

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

**133/1**

**BIOLOGY 1**  
(For Both School and Private Candidates)

**Time: 3 Hours**

**Year: 2020**

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**Instructions**

1. This paper consists of sections A and B with a total of **ten (10)** questions.
2. Answer **all** questions in section A and **two (2)** questions from section B.
3. Section A carries **seventy (70)** marks and section B carries **thirty (30)** marks.
4. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

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## SECTION A (70 Marks)

Answer **all** questions from this section. Each question carries **ten (10)** marks

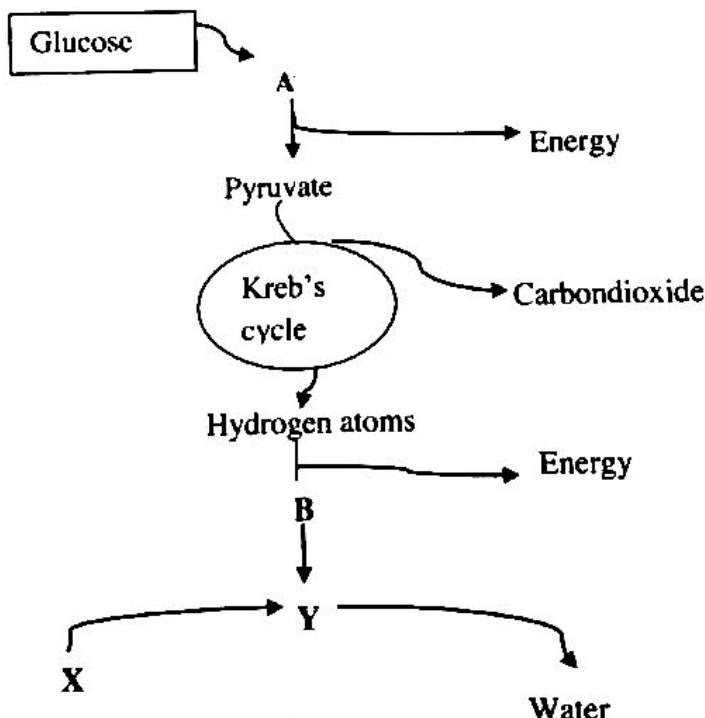
1. (a) Draw the structure of a generalised plant cell as seen under electron microscope and use roman numbers to label only the parts which are associated with the following roles:
  - (i) Strengthening of the cell
  - (ii) Controlling the exchange between the cell and its environment
  - (iii) Provision of energy
  - (iv) Protein synthesis
  - (v) Manufacture of food
  - (vi) Controlling of cell activities.  
(b) Identify four structures which are found in plant cells but not in animal cells.  
  
(c) How are the following processes important to a cell?
  - (i) Phagocytosis
  - (ii) Pinocytosis
  - (iii) Exocytosis.
  
2. (a) (i) Identify three types of nerve cells.  
(ii) State the role(s) of each nerve cell identified in 2 (a) (i).  
  
(b) Give a reason to support the fact that giant axons conduct impulses at greater velocities than thin axons.
  
3. (a) (i) What is the scientific name of human being?  
(ii) List hierarchically the major classification taxa.  
  
(b) (i) Why are Animal, Plant, Protista and Fungi considered to be Eukaryote Kingdoms while bacteria are considered to be Kingdom Prokaryotae?  
(ii) State five rules that a biologist should follow in binomial nomenclature.
  
4. (a) Giving reason, state a part in the body of a mammal where large number of the following organelles are found:
  - (i) Lysosomes
  - (ii) Microbodies.  
(b) What will happen if each of the following organelles is severely damaged? Give four points in each.
  - (i) Nucleus
  - (ii) Lysosome
  - (iii) Vacuole
  - (iv) Endoplasmic reticulum.
  
5. Give explanation to support the following facts:
  - (a) A placenta is a structure for excretion, digestion and respiration of a foetus.
  - (b) Removal of ovaries from a three months pregnant woman does not result to abortion.

6. (a) How do the following structures relate to their digestive role?
- Columnar epithelium of the stomach.
  - Columnar epithelium of the small intestine.
- (b) Giving two points, briefly describe the role of liver in digestion.
7. (a) What is respiratory quotient?
- (b) What information does each of the following respiratory quotients (RQ) carry? Give two points.
- $RQ = 1.0$
  - $RQ = 0.9$
  - $RQ = 0.7$
- (c) A baby was born with its lungs lacking surfactant. In three points, briefly describe the respiratory problem that the baby will experience.

### SECTION B (30 Marks)

Answer **two (2)** questions from this section. Each question carries **fifteen (15)** marks.

8. Study the following Figure and answer the questions that follow.



- (a) (i) Name the processes represented by letters **A** and **B** respectively.  
(ii) What does each of the letters **X** and **Y** represent?  
(iii) In two points, explain what will happen if each of the processes labeled **A** and **B** is impaired.

- (b) In seven points, explain the importance of fermentation processes to human beings.
9. (a) State where and when meiosis takes place in each of the following organisms:
- (i) Moss plant.
  - (ii) Angiosperms.
  - (iii) Mammals.
- (b) The number of chromosomes in the radicle of certain species of flowering plant is 16. Evaluate the number of chromosomes in the following cells:
- (i) Pollen tube nucleus
  - (ii) Antipodal cell
  - (iii) Endosperm
  - (iv) Pollen mother cell.
- (c) Describe how each of the following parts of human reproductive system is adapted to its function:
- (i) Uterus
  - (ii) Cervix
  - (iii) Ovaries.
10. With the aid of a diagram, describe the mechanism of transport of manufactured food in phloem based on Munch's mass flow hypothesis.