THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

133/1

BIOLOGY I
(For Both School and Private Candidates)

Time: 2 Hours 30 Minutes *Tuesday 19th February 2008 p.m.*

Instructions

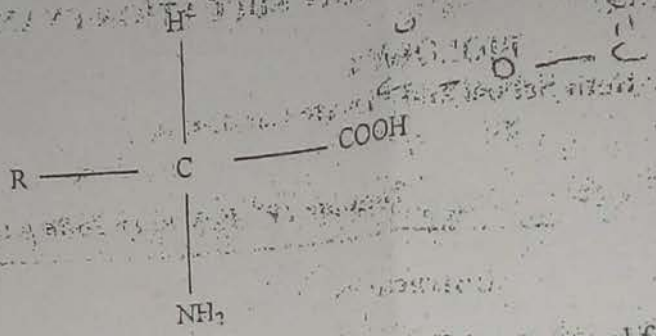
1. This paper consists of fifteen (15) questions in sections A and B.
2. Answer all questions in section A and two (2) questions from section B.
3. Section A carries 70 marks and section B carries 30 marks.
4. Cellular phones are not allowed in the examination room.
5. Write your Examination Number on every page of your answer booklet(s).

This paper consists of 4 printed pages

SECTION A (70 marks)

Answer all questions in this section.

1. Study the molecular structure below and answer the questions that follow.



(a) (i) Write the general name of the structural formula shown above.

(ii) What is the simplest form of R?

(iii) Which part of the structure gives acidic properties of the molecule?

(iv) Which part of the structure gives basic properties of the molecule?

(b) Two molecules of the above structure may join to produce a compound.

(i) Illustrate the compound produced.

(ii) What name is given to the type of bond formed in the joining of the two molecules? (7 marks)

2. (a) Give the differences between the skeleton of arthropods and that of a mammal.

(b) What characteristic features do fish and mammals have in common? (6 marks)

3. Giving two (2) examples, explain how synthetic hormones are used in:

(a) Animal husbandry.

(b) Crop production.

(c) Improvement of livelihood. (6 marks)

4. The amount of DNA per cell during several nuclear divisions is represented in figure1.

(a) Which type of nuclear division is represented by figure 1?

(b) What phases are represented by the dashed lines W, X and Y?

(c) What type of cells are represented by line Z? (6 marks)

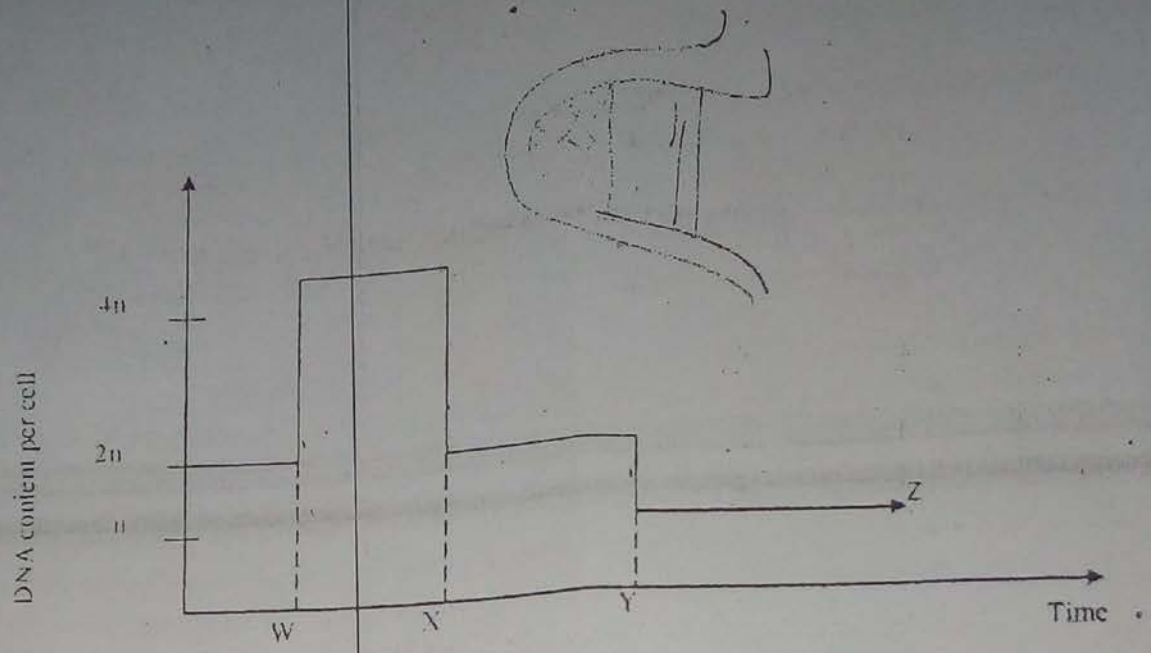


Figure 1

5. What would happen if detritus feeders and decomposers were to disappear from the surface of the earth? (6 marks)

6. (a) Why are the reactions centres of photo systems I and II referred to as P.700 and P.680 respectively?

(b) Compare cyclic and non-cyclic photophosphorylation. (8 marks)

7. Explain the meaning of the following statements:

(a) Nerve impulse obeys the 'all – or – nothing' principle.

(b) Plant growth substances are frequently having antagonism and synergism interaction to each other. (8 marks)

8. (a) Outline the transport mechanism involved in the exchange of substances between mother and foetus in humans.

(b) Using examples explain two advantages of a closed double circulatory system (7 marks)

9. (a) Give an account for the large difference in daily energy requirements of a large mammal e.g. human and a small mammal (mouse) on a weight for weight basis.

(b) Giving examples for each, differentiate between endothermic and ectothermic organisms (8 marks)

(a) Define the term meristem.

(b) Write short notes on lateral meristems with reference to location, role and effect.

(8 marks)

SECTION B (30 marks)

Answer two (2) questions from this section

11. (a) The father is blood group A and the mother blood group B. Explain, using appropriate genetic symbols the possible blood groups of their children.

(b) If these parents get non – identical twins, what is the probability that both twins have blood group A?

12. (a) Write **three (3)** differences between nervous and endocrine coordination.

(b) (i) Explain briefly how the eustachian tube of the human ear works in relation to pressure.

(ii) Account for the discomfort and deafness that may occur during aeroplane take off and deep diving.

13. (a) Explain briefly the meaning of the following terms.

(i) Tactic movements.

(ii) Nastic movements.

(b) With reference to **three (3)** examples, explain how each type of movement mentioned in 13(a) above occurs in plants.

14. Identify and describe the vascular tissues in plants and explain how they are adapted to their functions.

15. (a) Define each of the following terms as applied in genetics.

(i) Gene as a functional unit.

(ii) Genotype.

(iii) Phenotype.

(b) There was a dispute (a quarrel) in a certain family. Both parents had wrinkled hair, but one of their children had straight hair. How could you assist the parents in solving the dispute?