THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

FORM TWO NATIONAL ASSESSMENT

033 BIOLOGY

Time: 2:30 Hours **ANSWERS** **YEAR: 2024**

Instructions

1. This paper consists of sections A, B and C with a total of **ten (10)** questions.
2. Answer **all** questions in the spaces provided.
3. Section A and C carry **fifteen (15)** marks each and section B carries **seventy (70)** mark s.
4. All writings must be in **blue** or **black** ink.
5. Communication devices and any unauthorized materials are **not** allowed in the assessment room .
6. Write your **Assessment Number** at the top right hand corner of every page.
7. The following atomic masses may be used: H = 1. C = 12, O = 16

SECTION A (Multiple Choice Questions)

i. During an experiment, a student observed an organelle bounded by a membrane. From which organism was the cell taken?

A. Maize
B. Human being
C. Virus
D. Bacterium

Answer: B. Human being

Membrane-bound organelles like nuclei and mitochondria are present only in eukaryotic cells such as those of humans.

ii. Which trophic level is occupied by the wildebeests in the food chain (Fungi → Shrubs → Wildebeests → Hyena)?

A. Primary consumer
B. Secondary consumer
C. Producer
D. Tertiary consumer

Answer: A. Primary consumer

Wildebeests consume shrubs, making them primary consumers.

iii. Which organisms belong to the Division Bryophyta?

A. Paramecium and Euglena
B. Ferns and Liverworts
C. Liverworts and Amoeba
D. Liverworts and Mosses

Answer: D. Liverworts and Mosses

Bryophyta includes non-vascular plants like mosses and liverworts.

iv. In which specific part of the mammalian respiratory system does trapping of dust and microorganisms take place?

A. Alveolus
B. Epiglottis
C. Nose
D. Diaphragm

Answer: C. Nose

The nose contains hairs and mucus to trap dust and microorganisms.

v. Which part of the microscope should one use to regulate the amount of light passing from the mirror to the condenser?

A. Stage clip
B. Diaphragm
C. Hinge screw
D. Ocular tube

Answer: B. Diaphragm

The diaphragm adjusts the amount of light entering the microscope.

vi. Which blood vessel transports deoxygenated blood from the heart to the lungs?
A. Pulmonary vein
B. Pulmonary artery
C. Mesenteric artery
D. Coronary vein
Answer: B. Pulmonary artery
The pulmonary artery carries deoxygenated blood to the lungs for oxygenation.

vii. How can HIV/AIDS be prevented from spreading?
A. By sharing skin-piercing instruments
B. By touching people's blood with bare hands
C. By transfusion using unscreened blood
D. By abstaining from sexual intercourse
Answer: D. By abstaining from sexual intercourse
Abstaining is a sure way to prevent sexually transmitted diseases like HIV/AIDS.

viii. Why is it dangerous to put kerosene in drinking water bottles?
A. It can cause death when taken into the body.
B. It can cause injury when poured on the skin.
C. It emits harmful radiations.
D. It contains microorganisms which cause diseases.
Answer: A. It can cause death when taken into the body.
Kerosene is highly toxic and can be fatal if ingested.

ix. Your friend complains of passing out hard and dry feces. Which practice would you advise to treat the problem?
A. Limiting the amount of fruits in the diet
B. Ignoring the urge to go for a long call
C. Taking adequate amounts of fibers in the diet
D. Reducing the intake of vegetables and fruits
Answer: C. Taking adequate amounts of fibers in the diet
Fiber-rich foods improve bowel movement and prevent constipation.
x. Which diseases are transmitted through unprotected sexual intercourse?
A. (iii) and (iv)
B. (ii) and (iii)
C. (i) and (iv)
D. (ii) and (iv)
Answer: D. (ii) and (iv)
Syphilis, gonorrhea, and AIDS are sexually transmitted infections.
2. Matching Items (List A and List B)
List A:

(i) Reducing muscle pain
(ii) Cleaning and drying wounds
(iii) Covering small wounds
(iv) Securing bandages
(v) Treating burns and scalds
List B:
A. Sterile gloves
B. Adhesive bandage
C. Cotton wool
D. Liniment
E. Petroleum jelly
F. Painkillers
G. Scissors
H. Safety pins
Answers
(i) D
(ii) C
(iii) B
(iv) H
(v) E

SECTION B.

3. (a) Outline seven steps for carrying out a scientific investigation.

