



**THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
KIGAMBONI DISTRICT JOINT EXAMINATION**



**FORM TWO
033 BIOLOGY**

Time: 2½ hours

Monday, 19th May 2025 a.m.

Instructions

1. This paper consists of THREE sections A, B, and C with a total of ten (10) questions.
2. Attempt **ALL** questions.
3. All answers must be written in the spaces provided.
4. Write your examination number on every page in this question paper.
5. All writing must be in blue/black ink. Diagrams must be drawn in pencil and labeled in ink.
6. Cell phones and calculators are not allowed in the examination room

FOR EXAMINER'S USE ONLY		
Question Number	Score	Initials of Examiner
1		
2		
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9		
10		
TOTAL		

SECTION A (15 MARKS)

1. Choose the most correct answer among the given alternatives and write down the answer in the space given.
 - (i) The branch of Biology that specializes in studying fungi is called
 - A. Microbiology
 - B. Bacteriology
 - C. Mycology
 - D. Histology
 - (ii) One of the following is the most proper way of disposing waste:
 - A. Burying
 - B. Sanitary landfill
 - C. Burning
 - D. Open dumps
 - (iii) Virus that infects and multiplies within bacteria is called
 - A. Prokaryote
 - B. Bacteriophage
 - C. Microorganism
 - D. Eukaryotes
 - (iv) A young boy of about 18 years old was complaining of pain and itching in the urethra during urination and discharge of mucus and pus from his penis. What disease could he be possibly suffering from?
 - A. Gonorrhoea
 - B. Syphilis
 - C. Genital herpes
 - D. Chlamydia
 - (v) What happens during photosynthesis leading to the production of carbohydrate?
 - A. The oxygen from photolysis of water is combined with the carbon dioxide from the atmosphere
 - B. The hydrogen from photolysis of water is combined with the carbon dioxide from the atmosphere
 - C. The chlorophyll in the chloroplast is combined with the carbon dioxide from the atmosphere
 - D. The carbon from carbon dioxide is dissolved in the absorbed water
 - (vi) Which of the following distinguishes mushrooms from coconut trees?
 - A. Mushrooms store carbohydrates in form of starch
 - B. Mushrooms store carbohydrates in form of glycogen
 - C. Mushrooms do not store carbohydrates
 - D. Mushrooms do not have cell walls
 - (vii) Which of the following contains a set of holozoic organisms only?
 - A. Humans, Mushrooms and bacteria
 - B. Plants, mushrooms and worms
 - C. Humans, birds and snakes

D. Viruses, protozoa and algae

(viii) The following are examples of organs:

- A. Root, stem, flower and leaves
- B. Xylem, phloem, root and shoot
- C. Stomach, blood, skin and mitochondrion
- D. Eye, heart, stomach and blood

(ix) During starvation and after when the human body has used up all of the stored fat in the body, where does it get its energy source from before dying?

- A. Glycogen
- B. Lipids
- C. Carbohydrates
- D. Protein

(x) One could use forefinger and the middle finger to observe heart beat rate. This is an example of

- A. Use of basic knowledge to show people that you are a genius
- B. Use of common sense in making observation
- C. Use of special equipment in making observation
- D. Use of sense organs in making observation

2. Match items in list A with the correct phrase in list B.

LIST A	LIST B
(i) Are made up of fatty acids and glycerol	A. Marasmus
(ii) Are made up of carbon, hydrogen and oxygen	B. Carbohydrates
(iii) Large organic molecules made up of amino acids	C. Fat soluble vitamins
(iv) Vitamin A, D, E and K.	D. Protein
(v) Vitamin B and vitamin C.	E. Balanced diet
	F. Lipids
	G. Water soluble vitamins
	H. Minerals
	I. Kwashiorkor

SECTION B (70 MARKS)

3. Seypalm is a biologist. When presented with a stone and a snake and asked to do a research on only one of those two things, Sypalm did a research on the snake. Outline five characteristics of the snake that made Seypalm choose it for his research.

- (i)
- (ii)
- (iii)

(iv).....
.....
.....

4. (a) Government and relevant non-government organizations, often offer vaccination services and encourage people to be vaccinated, such as when there is a pandemic. Help people to respond positively to these government efforts by educating them about the following as related to vaccination:

(i) Meaning of vaccination and vaccine:

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.....

