

THE UNITED REPUBLIC OF TANZANIA



**PRESIDENT'S OFFICE, REGIONAL ADMINISTRATION AND LOCAL
GOVERNMENT
NJOMBE REGION
FORM SIX PRE-MOCK EXAMINATION**

CODE: 133/1

BIOLOGY 1

TIME: 3:00 HRS

Monday, 21st August 2023 P.M

INSTRUCTIONS

- This paper consists of **ten (10)** questions with two Sections, **A** and **B**
- Answer **ALL** question from section A and only **two (02)** question from section B
- Except for diagrams that must be drawn in pencil all writing should be done using a blue or black pen.
- Cellular phones are not allowed in the examination room
- Write your examination number on every page of your answer sheet(s)

QUESTION NUMBER	QUESTION ATTEMPTED PUT A TICK(V)	FOR EXAMINER'S USE ONLY	
		MARKS	EXAMINER'S SIGNATURE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
TOTAL MARKS			
CHECKER'S INITIALS			

SECTION A (70 MARKS)

1. a) While analyzing the cytoplasm of animal and plant cells, a scientist encountered the structure in figure 1 bellow. They were very fine, unbranched, hollow tubes with an external diameter of about 24nm and walls about 5nm thick made up of helically arranged protein subunits.

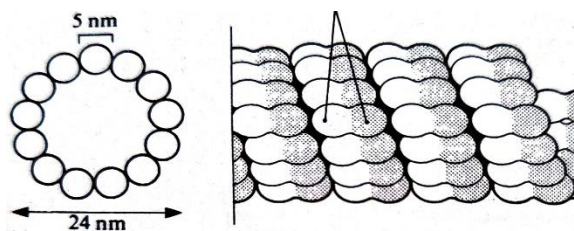


Figure 1

- i. Identify the structure
 - ii. Enumerate any five functions played by the structure to the cell
- b) Describe the difference in molecular structure between cellulose and Starch
2. a) Precisely, what role does oxygen perform in cellular respiration?
- b) Name four chemical substances which are involved in respiration which would enter the mitochondrion from the cytoplasm and four which would leave.
3. a) A group of young farmers from Njombe-Tanzania were planning to order new mango seeds from Venezuela for their plantation. While writing down the order, their advisor told them to use the name *Mangifera indica* instead of Mango. What do you regard as a scientific advantage of such an advice?
- b) Figure 2 consists of heads and beaks of four birds labeled *Bird W*, *Bird X*, *Bird Y* and *Bird Z*. Use the key provided to identify each bird by writing down the number of the true statement for the bird until you arrive at the correct name.

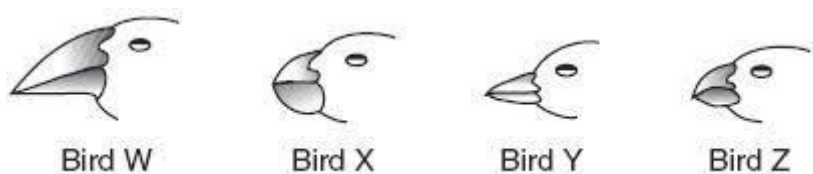


Figure 2

THE KEY

- 1 a) The beak is relatively long and slender.....*Certhidea*
- 1 b) The key is relatively stout and heavy.....go to 2
- 2 a) The bottom surface of the lower beak is flat and straight.... *Geospiza*
- 2 b) The bottom surface of the lower beak is curved Go to 3
- 3 a) The lower edge of the upper beak has a distinct bend...*Camarhynchus*
- 3 b) The lower edge of the upper beak is mostly flat..... *Platyspiza*

4. a) The number of chromosomes in the radicle of a certain species of flowering plant is to be 16. Evaluate the number of chromosomes in the following cells:
 - i. Pollen tube nucleus
 - ii. Endosperm
 - iii. Antipodal cell
 - iv. Microspore mother cell
 b) Draw a large, neat and well labelled diagram of human secondary oocyte.
5. a) What are the major three (3) light dependent reactions of photosynthesis?
 b) Briefly and precisely, explain why surgical removal of the stomach in human is not necessarily fatal.
6. a) With the help of a diagram, briefly describe the structure of a membranous labyrinth.
 b) Name the hormone that is most likely to produce the desired effects in each of the following.
 - i) A farmer wants to ripen his oranges rapidly so as to meet the demands of a new market.
 - ii) A Biology teacher wants to demonstrate that a dwarf variety of Maize plant can be made to grow to normal size.
 - iii) A farmer wants to initiate and stimulate roots development in his cuttings before planting them
 - iv) A farmer wants to prolong shelf life of his cabbages to prevent decay/rotting.
7. Most of farmers in Tanzania use seeds as a propagation technique for producing most of cash and food crops. What do you think are the advantages and disadvantages of reproducing by seeds as compared to other techniques? (Five points in each case).

SECTION B (30 MARKS)

Answer any two (02) questions from this section.

8. a) i) Dioecious plants are rare, despite the advantage of cross pollination. Suggest two possible reasons for this
 ii) Dioecism (separate sexes) is common in animals. Suggest why this phenomenon is more successful in animals than in flowering plants.
 b) The human placenta is generally referred to as the site for exchange of material and a barrier against entry of toxic and harmful materials from maternal to the fetus. However, there are some harmful substances that may cross the placenta to the fetus. Briefly explain any five harmful substances that may cross the placenta to the fetus.
9. a) What is the biological significance of the properties of water?
 b) What structural features of carbohydrates account for the fact that a wide variety of polysaccharides exists.
10. a) What are the important features of phloem transportation?
 b) The heart being made up of cardiac muscles, beats powerfully and continuously throughout the entire life without any rest. Explain how the cardiac muscles incredibly manage that activity.