

**THE UNITED REPUBLIC OF TANZANIA  
MINISTRY OF EDUCATION AND CULTURE**

**FORM TWO SECONDARY EDUCATION EXAMINATIONS, 2005**

0033

BIOLOGY

TIME: 2 HOURS.

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**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.  
Answers for section C should be written in the paper provided.
4. Write your examination number on the top right hand corner of every page.
5. All writing must be in blue/black ink or ball point pens.
6. Cell phones are not allowed in the examination room

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

This paper consists of 11 printed pages

**SECTION A**

**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) Which of the following organelles is involved in respiration?

- A Cell membrane.
- B Nucleus.
- C Chloroplast.
- D Mitochondrion.
- E Lysosome.

(ii) One of the following is not a part of a microscope;

- A Stage.
- B Eye piece.
- C Coarse adjustment knob.
- D Light.
- E Mirror.

(iii) Gaseous exchange in human lungs occurs in the;

- A Alveoli.
- B Mouth
- C Nose.
- D Bronchioles
- E Trachea

(iv) Which of the following parts transports water within a plant?

- A Phloem.
- B Xylem.
- C Cambium.
- D Epidermis.
- E Pith.

(v) The following group of organisms belong to the same kingdom;

- A Bat, Whale, Amoeba.
- B Euglena, Yeast, Liverwort.
- C Grasshopper, Bat, Fish.
- D Amoeba, Housefly, Mosquito.
- E Paramecium, Bat, Moss.

(vi) HIV/AIDS can result from the following behaviour.

- A Abstaining from sex and use of condoms.
- B Rape, alcoholism and drug abuse.
- C Faithfulness in marriage.
- D Avoiding multiple sexual partnership.
- E Using contraceptive pills.

(vii) A food sample X turned blue-black when iodine solution was added on to it.  
The conclusion is that sample X contained:

- A Non reducing sugar.
- B Reducing sugar.
- C Starch.
- D Protein.
- E Lipid.

(viii) A patient having blood group B can receive blood of a donor with blood group;

- A B only.
- B AB only.
- C O only.
- D B or AB.
- E B or O.

(ix) Which of the following does not secrete digestive enzymes?

- A Oesophagus.
- B Pancreas.
- C Stomach.
- D Salivary glands.
- E Ileum.

(x) The body is protected against pathogens by:

- A Bone marrow.
- B Erythrocytes.
- C Thrombocytes.
- D Lymph.
- E Leucocytes.

2. The following statements are either TRUE or FALSE. In the space provided write TRUE if the statement is true and FALSE if the statement is false. The first one is done for you.

- Living organisms are made up of cells      TRUE  
 .....
- (i) Blood groups are arranged on the basis of presence or absence of plasma and anti-bodies .....
  - (ii) Fungi have chloroplasts but lack DNA .....
  - (iii) The valve separating the right auricle and right ventricle is called tricuspid valve. ....
  - (iv) All types of bacteria cause diseases in human beings. ....
  - (v) Salting and freezing are some of the methods of food preservation. ....
  - (vi) Synovial fluid reduces friction between joints. ....
  - (vii) Root hairs increase the surface area of plant roots for water absorption. ....
  - (viii) The nucleus is the basic unit of life. ....
  - (ix) The ileum is the first part of the small intestine. ....
  - (x) Inhaled air has high content of oxygen. ....

3. The following are matching items. Match the phrase or term in list A with that in list B by writing its letter against appropriate position in the space provided alongside List A as shown in the worked example (x).

Example x:

**List A**

Y Present in all plant cells

**List B**

X cell membrane

Y cell wall

**List A**

- (i) ..... Product of anaerobic respiration in plants.
- (ii) ..... Turgor pressure.
- (iii) ..... Carries oxygenated blood from lungs to the heart.
- (iv) ..... Joints between the bones of cranium.
- (v) ..... Removal of undigested materials from the human body.
- (vi) ..... A group of organisms which can interbreed and produce fertile offspring
- (vii) ..... The process of releasing energy in the presence of oxygen.
- (viii) ..... The liquid part of blood.
- (ix) ..... End products of digestion of fats and oil.
- (x) ..... Control the closing and opening of the stomatal pore.

