell

15. The study of biology enhances international cooperation, as countries work together to solve environmental problems. Name 2 biology related international conventions that help solve environmental problems. (2 marks)

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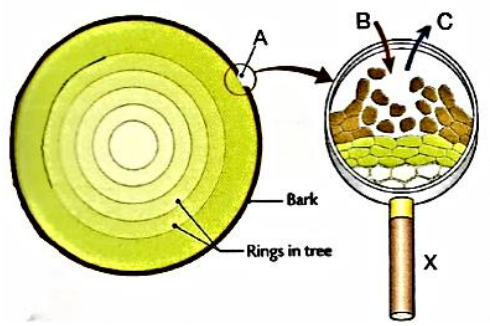
16. The diagram below shows a gaseous exchange structure in the stems of angiosperms.

Name;



a) Part labelled A. (1mk)

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b) Apparatus X. (1mk)

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c) Substances represented by arrows B and C. (2mks)

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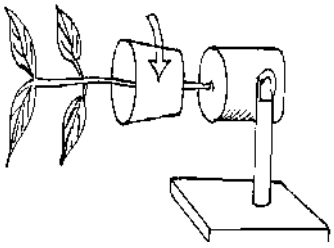
17. Carefully study the figure which rotates making one resolution in 15 minutes. A seedling with a straight radicle and plumule was attached to the apparatus as shown below.



(a) What is the name of the apparatus shown (1mk)

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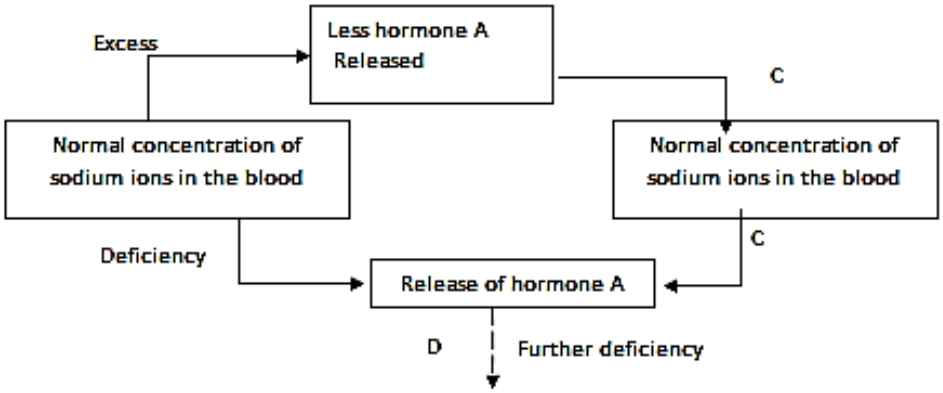
(b) Make a drawing of how the seedling might have appeared after one week. Explain (2mks)

c) State the type of response being investigated in the experiment above. (1mk)

18) Study the homeostatic scheme below:

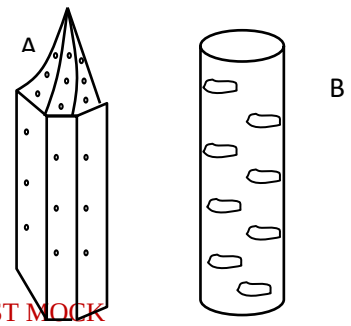


(a) Identify the hormone labeled **A.** (1mk)

(b) Name the site of action of hormone **A** (1mk)

(c) Identify the feedback labeled **D** (1mk)

19) The diagram below represents a plant tissue.



(a) Identify the structures labelled A and B (2mks)

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(b) What property makes B to be more efficient in function? (1mk)

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(c) What makes the walls of both **A** and **B** impermeable to water and solutes? (1mk)

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20) Give a reason why the following precautions should be adhered to during collection of specimen. (2mks)

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a) Not harming or killing the specimen unnecessarily

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b) Not destroying its natural habitat

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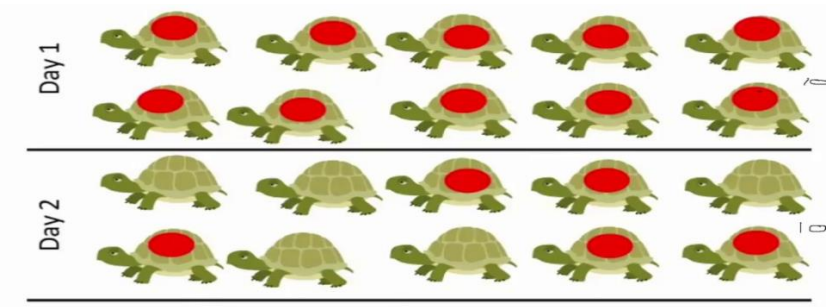
21. Study the diagram below and use to answer the questions that follow;



a) Identify the sampling method illustrated. (1 mark)

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b) Describe how the sampling method above was used to estimate the population of organisms (4 marks)

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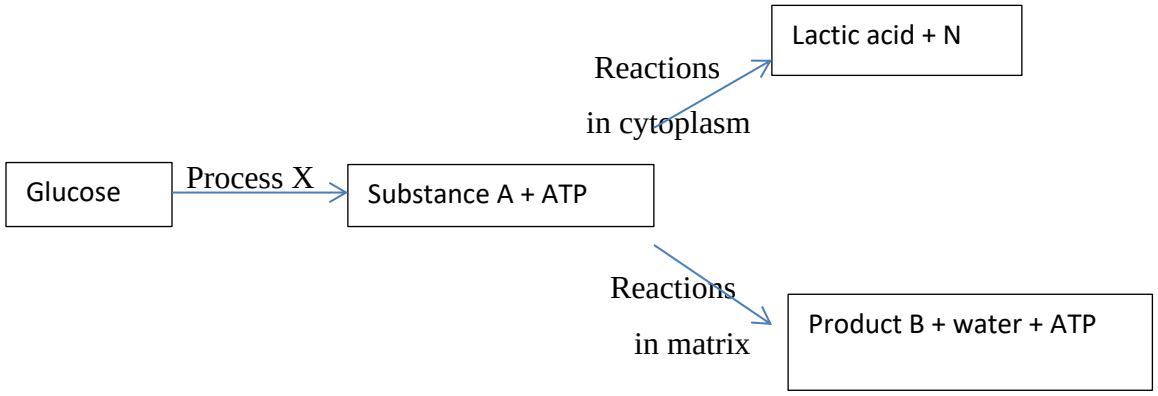
22. The chart below shows a summarized process that occurs in animals.



(a) Name the: (3 marks)

(i) Process X .....

(ii) Substance A .....

(iii) Product B .....

(b) State the condition necessary for the reactions in matrix to occur. (1 mark)

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23. A student was given two samples of grounded maize grains i.e. samples P and R. Sample P was obtained from maize grains that were soaked for four days before grinding while sample R was obtained from unsoaked maize grains. Each flour was tested for reducing sugars and starch.

a) Name one food substance likely to be present in each food substance. (2mks)

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b) Explain the results I a) above (2mks)

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