

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

**033/1**

**BIOLOGY 1**

**TIME: 3 HOURS**

**Wednesday, 05<sup>th</sup> October 2011 a.m.**

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**INSTRUCTIONS**

1. This paper consists of three sections A, B and C.
2. Answer **all** questions from 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/black ink or ball point pen.
5. 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).

This paper consists of 5 printed pages.

## SECTION A (20 MARKS)

Answer **all** questions in this section, each question carries **10** marks.

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) How many gametes are produced from one cell during meiosis?  
A Two                                      B Four                                      C Six  
D Eight                                      E Ten
- (ii) Which of the following is not an excretory product in plants?  
A Tannins                                      B Carbon Dioxide                                      C Urea  
D Calcium oxalate                                      E Latex
- (iii) Why are skeletal muscles usually found in opposing pairs?  
A One muscle alone cannot extend a joint  
B Muscles can only work by contraction  
C One muscle alone cannot flex a joint  
D Paired muscles are stronger  
E Muscles normally work in antagonistic fashion
- (iv) Which of the following best defines allergy?  
A Body reaction to antigen  
B Body reaction against a specific drug  
C Body reaction against a disease-causing micro-organism  
D Accumulation of mucus caused by inhaling dust particles  
E Formation of rash caused by eating specific foods
- (v) When students were conducting private study at night, lights went off completely. Which of the following changes occurred in the eyes of the students?  
A The lens became thicker                                      B The pupil became larger  
C The ciliary muscle relaxed                                      D The lids close  
E The eyes opened wider
- (vi) Select the item that indicates the best match in vitamin-deficiency:  
A Vitamin A ..... dry scaly skin  
B Vitamin B ..... loss of appetite and yawning  
C Vitamin C ..... anemia and high blood pressure  
D Vitamin D ..... soft deformed bones  
E Vitamin K ..... poor night vision
- (vii) Which of the following is formed immediately after fertilization?  
A A placenta                                      B An embryo                                      C A foetus  
D Amniotic fluid                                      E A zygote

- (viii) The human ovary secretes hormones known as:  
 A Oestrogen and testosterone  
 B Progesterone and testosterone  
 C Oestrogen and lactogen  
 D Oestrogen and progesterone  
 E Follicle stimulating hormone and progesterone
- (ix) The offspring of crosses between red flowered and white flowered plants were always found to be pink. This is an example of:  
 A Crossing over  
 B Mutation  
 C Co-dominance  
 D Incomplete dominance  
 E Natural selection
- (x) At early stages of development of the human zygote which organ develops first?  
 A Liver  
 B Heart  
 C Kidney  
 D Eyes  
 E Notochord

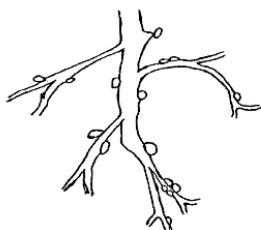
2. Match the responses in **List B** with the phrases in **List A** by writing the letter of the correct response beside the item number

LIST A	LIST B
(i) A chemical breakdown of a substance involving addition of water	A. Veins
(ii) Double strand structure with base pairs	B. DNA
(iii) The vascular tissue which transports organic solutes in plants	C. Multiple pregnancy
(iv) Secondary sexual characteristics in man	D. Genital mutilation
(v) Female circumcision	E. Condensation
(vi) Major cause of natural selection	F. Mutation
(vii) May develop from a single fertilized egg	G. Adulthood
(viii) Allows nodding of the head	H. Joint
(ix) Similar structures due to common ancestry	I. Wall pressure
(x) Pressure of the cell contents against the cell wall	J. Pelvic damage
	K. Hereditary unit
	L. Phloem
	M. Development of beard
	N. Identical twins
	O. Homology
	P. Turgor pressure
	Q. Nucleotide
	R. Hydrolysis
	S. Axis
	T. Analogy

## SECTION B (60 Marks)

Answer **all** questions in this section.

3. (a) Identify structures found in plant cells only.
- (b) Describe the functions of each structure identified in 3(a) above. **(6 marks)**
4. (a) (i) What do you understand by the term peristalsis?  
(ii) Suppose the peristalsis stops. What problems would an animal face?
- (b) Describe the kind of food which should be added to a meal in order to improve peristalsis. **(5 marks)**
5. (a) Define the term “irritability” in living organisms.
- (b) How does each of the aspects below illustrate the phenomena in 5(a) above?  
(i) Germinating seeds  
(ii) A potted hibiscus plant growing near a window  
(iii) A zebra sniffing the air with a predator nearby. **(7 marks)**
6. (a) With example, explain the meaning of the following:  
(i) Renewable natural resource?  
(ii) Non-renewable natural resource?
- (b) (i) What is the importance of recycling of the resources?  
(ii) Name the carbon cycle processes which are likely to affect the oxygen concentration in the atmosphere. **(8 marks)**
7. (a) Name two types of girdles found in the skeletal system.
- (b) (i) Describe the three main functions of limb girdles.  
(ii) State the type of joint formed at the girdles. **(8 marks)**
8. Figure 1 is a diagram of a plant root. Study the diagram and answer the questions that follow.



**Figure 1**

- (a)
  - (i) Name a group of plant represented by the diagram in Figure 1.
  - (ii) Give any two examples of plants which can be found in a group of plants mentioned in (a)(i)?
  - (iii) Name the organisms which inhabit the swellings on the root.
  - (iv) What is the relationship existing between the plant and the organism mentioned in (a)(iii)?
- (b) Name the bacteria which does the following:
  - (i) Changes nitrates into nitrites;
  - (ii) Converts ammonia into nitrites;
  - (iii) Change nitrites into nitrates.

**(8 marks)**

9. (a) Mention any four laboratory safety rules.
- (b) Some of the chemicals and apparatus used in Biology are harmful/dangerous. In what way are the following substances harmful/dangerous?
- (i) Toxic substances
  - (ii) Highly flammable substances
  - (iii) Corrosive substances
  - (iv) Radioactive substances
  - (v) Biohazards

**(8 marks)**

10. (a)
  - (i) List the five kingdoms into which organisms are placed.
  - (ii) List the distinctive features of members of the kingdom to which a malaria vector belongs.
- (b)
  - (i) Identify by using common name, two types of flat-worm found in the alimentary canal of a living organism.
  - (ii) To which kingdom does organism in (b)(i) belong?

**(10 marks)**

### **SECTION C (20 Marks)**

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

11. Write an essay on transportation in plants using the following guidelines:
- (a) Meaning of transportation
  - (b) The importance of transpiration
  - (c) The adaptation of features which enable plants to reduce water loss
12. With the aid of a diagram, describe the structure and function of blood tissue.
13. (a) State the function of the following parts of the brain:
- (i) Medulla oblongata
  - (ii) Hypothalamus
  - (iii) Cerebellum
  - (iv) Cerebrum
- (b)
  - (i) Define the term “drug use”
  - (ii) Explain three effects of drug abuse
  - (iii) Explain two ways in which drug abuse can be controlled