

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

**033/1**

**BIOLOGY 1**  
(For Private Candidates Only)

***TIME: 3 Hours***

***Monday, 12th October 2009 a.m.***

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**Instructions**

1. This paper consists of sections A, B and C.
2. Answer **all** questions in sections A and B and **one (1)** question from section C.
3. Read each question carefully before you start answering it.
4. Except for diagrams that must be drawn in pencil all writings should be in blue/blank ink or ball pen.
5. Electronic calculators are **not** allowed in the examination room.
6. Cellular phones are **not** allowed in the examination room.
7. Write your **Examination Number** on every page of your answer booklet(s).

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This paper consists of 7 printed pages

## SECTION A (20 Marks)

Answer **all** questions in this section.

1. For each of the items (i) - (x) choose the correct answer from among the given alternatives and write its letter beside the item number.
  - (i) The structure that prevents food from entering the wind pipe is
    - A Glottis
    - B Tongue
    - C Soft palate
    - D Epiglottis
    - E Mouth
  - (ii) Organisms are classified on the bases of their
    - A mode of feeding
    - B similarities and differences
    - C type of movement
    - D advantages and disadvantages
    - E homologous and analogous characteristics
  - (iii) Which of the following types of vertebrate muscles would you find in the heart?
    - A Smooth muscle
    - B Cardiac muscle
    - C Striated muscle
    - D Skeletal muscle
    - E Voluntary muscle
  - (iv) An amoeba moves by
    - A producing pseudopodia
    - B using cilia
    - C using flagella
    - D the flow of ectoplasm
    - E producing limbs
  - (v) Which one of the following hormones controls reabsorption of water from the urinary tubules when the amount of water in the blood is below normal
    - A Adrenaline
    - B Internizing hormone
    - C Oxytocin
    - D Anti-diuretic hormone
    - E Aldosterone

- (vi) A neuron that carries sensory information towards the central nervous system is called
- A Interneuron
  - B Efferent neuron
  - C Afferent neuron
  - D Motor neuron
  - E Relay neuron
- (vii) The following is not true about viruses
- A They attack living cells
  - B Multiply rapidly inside living cells
  - C They are easy to destroy
  - D They spread through the air
  - E They cause diseases
- (viii) During cold weather, shivering occurs in a mammal's body in order to
- A shake off coldness
  - B generate heat
  - C produce sweat
  - D relax the muscles
  - E exercise the muscles
- (ix) Pure breeding tall pea plants are crossed with pure breeding short pea plants. The resulting offspring (F1) are tall. Which terms describe the F1 generation?
- A Heterozygous, with shortness dominant
  - B Heterozygous, with tallness dominant
  - C Homozygous dominant
  - D Homozygous recessive
  - E Heterozygous, with incomplete dominance
- (x) Which of the following is correct for someone with a nose bleed?
- A To move around with their head tilted up
  - B To sit with their head tilted to the side
  - C To sit quietly with their head in an upright position
  - D To sniff in between intervals and sit with their head tipped forward
  - E To sit with their head tipped forward

2. Match the responses in **List B** with the word/phrases in **List A** by writing the letter of the correct response beside the item number.

| <b>List A</b> |   | <b>List B</b> |                  |
|---------------|---|---------------|------------------|
| (i)           | A state of physical and mental well-being | A             | Beriberi         |
| (ii)          | Attack and engulf foreign organisms       | B             | Vector           |
| (iii)         | Leprosy, tetanus, cholera                 | C             | Good manners     |
| (iv)          | Vitamin B1 deficiency                     | D             | Pandemic         |
| (v)           | Spreads diseases without being affected   | E             | Natural immunity |
| (vi)          | Chemicals on the surface of pathogens     | F             | Antibodies       |
| (vii)         | Ready-made antibodies                     | G             | Bacterial        |
| (viii)        | Removes pathogens                         | H             | Lymphocytes      |
| (ix)          | Behaving in an acceptable way             | I             | Personal hygiene |
| (x)           | An epidemic across whole continents       | J             | Immunity         |
|               |   | K             | Phagocytes       |
|               |   | L             | Protozoans       |
|               |   | M             | Scurvy           |
|               |   | N             | Parasite         |
|               |   | O             | Antigens         |
|               |   | P             | Sneezing         |
|               |   | Q             | Healthy          |
|               |   | R             | Endemic          |
|               |   | S             | Yawning          |
|               |   | T             | Passive immunity |

## Section B (60 Marks)

Answer **all** questions in this section

3. (a) (i) Name two blood vessels which carry blood to the liver.  
(ii) What is the difference in composition of the blood in the two blood vessels?
- (b) The diagrams in Figures 1 and 2 represent side and front views of a human eye in two different light intensities.

