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

033/1 **BIOLOGY 1**

(For Both School and Private Candidates)

TIME: 3 Hours ***Monday 13th October 2008 a.m.***

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. Electronic calculators are **not** allowed in the examination room.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s)

This paper consists of 7 printed pages.

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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) Having a swollen painful lymph node under the armpit is a sign of
- A a septic wound on the arm
- B building immunity against diseases
- C a septic wound in any part of the body
- D a septic wound on a leg
- E building immunity on a leg.

(ii) A reproductive cell which develops in a new organism without fertilization is called
- A sporophyte B gamete C gametophyte
- D sporangia E spore.

(iii) When a baboon stretches out its fore arm to pick mango fruits from a tree, the motion of the arm is brought about by
- A contraction of the biceps and relaxation of triceps
- B contraction of triceps and relaxation of biceps
- C relaxation of both biceps and triceps
- D contraction of both flexor and extensor muscles
- E relaxation of the biceps and contraction of triceps.

(iv) During a Biology practical session form four students classified whale as a mammal, although it lives in water and swims like fish. Which of the following features guided them to place whale in that group?
- A Presence of mammary glands, shows parental care, and has lungs.
- B Possession of mammary glands, diaphragm and placenta.
- C Presence of gills, lungs and different kinds of teeth.
- D Suckle their young, have tail, and lungs.
- E Have mammary glands, fins and body covered with fur.

(v) A farmer observed excessive elongation in peas after the plants were treated with a certain chemical. The chemical might have possessed
- A cytokinin B auxins C ethylene
- D gibberellins E abscisic acid.

(vi) If you look at cells in rat muscles, you will observe that they contain nuclei but lack chloroplast. The statement that rat muscle cells contain nuclei but no chloroplast is termed as
- A a hypothesis
- B an assumption
- C conclusion
- D an experiment
- E observation.

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(vii) All body metabolic activities carried out within the body of living organisms use ATP as a source of energy instead of glucose. Why is this so?

A Less energy is produced from glucose.
B Glucose has to undergo further digestion processes.
C Glucose is not available in the body of most organisms.
D ATP produces more energy.
E ATP is a free energy which is readily available.

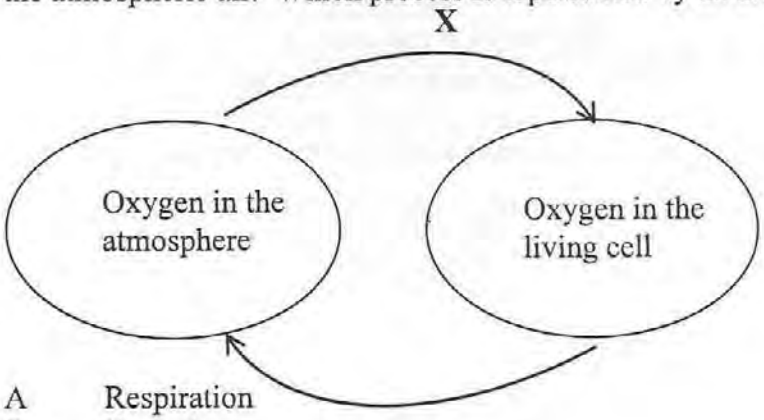
(viii) A student took a blood smear from her finger tip and examined it under a microscope. Which was the most abundant cell type that she observed?

A Thrombocytes.
B Leucocytes.
C Phagocytes.
D Erythrocytes.
E Macrophages.

(ix) Mama Sikujua delivered four children in four years of her marriage time, which were not twins. What are the consequences of this?

A She becomes economically unproductive, weak and psychologically stressed.
B She becomes, weak, unhappy and lazy.
C She gets older, psychologically stressed and miserable.
D She becomes economically unproductive, poor health and lonely.
E She will be unhappy, poor and lonely.

(x) Figure 1 below shows a cyclic movement of oxygen between a living organism and the atmospheric air. Which process is represented by an arrow labelled X?



A Respiration
B Excretion
C Photosynthesis
D Transpiration
E Evaporation

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

LIST A		LIST B	
(i)	Separates the right auricle from the ventricle.	A	Aorta
(ii)	Carry oxygenated blood from the heart to the body.	B	Arteries
(iii)	Separates the left auricle from the ventricle.	C	Atrium
(iv)	Supply food and oxygen to the heart.	D	Bicuspid valve
(v)	Thick-walled chamber of the heart.	E	Coronary arteries
(vi)	Carry oxygenated blood from the lungs to the heart.	F	Erythrocytes
(vii)	Blind ended tubes with valves.	G	Heart attack
(viii)	Have valves at regular intervals to prevent the backward flow of blood.	H	High blood pressure
		I	Lymphocytes
(ix)	Contains blood flowing under high pressure.	J	Lymph vessels
(x)	Caused by narrowing of arteries.	K	Muscles
		L	Phagocytes
		M	Posterior vena cava
		N	Pulmonary artery
		O	Pulmonary vein
		P	Semilunar valve
		Q	Thrombocytes
		R	Tricuspid valve
		S	Veins
		T	Ventricle

SECTION B (60 marks)

Answer **all** questions in this section.

3. (a) (i) Differentiate between prenatal health care and post natal health care.

(ii) Outline **four (4)** harmful reproductive health practices in our society.

(b) Explain the proper ways of disposing waste.

(9 marks)

4. (a) (i) Define the term classification.

(ii) State the advantages and disadvantages of natural system of classification.

