

231/1
BIOLOGY
PAPER 1
THEORY
Time: 2 hours

**BAHATI GIRLS HIGH SCHOOL
MOCK EXAM**

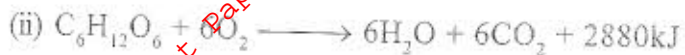
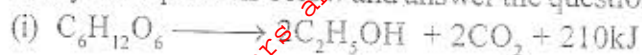
Instructions to candidate

1. Answer **all** the questions in the spaces provided after each question paper.
2. Additional papers must not be inserted. All working must be clearly shown where necessary.
3. Candidates will be penalized for recording irrelevant information and incorrect spelling especially of technical terms.
4. All working must be clearly shown where necessary.

For Examiner's use only

Questions	Maximum Score	Candidate's Score
1 - 18	80	
TOTAL SCORE	80	

1. Study the equations below and answer the questions that follow.

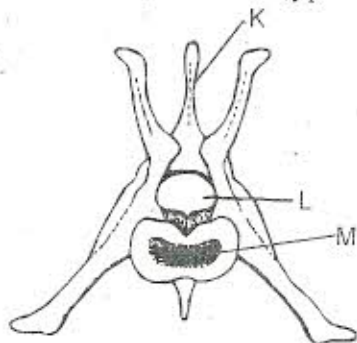


What reactions are represented by the above equations?

(2 marks)

(i)

2. The diagram below represents a type of a bone in the mammalian skeleton.



(a) With a reason identify the bone

(2 marks)

(b) State the function of the part labelled.

(2 marks)

(i) K

(ii) L

(c) Name the type of joint that is formed at the point labelled M.

(1 mark)

3. (a) Mammals require more energy intake than reptiles of the same size. Explain

(2 marks)

(b) Name the part of the brain responsible for thermoregulation.

(1 mark)

4. (a) Name two groups of saprophytes in an ecosystem.

(2 marks)

(b) What is the role of saprophytes in terrestrial ecosystems?

(2 marks)

(c) Explain why it is important to drain off excess water from the soil before planting some plants.

(2 marks)

5. The diagram below shows nucleotide sequence in the DNA before and after a certain mutation.



- (a) Identify the type of genetic mutation shown.

(1 mark)

- (b) State the significance of mutations in evolution.

(2 marks)

6. A student counted 30 cells lengthwise across,

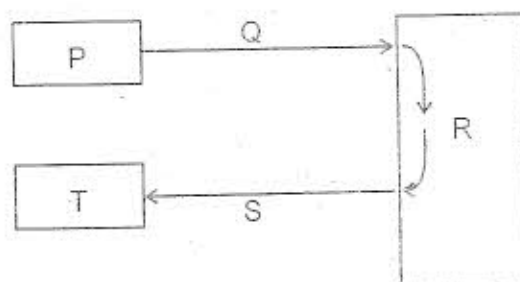
- (a) the diameter of the field of view of a microscope. If the diameter of the field of view was 2.5 millimeters. Calculate the average length of one cell in micrometers.

(2 marks)

- (b) an examination using an electron microscope. A certain organ of a rabbit was found to have numerous rough endoplasmic reticula and golgi bodies. What can you deduce to be the function of the organ?

(1 mark)

7. The diagram below represents a simplified vertebrate nervous system. Study it carefully and then answer the questions that follow.



- (a) Identify the parts marked P, R, and S.

(3 marks)

P -

R -

S -

(b) What is the function of the part labelled R?

(1 mark)

(c) Give one example each for the parts labelled
P -

T -

(2 marks)

(d) What is the role of microscopic gaps found in the part labelled R?

(2 marks)

8. (a) Explain three differences in the composition of blood in the umbilical artery and umbilical vein.
(3 marks)

(b) What is the function of the placenta?

(2 marks)

9. In an experiment, some germinating seeds were placed in a large air tight flask and left for four days.

(a) Suggest the expected changes in the composition of gases in the flask on the fifth day.

(2 marks)

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

(2 marks)

(c) Name **two** methods that man can use to break dormancy in seeds.

(2 marks)

10. (a) Explain **three** adaptations that help a bird to fly.

(3 marks)

(b) State **three** functions of an insect's cuticle.

(3 marks)

11. (a) Suggest reasons why the eggs of birds are relatively much larger than those of mammals.

(2 marks)

(b) Differentiate between tubal ligation and vasectomy.

(2 marks)

12. In humans, the disease phenylketonuria is inherited through a recessive gene. A phenotypically normal couple produced one normal child and one phenylketonuric child.

(a) Using the symbols P for normal gene and p for phenylketonuric gene, write down the genotype of the parents. (2 marks)

(b) Write down the possible genotypes of the normal child (2 marks)

13. The table below shows the concentration of some ions in pond water and in the cell sap of an aquatic plant growing in the pond

Ion	Concentration in pond water pond water (part per million)	Concentration in cell sap (part per million)
Chloride	70	110
Calcium	2.3	1.5
Potassium	4	80
Sodium	45	28

(a) Name the processes by which the following ions could have been taken up by this plant.

(2 marks)

(i) Chloride ions

(ii) Sodium ions

(b) For each process named in (a) above, state one condition necessary for the process to take place (2 marks)

(i)

(ii)

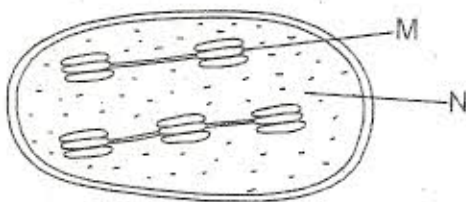
14. (a) Name **three** sites where gaseous exchange takes place in terrestrial plants. (3 marks)

(b) State **one** adaptation of aerenchyma tissue to its function. (1 mark)

(c) Give **two** reasons why accumulation of lactic acid in muscles lead to increased rate of breathing. (2 marks)

15. State the function of synovial fluid (2 marks)

16. The diagram below shows a fine structure of an organelle in plant cells.

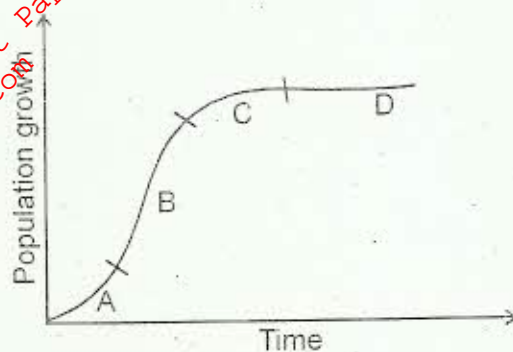


(a) Identify the organelle (1 mark)

(b) (i) Name the part labelled N. (1 mark)

(ii) Name the chemical compound contained in the structure labelled M (1 mark)

17. The graph below shows the growth curve for the population of a certain organism in a habitat.



(a) Name the phase labelled A and D on the graph.

(2 marks)

A -

D -

(b) Suggest two reasons for the growth pattern in the phase labelled B.

(2 mark)

(c) Give the name of the above growth curve

(1 mark)

18. Name two functions of lymph nodes.

(2 marks)