

THE UNITED REPUBLIC OF TANZANIA

DODOMA REGION

FORM FOUR MOCK EXAMINATION

033/1

BIOLOGY 1

TIME: 3 Hours

August, 2023

Instructions

1. This paper consists of section A, B and C
2. Answer all questions in section A & B and only two (2) questions in section C
3. Write your examination number on each page of your answer sheet provided
4. Except for the diagrams which must be drawn by using pencils and labeled in INK all writing should be in BLUE / BLACK pen

FOR EXAMINERS ONLY			
QUESTION	TICK THE ATTEMPTED QUESTION	MARKS	EXAMINER'S INITIAL
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
Total			

SECTION A (16 MARKS)

Answer all questions in this section

1. You are given the items (i) – (x) choose the most correct answer among the given alternatives and write its answer against its item number
- (i) Hypertonic and hypotonic solution differs in that
- A. Hypertonic has high water potential and hypotonic has low water
 - B. Hypertonic loses water and hypotonic solution absorbs water
 - C. Hypertonic has low water and hypotonic has high water potential
 - D. Both hypertonic and hypotonic solution has equal water potential
 - E. Both absorbs water
- (ii) A food sample which was tested by boiling with benedict solution gave an orange precipitate. This showed that the food sample contained,
- A. Reducing sugar
 - B. Fat
 - C. Sucrose
 - D. Protein
 - E. Non reducing sugar
- (iii)The glomerular filtrate contains the following materials
- A. Glucose molecules, water, urea and dissolved mineral salts
 - B. Cells, proteins and glucose
 - C. Uric acids, proteins and urea
 - D. Vitamins, urea and water
 - E. Mineral salts, proteins and glucose
- (iv)The proper methods of disposing biohazardous wastes is
- A. Burying
 - B. Incineration
 - C. Recycling
 - D. Feeding animals
 - E. Pit latrines
- (v) Which of the following part of germinating seed is an embryonic shoot?
- A. Hypocotyl
 - B. Radicle
 - C. Plumule
 - D. Epicotyl
 - E. Cotyledon
- (vi)The feature of the leaves which differentiate monocotyledonae from dicotyledonae are; -
- A. Monocotyledonae have narrow leaves with network venation
 - B. Dicotyledonae broad leaves with parallel venation
 - C. Both have broad leaves and network venation
 - D. Monocotyledonae have narrow leaves and parallel venation
 - E. Dicotyledonae narrow leaves and network venation
- (vii) The part of the ear which convert sound signals into nerve impulses which are transimitted to the brain includes;
- A. Ear ossicles
 - B. Semicircular canal
 - C. Cochlea
 - D. Eustachian tube

- E. Ear drum
- (viii) Steady state theory of origin of life states that; -
- A. The universe has always existed and has no origin
 - B. The universe was created by supernatural power called God
 - C. Living things originated from non-living organisms
 - D. The universe was formed due chemical composition
 - E. All species here on earth arrived from different planets in universe
- (ix) The part of a compound microscope which helps to concentrate light to the object under observation is
- A. Ocular tube
 - B. Condenser
 - C. Revolving nosepiece
 - D. Mirror
 - E. Diaphragm
- (x) Mutual interactions between two species are described by which of the following characteristics?
- A. Both live as parasite
 - B. Both may be harmed
 - C. Both benefit and flourish
 - D. One is harmed and another benefit
 - E. Both neither benefit nor harmed

2. Match the items from **LIST A** with the correct phrase in **LIST B** by writing the letter of the correct response from **LIST B** against the item number in **LIST A**

LIST A	LIST B
(i) Muscles (ii) Smooth muscles (iii) Cardiac muscles (iv) Skeletal muscles (v) Tendon (vi) Ligament	A. Have no ability to relax and contract B. Biceps and triceps muscles C. Smooth muscles with a disc between cells D. Space between bone and bone E. Contractile tissue specialized for relaxation and contraction to bring about movement and locomotion F. Muscles made up of long fibers that cover the bones G. Muscles made up of long and tapered end cells found in most of the internal organs, such as the alimentary canal, kidney and the liver, uterus, sperm duct and blood vessels. H. Connective tissues which attaches muscle to bone I. Fibers tissue that join bone to bone

	J. Muscle that are able to contract without suffering fatigue and their not under the influence of nervous system
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SECTION B (54 MARKS)

Answer all questions in this section

3. (a) Distinguish between homologous structures and analogous structures with specific examples.
 (b) Name the type of evolution exhibited by comparing;
 - (i) Flippers of whale and forelimb of desert rat
 - (ii) Wings of a bat and wings of a butterfly
 - (iii) Forelimbs of human and that of tiger
 - (iv) Wings of flamingo and wing of an insect
4. (a) Give three factors that aid ultrafiltration in glomerulus.
 (b) Give explanation to the following
 - (i) Plasma protein are absent in glomerular filtrate
 - (ii) Urine of a normal person does not have glucose.
 - (iii) During cold days, one produces large quantities of dilute urine.
 (c) State 3 adaptations of proximal convoluted tubule to re-absorption.
5. (a) (i) Define the term mitosis
 (ii) Outline the significance of mitosis to organisms
 (b) Define the following terms and give an example of organism where each takes place
 - (i) Complete metamorphosis
 - (ii) Incomplete metamorphosis
 - (iii) Ecdysis
6. (a) state any three adaptations of the leaf for photosynthesis
 (b) How do the following factors affect the rate of photosynthesis?
 - (i) Chlorophyll
 - (ii) Sunlight
 - (iii) Carbondioxide
7. In a legal dispute, two families of Ali and Rao pinto both claimed to have sired a girl by the name Leila whose blood group was determined to be AB. Ali was established to have blood group A and his wife blood group O. Rao pinto had blood group A and his wife has blood group B. Determine which family is the likely biological parents of Leila. Show your working.
8. (a) During cooking, a cook unfortunately touched a hot burning charcoal. He pulled his hand abruptly.

- (i) What is the name of that response
 - (ii) What is the name given to the pathway which describes the response in 8a (i) above
- (b) Illustrate the pathway of an impulse from the sense organ to effectors of the cook's hand

SECTION C (30 marks)

Answer only two (2) questions in this section.

- 9. With a well labeled diagram explain clearly how the gaseous exchange occurs across the alveolus.
- 10. Write an essay to explain (5) advantages and three (3) disadvantages of coniferophyte
- 11. Describe how the following method of family planning works.
 - (a) Implants
 - (b) Rhythm (calendar) method
 - (c) Coitus interruption (withdraw)
 - (d) Condom
 - (e) Diaphragm