

THE UNITED REPUBLIC OF TANZANIA MINISTRY OF EDUCATION AND CULTURE

FORM TWO SECONDARY EDUCATION EXAMINATIONS, 2003

0033

BIOLOGY

TIME: 2 HOURS.

INSTRUCTIONS

1. This paper consists of sections A, B and C.
2. Answer ALL questions from sections A and B and ONE question from section C.
3. All answers for sections A and B must be written in the space provided for each question.
4. Answers for section C should be written in the paper provided.
5. Write your examination number on the top right hand corner of every page.
6. All writing must be in blue/black ink or ball point pens.
7. Cell phones are not allowed in the examination room

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	INITIALS OF EXAMINER
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
TOTAL		

This paper consists of 7 printed pages

SECTION A (30 MARKS)

Answer ALL questions from this section. Each question carries 10 marks.

1. Questions (i) - (x) are multiple choice items. Select the best answer in each case and write its letter in the box provided.

(i) The scientific study of living organisms and their environment is called:

- A. Zoology
- B. Biology
- C. Botany
- D. Ecology
- E. Physiology

(ii) Which of the following is a function of the vacuole in a plant cell?

- A. Controls cell activities
- B. Stores water and nutrients
- C. Produces energy
- D. Synthesizes proteins
- E. Regulates light

(iii) The type of respiration that occurs without oxygen is called:

- A. Aerobic respiration
- B. Anaerobic respiration
- C. Cellular respiration
- D. Oxidative respiration
- E. Gaseous respiration

(iv) The part of the digestive system where most nutrient absorption occurs is:

- A. Stomach
- B. Oesophagus
- C. Small intestine
- D. Large intestine
- E. Rectum

(v) Which of the following is a characteristic of arthropods?

- A. Presence of feathers
- B. Segmented body with jointed legs

- C. Soft body with a shell
- D. Backbone
- E. Gills for respiration

(vi) A disease caused by a deficiency of vitamin D in children is:

- A. Beriberi
- B. Scurvy
- C. Rickets
- D. Pellagra
- E. Night blindness

(vii) The test for lipids in a food sample involves:

- A. Adding iodine solution
- B. Using Sudan III stain
- C. Mixing with Biuret solution
- D. Boiling with Benedict's solution
- E. Adding sodium hydroxide

(viii) Which chamber of the heart pumps blood into the aorta?

- A. Right atrium
- B. Left atrium
- C. Right ventricle
- D. Left ventricle
- E. Pulmonary vein

(ix) The process by which plants lose water through stomata is called:

- A. Translocation
- B. Transpiration
- C. Diffusion
- D. Osmosis
- E. Absorption

(x) Which of the following is a unicellular organism?

- A. Hydra
- B. Amoeba

- C. Earthworm
D. Mushroom
E. Fern

2. The following statements are either TRUE or FALSE. In the spaces provided write TRUE if the statement is correct and FALSE if the statement is not correct.

- (i) All bacteria are harmful to humans.
(ii) The liver produces bile for fat digestion.
(iii) Sponges belong to the Kingdom Plantae.
(iv) The heart is an organ made up of muscle tissue.
(v) Photosynthesis produces glucose and carbon dioxide.
(vi) Blood group O is a universal donor.
(vii) The trachea is lined with cilia to trap dust particles.
(viii) All animals have a closed circulatory system.
(ix) Cholera is caused by a virus.
(x) The cell wall in plants is made of cellulose.

3. The following are matching items. Match the phrase or term in List A with that in List B by writing its letter in the spaces provided in the table at the end of the question.

LIST A	LIST B
(i) Protects the leaf from water loss	A. Cuticle
(ii) Disease transmitted through contaminated water	B. Cholera
(iii) Organelle for photosynthesis	C. Chloroplast
(iv) Carries oxygenated blood to the body	D. Aorta
(v) Organisms that produce their own food	E. Autotrophs
(vi) Deficiency disease due to lack of vitamin A	F. Night blindness
(vii) Enzyme that digests starch in the mouth	G. Amylase

(viii) Structure for locomotion in Paramecium	H. Cilia
(ix) Process of removing metabolic wastes	I. Excretion
(x) Blood component that clots blood	J. Thrombocytes

Answers:

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

SECTION B (50 MARKS)

This section consists of five short answer questions. You are required to answer ALL questions from this section. Read the questions carefully before writing the answers in the spaces provided. Each question carries 10 marks.

4. (a) Define the term "tissue".

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(b) Name three types of animal tissues and their functions.

(i)

Function:

(ii)

Function:

(iii)

Function:

(c) State one difference between a tissue and an organ.

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5. (a) What is meant by the term "gaseous exchange"?

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(b) Draw a labelled diagram of a leaf cross-section showing the structures involved in gaseous exchange.

(c) List two factors that affect the rate of gaseous exchange in plants.

- (i)
- (ii)

6. (a) Define the term "circulatory system".

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(b) Complete the table below showing the components of blood and their functions.

Blood Component	Function
(i)	
(ii)	
(iii)	

(c) Name one disease that affects the circulatory system.

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7. (a) What is a "pathogen"?

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(b) List three ways pathogens can enter the human body.

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

(c) Name two diseases caused by bacteria.

- (i)
- (ii)

8. (a) Define the term "food chain".

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(b) Construct a food chain with four trophic levels starting with a green plant.

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(c) Explain two roles of decomposers in an ecosystem.

- (i)

SECTION C (20 MARKS)

This section consists of two guided essay questions. You are required to answer only ONE question. Each question carries 20 marks.

9. Write an essay on tuberculosis using the following guidelines:

- Causative agent
- Modes of transmission
- Symptoms
- Effects on the body
- Prevention and control measures

10. Write an essay on the importance of water in living organisms using the following guidelines:

- Role of water in cells
- Importance in digestion
- Role in transport systems
- Regulation of body temperature