(b) Explain the adaptive features of the flowering plant leaves to the function of photosynthesis.

(8 marks)

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5. Figure 2 below shows a part of mould growing on a substrate.

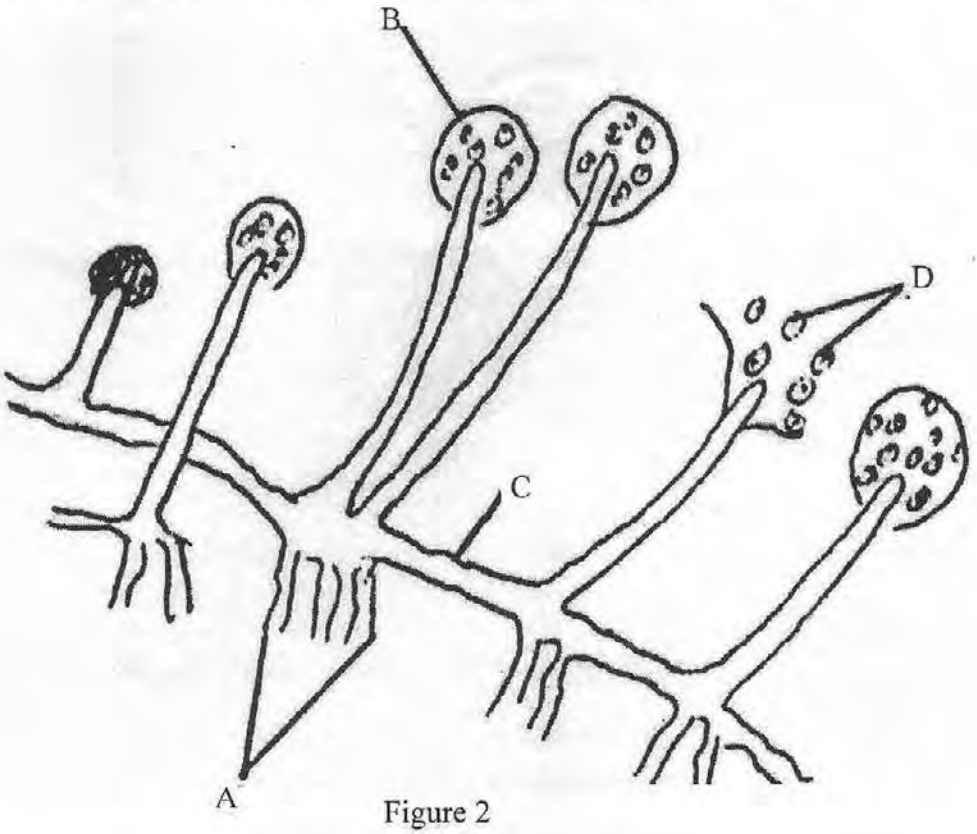

Figure 2

(a) (i) Identify the parts labelled A – D.

(ii) What are the functions of the parts labelled A and B?

(b) Most fungi are saprophytes. What does this mean?

(8 marks)

6. (a) (i) Differentiate between epigeal and hypogeal germination.

(ii) Mention conditions necessary for seed germination.

(b) Describe the changes that occur during seed germination.

(5 marks)

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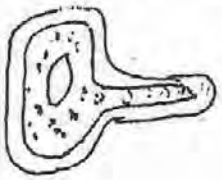
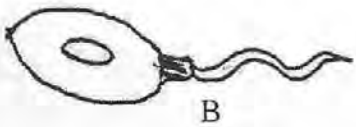
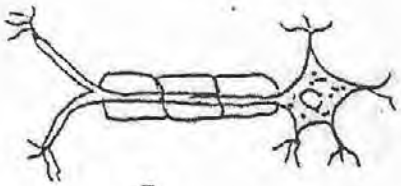
7. Figure 3 represents four different cell types; A, B, C and D.



A



B



C

D

Figure 3

(a) Identify cells A, B, C and D.

(b) Each of the above cells is specialized in performing a specific function.

(i) State the function(s) of each cell.

(ii) For each cell, list the adaptations which enable it to perform its function.

(iii) Name a cell which is required by cell B in order for it to perform its function.

(iv) Explain how cell B and the cell you have named in 7.(b)(iii) accomplish their functions.

(10 marks)

8. (a) Biologists prefer using the term "natural selection" rather than "survival of the fittest". Justify this statement.

(b) Explain the Lamarckian theory of evolution and its weaknesses.

(6 marks)

9. (a) Explain the following terms:

(i) Test cross.

(ii) Back cross.

(b) (i) Two maize varieties which yielded very small cobs were crossed. The offspring produced large cobs. In the next generation however, some of the maize had small cobs while others had large cobs. Account for these observations.

(ii) Name **four (4)** agents of pollination.

(6 marks)

10. During physical exercise body heat production increases. Explain the feedback mechanisms which will return the body to normal. **(8 marks)**

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SECTION C (20 marks)

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

11. Using a human being as an example, explain why movement such as bending and straightening of the forelimb is impossible without joints and muscles. Use drawings to illustrate your answer. **(20 marks)**

12. Through the process of photosynthesis, green plants convert solar energy into chemical energy which can be used by other living organisms. Write an essay on how photosynthesis takes place and show clearly the importance of this process to the existence of our planet, the Earth. **(20 marks)**

13. Urine is a waste product of metabolism, which is a very important physiological process taking place in the human body. Discuss the mechanism of urine formation. **(20 marks)**

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