(i) Identify the problem
(ii) Gather information about the problem
(iii) Formulate a hypothesis
(iv) Design and conduct an experiment
(v) Record observations and data
(vi) Analyze the data
(vii) Draw conclusions and communicate results

(b) State the sense organs used in making the following observations.
(i) Colour change during food test experiment
Answer: Eyes

(ii) Identifying the smell of a flower
Answer: Nose

(iii) Identifying the texture of sand
Answer: Skin

4. Briefly explain five methods of preventing the spread of malaria.
(i) Use of mosquito nets: Sleeping under insecticide-treated nets prevents mosquito bites.

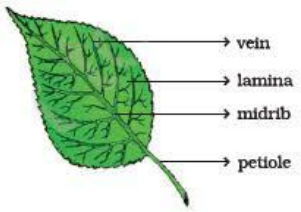
(ii) Elimination of breeding sites: Draining stagnant water stops mosquitoes from reproducing.
(iii) Indoor residual spraying: Spraying insecticides inside homes kills mosquitoes.
(iv) Use of prophylactic drugs: Antimalarial drugs protect individuals from infection.
(v) Wearing protective clothing: Covering the body reduces the chances of mosquito bites.

5. (a) What are the four major requirements for photosynthesis to take place?
(i) Sunlight
(ii) Carbon dioxide
(iii) Water
(iv) Chlorophyll

(b) In three points, support the statement that "Photosynthesis is an important process to living organisms."
(i) Photosynthesis provides oxygen necessary for the survival of most living organisms.
(ii) It produces glucose, which is a primary source of energy for plants and animals.
(iii) It helps regulate atmospheric carbon dioxide, reducing the greenhouse effect.

6. How does gaseous exchange occur across the alveolus? Briefly explain by giving five points.
(i) Oxygen diffuses from the alveoli into the blood capillaries due to the concentration gradient.
(ii) Carbon dioxide diffuses from the blood into the alveoli to be expelled during exhalation.
(iii) The thin walls of alveoli allow rapid diffusion of gases.
(iv) The moist lining of alveoli aids in dissolving gases for easy diffusion.
(v) The dense network of capillaries surrounding the alveoli ensures efficient exchange of gases.

7. (a) Draw the external structure of a plant leaf and label its four parts.



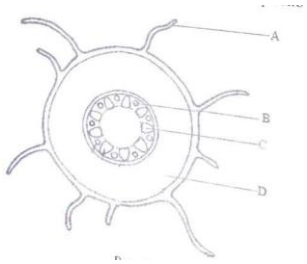
(b) State one function of any two parts which you have labeled in 7(a).
(i) Leaf veins: It helps to distribute the foods throughout the leaf.
(ii) Part B (Petiole): It supports the leaf and connects it to the stem, allowing transport of nutrients and water.

8. (a) Classify the following organisms into their respective Kingdoms and Phylum levels.

Organism		kingdom	phylum
i.	plasmodium	protoctista	apicomplexa
ii.	amoeba	protoctista	amoebazoa
iii.	mushroom	fungi	basidiomycota
iv.	Huma being	animalia	chordata

(b) Provide one disadvantage of the following organisms to human beings.
(i) Amoeba: Some amoebas, like Entamoeba histolytica, cause diseases such as amoebiasis in humans.
(ii) Mushroom: Certain mushrooms are poisonous and can cause severe illness or death when consumed.

9. The following figure shows the arrangement of vascular bundles in a monocotyledonous root. Study it carefully and answer the questions that follow:



(a) Name the parts labeled A, B, C, and D.
A: Epidermis
B: Cortex
C: Endodermis
D: Xylem

(b) What are the functions of the parts labeled A, B, and C?
A: Epidermis: Protects the root and absorbs water and nutrients.
B: Cortex: Stores food and conducts water to the vascular bundles.
C: Endodermis: Regulates the flow of water and nutrients into the vascular bundles.
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10. Why is blood circulation important in animals? Explain by giving six points.
(i) Blood transports oxygen from the lungs to body tissues for cellular respiration.
(ii) It carries nutrients from the digestive system to cells for energy and growth.
(iii) It removes waste products like carbon dioxide and urea from the body.
(iv) Blood helps in regulating body temperature by distributing heat.
(v) It protects the body against infections through white blood cells and antibodies.
(vi) Blood aids in clotting, preventing excessive bleeding during injuries.