

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

**033/1**

**BIOLOGY 1**

(For Both School and Private Candidates)

**Time: 3 Hours**

**Tuesday, 05<sup>th</sup> November 2019 a.m.**

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**Instructions**

1. This paper consists of sections A, B and C with a total of **fifteen (15)** questions.
2. Answer **all** questions in sections A and B and **two (2)** questions from section C of which question 13 is compulsory..
3. All writing should be in **blue** or **black** ink, except for diagrams that must be drawn in pencil.
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).

## SECTION A (15 Marks)

Answer **all** questions in this section.

1. For each of the items (i) - (x), choose the correct answer among the given alternatives and write its letter beside the item number in the answer booklet provided.

- (i) What is the aim of doing an experiment when conducting a scientific investigation?  
A Identifying a problem      B Finding a solution  
C Testing a hypothesis      D Gathering information  
E Recording results
- (ii) Why is it advised to build an incinerator in every hospital and health centre?  
A for collecting wastes.      B for disposing gaseous wastes.  
C for disposing liquid wastes.      D for burning hazardous wastes.  
E for disposing plastic wastes.
- (iii) Mrs. Juma's child has protruding stomach and swollen lower limbs. What type of food should she give to her child to overcome the problem?  
A Starch      B Lipids  
C Proteins      D Minerals  
E Vitamins
- (iv) In the food chain: Grass → Zebra → Lion. A lion is  
A a primary consumer.      B a secondary consumer.  
C a producer.      D a tertiary consumer.  
E a decomposer.
- (v) Water from the roots of flowering plants is transported up to the plant by different forces. Which of the following forces initiates and raises water to the least height?  
A Root pressure      B Transpiration pull  
C Cohesion forces      D Adhesion forces  
E Capillarity
- (vi) A patient has been diagnosed with low level of blood sugar. Which hormone would you recommend to regulate the victim's sugar?  
A Insulin      B Glucagon  
C Antidiuretic      D Aldosterone  
E Testosterone
- (vii) Which one is the feature of aging in human beings?  
A Shorter reaction times      B Strong bones

- C Strong muscles  
E Wrinkling of the skin
- D Body increases in size

- (viii) What is the role of node of ranvier in a neurone?
- A To transmit the impulses away from the cell body.  
B To insulate the axon and speed up transmission of impulses.  
C To transmit nerve impulses from one nerve to another.  
D To speed up the transmission of nerve impulses.  
E To transmit the nerve impulses towards the cell body.
- (ix) What is variation as applied to genetics?
- A Differences among individuals of the related species.  
B Differences among individuals of the same species.  
C Differences among individuals of different species.  
D Differences among individuals of unrelated species.  
E Differences among individuals of the expected species.
- (x) Which one is correct about Cosmozian theory of origin of life?
- A Life was brought in this Earth from elsewhere.  
B Life arose according to physical and chemical laws.  
C Living organisms arose from non-living materials  
D The Earth and all organisms on it were created by God.  
E The planet Earth and all the organisms have always been there.

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

2. Match the functions of components of the skeleton in **List A** with their corresponding components of the skeleton in **List B** by writing the letter of the correct response beside the item number in the answer booklet provided.

LIST A	LIST B
(i) Axial component which protects the delicate internal organs such as lungs and the heart.	A Pivot
(ii) Axial component which protects the brain and provide area for attachment of the neck.	B Vertebral column
(iii) Appendicular component which provides a large surface area for muscle attachment and a base for articulation with hind limbs.	C Lumbar
(iv) Axial component which protects the spinal cord.	D Pelvic girdle
(v) Appendicular component which provides a large surface area for muscle attachment and a base for articulation with upper arm bones.	E Cervical
	F Rib cage
	G Skull
	H Pectoral girdle

i	ii	iii	iv	v
F	G	D	B	H

### SECTION B (60 Marks)

Answer **all** questions in this section.

3. In the Biology laboratory there are different apparatuses and equipment used for conducting experiments. Draw the apparatus used for:
- (a) putting specimens for close observation: **watch glass**
  - (b) grinding or crushing substances in the laboratory: **morta and pestle**
  - (c) adding liquids during an experiment drop by drop: **dropper**
  - (d) scooping powder or crystalline substances: **spatula**

4. It has been observed that some people dispose wastes around the lake which supplies water to the surrounding communities. Briefly explain three problems which are likely to happen to the area.

Effects of improper waste disposal.

- soil pollution on that area.
- can lead to eruption of cholera.
- make that area to be dirty.

5. What are the differences between the nervous system and endocrine system? Give three points.

#### Differences between endocrine & nervous systems

NERVOUS SYSTEM	ENDOCRINE SYSTEM
Electrical – chemical message	Chemical message
Carried by nerves	Carried by blood
Impulses target specific sites	Messages can be sent to many regions in the body
Response is fast acting	Response is slow acting
Effects are short term	Effects are long term

6. Jairus complains of having burning sensation around the chest region.

- (a) What digestive disorder is he facing?