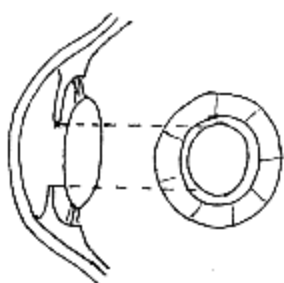


Figure 1

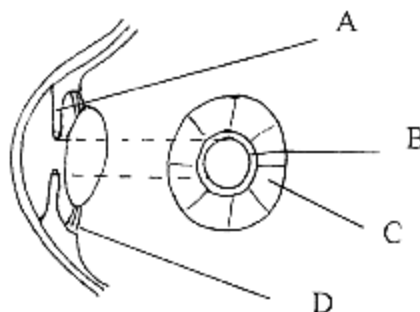


Figure 2

- (i) Name the parts labeled A, B, C and D.  
(ii) Which diagram represents the eye in bright light and which represents it in dim light? Give reasons.

**(7 marks)**

4. (a) Give two reasons why biologists classify organisms.
- (b) The following organisms belong to the Phylum Arthropoda: Mosquito, scorpion, grasshopper, crab, millipede, termite, beetle, spider, butterfly, tick, centipede, prawn, cockroach, moth and housefly. This phylum is further divided into five (5) classes.  
(i) Group the organisms according to their respective classes.  
(ii) Write down two (2) characteristics that all Arthropods have in common.

**(8 marks)**

5. (a) Carbon dioxide is needed by green plants but is given out by animals. Briefly explain the names and nature of the two processes involved.
- (b) Describe the importance of photosynthesis to living organisms.

**(8 marks)**

6. (a) Briefly explain the following Mendelian traits in human beings:  
(i) Albinism  
(ii) Tongue rolling

- (b) A couple with normal vision marry and produce six children. Out of the six, four have normal vision while two are colour-blind. What are the genotypes of the parents?

**(7 marks)**

7. (a) Explain why the body uses ATP as a source of energy for carrying out various activities instead of using energy directly from glucose.

- (b) Briefly describe an experiment you would perform to find out whether exhaled air contains more carbon dioxide than inhaled air.

**(6 marks)**

8. (a) (i) What do you understand by the term “body substance isolation?” Give two (2) examples.  
(ii) Explain how you would help someone who had just vomited.
- (b) (i) What do you understand by the term hiccups?  
(ii) What is the most common cause of hiccups?

**(7 marks)**

9. (a) The diagram in Figure 3 represents a transverse section (TS) of a plant part.

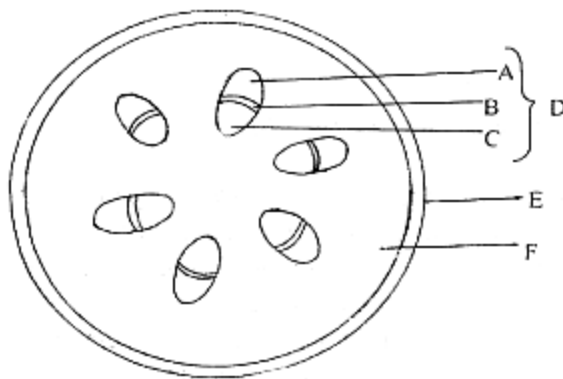


Figure 3

- (i) Name the part of the plant from which the section was taken.  
(ii) Identify the parts labeled A, B and C.

- (b) Briefly explain the functions of the parts labeled A, B and C.

**(7 marks)**

10. Comment on the following observations:

- (a) (i) Man has functionless organs such as a tail and appendix.  
(ii) It is not advisable to use the same insecticide for a very long time.
- (b) (i) The organisms, which produce many offspring, are best suited than others.  
(ii) Isolation brings about speciation.

**(10 marks)**

### SECTION C (20 Marks)

Answer **one (1)** question from this section.

11. In an adult education class, the teacher emphasizes the need for eating a balanced diet; but one of the participants did not understand. You are now asked to clarify this for him. Use the following headings in giving the clarification.
  - (a) Meaning of a balanced diet
  - (b) Effect of not eating a balanced diet
  - (c) Advice to the participants on the nature of a balanced diet
12.
  - (a) Differentiate HIV, AIDS and STIs. How do they relate?
  - (b) Analyze the impact of HIV/AIDS in the community. What can be done to control and manage the spread of HIV/AIDS?
13. Discuss the physiological and behavioral changes associated with growth and development in humans.