(ii) Two things a vaccine can be made of:

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.....

(iii) Four examples of diseases that can be vaccinated

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- (b) Giving at least one example of each, differentiate between communicable diseases and non-communicable diseases.

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5. The problem of poor waste management is very big, as evidenced by the way people indiscriminately throw waste everywhere in Dar es Salaam and in other cities.

(a) Suggest any one effective way that would make Tanzanians practice proper ways of waste disposal that they've learned in schools.

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(b) Remind Tanzanians of at least eight effects of poor waste management.

(i)
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(ii)
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(iii)
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- (iv).....
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- (v)
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- (vi).....
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- (vii).....
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6. (a) Your teacher placed a sample of a plant cell on a microscope slide on the stage of a light microscope for you to observe it. Name the two parts of the light microscope just below the stage and state their functions.

- (i)
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- (ii)
.....

(b) Briefly explain four ways the cell your teacher set up for you to observe in 6(a) above, fundamentally differ from a cell obtained from inside your cheek.

- (i)
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- (ii)
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- (iii).....
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- (iv).....
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7. (a) Seyplam was drinking milk and eating sugar cane. State the enzymes involved in breaking down the carbohydrates from the milk and sugar cane to the absorbable end products in the ileum, and mention all of those end products.

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(b) Briefly explain four ways the ileum is adapted to perform its functions:

- (i)
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- (ii)
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- (iii).....
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- (iv).....
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8. Carefully study the following picture and outline five main features of the division represented by the organism in the picture:



- (i)
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- (ii)
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- (iii).....
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- (iv).....
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- (v)
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9. A certain Secondary School is building a Biology laboratory. As one of the brightest Biology students, advise them in ten points on the qualities the laboratory should have in order to be the best Biology laboratory in Tanzania.

- (i)
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- (ii)
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- (iii).....
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- (iv).....
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- (v)
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- (vi).....
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- (vii)
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- (viii)
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- (ix).....
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SECTION C (15 MARKS)

10. The new curriculum allows students to choose whether they want to take Biology or not in their course of studies. Advise other students why all of them must choose to take Biology in their course of studies.

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**FORM TWO
033 BIOLOGY
MARKING SCHEME MAY 2025**

SECTION A (15 Marks)

1.

i	ii	iii	iv	v	vi	vii	viii	ix	x
C	B	B	A	B	B	C	A	D	D

2.

i	ii	iii	iv	v
F	A	D	C	G

SECTION B (70 Marks)

3. Characteristics of living things (He chose snake because it was a living thing)

- (i) Nutrition: nutrition involves obtaining and using nutrients (food substances) for energy production and growth and repair. The snake eats.
- (ii) Respiration: respiration involves the step by step breaking down of food substances to produce energy. The snake respire
- (iii) Reproduction: reproduction involves the formation of new members of a species from the parents. The snake give birth (through eggs or directly)
- (iv) Irritability or sensitivity: irritability refers to response to stimulus. The snake responds to stimulus
- (v) Movement: movement refers to change in posture or location by an organism. The snake moves
- (vi) Growth: growth refers to the increase in the size of organisms.
- (vii) Excretion: excretion is the process of removing metabolic wastes from the body. Metabolic wastes are those resulting from various metabolic activities such as respiration and digestion. (Any five 02 @ =10 marks)

(Total: 10 marks)

4. (a)

- (i) Vaccination is the process of introducing vaccine into the body of an organism in order to increase the ability of the body to produce antibodies that fight diseases. Vaccine is an antigen which triggers the body to produce antibodies. (03 marks)
- (ii) Vaccine can be made of:
 - 1. Inactivated bacteria toxins.
 - 2. Killed microbes. (Any two: 02 marks)
 - 3. Viable but weakened microbes.
- (iii) Four examples of diseases which can be vaccinated are rabies, polio, tetanus, elephantiasis, plague, and measles. (02 marks)

- (b) Communicable diseases are diseases that can be transmitted from one person to another; they are diseases that are caused by pathogen, for example, malaria, while Non-communicable diseases are non-infectious diseases that cannot be spread from one person to another, for example, Cancer. (03 marks)

(Total: 10 marks)

5. (a) While learning about proper waste management in schools, parents at homes should consolidate their knowledge by actively encouraging them to practice the culture as role models or repeated debates on why Tanzanians do not apply what they have learned about proper waste management... *(Any sound answer)*

- (b) Effect of poor waste disposal

1. May cause toxic health effects.
2. May lead to eruption of diseases. For example, feces nearby streams and sources water used for drinking may lead to eruption of diseases like cholera.
3. May cause air pollution, bad odors and destruction of ozone layer.
4. May cause water pollution and death of aquatic animals.
5. May cause accidents and injuries: for example, explosion from pressurized gas cans and cuts from broken glass.
6. May cause land pollution.
7. May lead to breeding places of harmful organisms such as bacteria and mosquitoes.
8. It makes the environment ugly and unattractive.