- heartburn

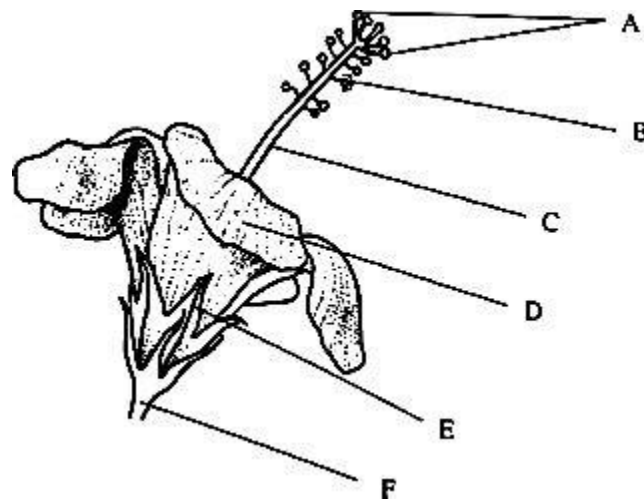
- (b) Give five measures he should take to treat the disorder.

measures to control heartburn.

- wearing loose clothing
- standing up straight
- elevating your upper body
- ginger taking

- staying away from cigarette smoke
- medications.

7. **Figure 1** represents an external structure of a hibiscus flower. Study it carefully and answer the questions that follow:



**Figure 1**

- (a) Name the parts labeled A, B, C, D, E, and F.
- A stigma
  - B anther
  - C style
  - D petal
  - E sepal
  - F pedicel.

(b) What are the functions of the parts labeled **B** , **D** and **E** ?

Part	Function
Stigma	Produces pollen grains
Petals	Attracts insects
Anther	Receives pollen grains.

8. Ringing in plants involves removal of the bark of the tree. This hinders communication between the upper and lower parts of the plant. In three points, briefly elaborate the impact of ringing on the stem of a hibiscus plant.

- prevents the movement of manufactured food from leaves to roots.
- leads to swelling of upper part of ringed plant due to accumulation of food.
- death of plants beginning from lower and become of lack of food.

9. How are the respiratory surfaces adapted to their role? Give four points.

- are moist to dissolve gases
- they are highly vasculated with blood capillaries.
- has large surface area for food absorption.
- they are thin for easy diffusion.

10. (a) Give two differences between a cell membrane and a cell wall.

Cell Wall	Cell Membrane
Cell Wall is the non-living, outermost boundary of plant cells, bacterial cells and fungal cells.	Cell membrane is a membrane which surrounds nucleus and cytoplasm in all types of cells, but in plant cells it is surrounded by cell wall.
Cell wall is mainly composed of cellulose and pectin.	Cell membrane is composed of phospholipids, cholesterol and protein molecules.
Cell wall is composed of three main layers, middle lamella, primary wall and secondary wall.	Cell membrane consists of lipid bilayer in which protein molecules float like icebergs in the sea.
It provides protection and mechanical support to the cell and gives definite shape and rigidity to plant.	Cell membrane is selectively permeable membrane. In animal cells, folds of cell membrane take in materials, in the form of vacuoles. This process is called endocytosis.

- (b), Why is cell differentiation important to living organisms? Give a reason.

- Cell differentiation enables organisms to carry out many functions at the same time.

11. Consider that you are a medical doctor and you have received a patient whose investigation has diagnosed kidney stones. Suggest to the patient three possible causes and three control measures for kidney stones.

Causes of kidney stone

- lack of enough water
- taking food with a lot of salt.
- impermeability of pelvis

Treatment of kidney stone

- take enough water
- surgery to remove them.
- drugs to dissolve stones.



12. Reptiles are organisms whose body temperature is affected by environmental temperature. Briefly explain three ways that help reptiles to survive in different weather conditions.

- they can hibernate on cold condition.
- they aestivate during hot weather.
- they bask on rocks to warm their bodies.

### SECTION C (25 Marks)

Answer **two (2)** questions from this section. Question **13** is compulsory.

13. You are invited by a Fema Club of a certain secondary school as a health officer. Explain how you will educate members of Fema Club on the cause, symptoms and transmission of HIV/AIDS. Give five symptoms and four ways of transmitting the disease.

#### HIV/AIDS

Causes-It is caused by viruses called Human Immunodeficiency Virus.

#### SYMPTOMS OF HIV/AIDS

- Rapid weight loss
- Recurring fever or profuse night sweats
- Extreme and unexplained tiredness
- Prolonged swelling of the lymph glands in the armpits, groin, or neck
- Diarrhea that lasts for more than a week
- Sores of the mouth, anus, or genitals

#### TRANSMISSION.

- by unprotected sexual intercourse.
- From mother to baby during birth and breastfeeding.
- sharing piercing and cutting items.
- through unscreened blood transfusion.

14. A majority of people believe that all fungi are harmful organisms. As a biologist, explain four ways in which fungi are beneficial to human beings

#### BENEFITS OF FUNGI

- are used as source of food.eg mushroom
- helps in decomposition of organic matters.
- some are sources of medicine.eg penicillin.

- some are used in beer brewing
- yeast is also used in bread making.

15. Why is the study of genetics important in our daily life? Explain by giving four points.

- genetics is used to solve parental conflicts.
- knowledge of genetics is used for counseling couples before marriage.
- knowledge of genetics has been used to produce animals and plants species with superior characteristics.
- genetics is used in carrying out forensic investigations like identifying animals.