(@1 = 08 marks)

(Total: 10 marks)

6. (a) (02@ = 04 marks)
- (i) Condenser: it is located below the stage and is used to concentrate light on the specimen.
 - (ii) Diaphragm: it is used to regulate the amount of light passing through the condenser.
- (b) Since it is a plant cell while the cell from the student's cheek is animal cell:
- (i) The plant cell has cell wall (made of cellulose) while the animal cell does not have cell wall
 - (ii) The plant cell has regular shape while the animal cell has no definite shape
 - (iii) The plant cell has chloroplast while the animal cell does not have chloroplast
 - (iv) The plant cell has large permanent vacuoles while the animal cell has small temporary vacuoles
 - (v) The plant cells have no centrioles while the animal cells have centrioles
 - (vi) The plant cells store starch while the animal cells store glycogen

(Any four 01½ @ = 06 marks)

(Total: 10 marks)

7. (a) lactase hydrolyzes lactose into glucose and galactose, and the sucrase hydrolyzes sucrose into glucose and fructose.

- (b) The ileum is adapted for absorption as follows:

- (i) It has villi. Villi (singular villus) are finger like projections with large network of blood capillaries, a lymphatic vessel called lacteal and very thin surfaces. The villi also increase the surface area of the inner lining of the ileum.
- (ii) The ileum is very long hence allowing enough time and surface area for absorption
- (iii) The inner side is folded and ridged
- (iv) Heavily supplied with blood capillaries

(02 @ = 08 marks)

(Total: 10 marks)

8.

- (i) They show alternation of generations and the gametophyte is a free-living organism.
- (ii) A fern gametophyte typically consists of: Prothallus: A green, photosynthetic structure that is one cell thick, usually heart or kidney shaped. The prothallus produces gametes by means of antheridia (male reproductive structures) and archegonia (A female reproductive structure). They have flagellated sperms which must swim to reach eggs.
- (iii) They reproduce sexually and asexually; sexual reproduction occurs in the gametophyte while asexual reproduction occurs in the sporophyte. (02 @ = 08 marks)
- (iv) The sporophytes have leaves called fronds. The fronds have sporangia (spore bearing structures) which cluster together to form sori (singular sorus).
- (v) They have more developed conductive tissue.

(Total: 10 marks)

9. Features of a good Biology laboratory

- (i) Should have enough supply of air/must be well ventilated.
- (ii) Should have electricity.
- (iii) Should have enough water supplies.
- (iv) Should have fire extinguishers.
- (v) Should have preserved specimens.
- (vi) Should have models.
- (vii) Should have oven for drying samples.
- (viii) Should have enough space. (Any ten @1 = 10 marks)
- (ix) Should have enough heat sources.
- (x) Should have refrigerator or freezer for storing of specimen.
- (xi) Should have non-slippery floor.
- (xii) Should have proper lighting.

(Total: 10 marks)

SECTION C (15 Marks)

10. Importance of studying Biology

Intro: Biology is the scientific study of living things...(01½ marks)

Studying biology helps us understand ourselves better and therefore maintain our well-being by keeping our bodies under optimum conditions.

Studying biology enables us understanding better other organisms that we interact with, therefore being able to live with them in a way that would benefit us. For example, how to keep benefiting from plants in terms of food source, medicine and environment protection. Studying biology provides us with answers to questions about the nature of life, how and where did it begin.

Knowledge of biology helps us in preventing and treating diseases so that we can stay healthy. (02 @ = 12 marks)

Biology helps us to attain careers such as medicine and genetic engineering.

Studying biology provides us with scientific skills that can enable us to conduct researches.

Conclusion: Due to its importance, all students should choose to take Biology subject even though the new curriculum allows students not to take it. (01½ marks)

(Total: 15 marks)