**List B**

- A. Fatty acids and glycerol
- B. Fatty acids and glycerine
- C. Moveable joints
- D. Immoveable joints
- E. Species
- F. Genus
- G. Lactic Acid
- H. Ethanol
- I. Corpuscles
- J. Plasma
- K. Epidermal cells
- L. Guard cells
- M. Pulmonary artery
- N. Pulmonary vein
- O. Ingestion
- P. Egestion
- Q. Aerobic respiration
- R. Anaerobic respiration
- S. Force exerted against a cell wall
- T. Pressure due to flaccidity

**SECTION B**

This section consists of five (05) 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) Outline four (04) differences between plant cells and animal cells.

PLANT CELLS	ANIMAL CELLS
(i)	(i)
(ii)	(ii)
(iii)	(iii)
(iv)	(iv)

- (b) What is First Aid?

.....

.....

.....

.....

.....

- (c) List four (04) components of a First Aid Kit.

(i) .....

(ii) .....

(iii) .....

(iv) .....

(d) Briefly outline three methods of providing First Aid to victims of fainting.

(i) .....  
.....

(ii) .....  
.....

(iii) .....  
.....

5. (a) Differentiate between the following:

(i) Osmosis and Diffusion

.....  
.....  
.....  
.....

(ii) Gaseous exchange and respiration

.....  
.....  
.....  
.....

(b) Draw a well labelled diagram of a generalized plant cell as seen under a light microscope.

6. If the body does not get enough of any of the food substances, certain disorders occur. Such disorders are generally called deficiency diseases.

(a) Complete the table below;

Food substance lacking in diet	Deficiency diseases
Calcium	(i) .....
(ii) .....	Night blindness
Vitamin B <sub>1</sub>	(iii) .....
Iodine	(iv) .....
Iron	(v) .....
(vi) .....	Pellagra
Vitamin D	(vii) .....

(b) Name three (3) elements which for carbohydrates.

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



7. Study figure X below carefully and answer the questions that follow.

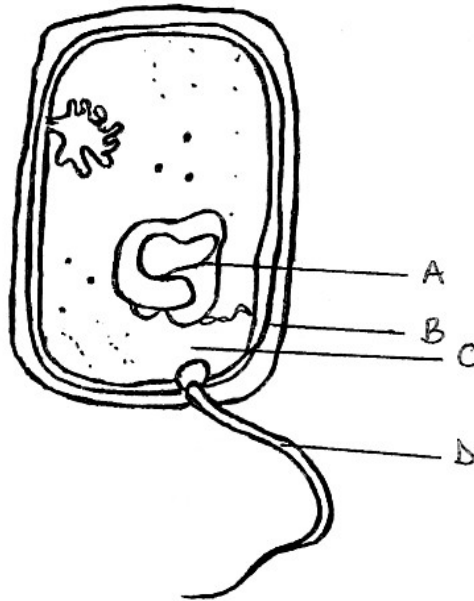


Figure X

- (a) (i) What is the name of an organism in Figure X above?  
.....  
.....
- (ii) In which kingdom does the organism in Figure X belong?  
.....  
.....
- (b) Identify structures labelled A – D.
- A .....  
B .....  
C .....  
D .....

- (c) List any four (4) economic importance of the organism in Figure X.
- (i) .....
  - .....
  - (ii) .....
  - .....
  - (iii) .....
  - .....
  - (iv) .....
  - .....

8. A biologist collected blood samples from an athlete at intervals to determine the amount of lactic acid accumulation. The following were the results obtained.

TIME IN MINUTES	CONCENTRATION OF LACTIC ACID (Mg/100cm <sup>3</sup> )
0	3
4	28
8	50
12	40
16	33
20	26
40	8
60	3

Table 1

Study Table 1 above and answer the following questions.

- (i) Name the process which leads to the accumulation of lactic acid.  
.....  
.....
- (ii) In which animal tissue is lactic acid formed?  
.....  
.....
- (iii) What are the effects of accumulation of lactic acid in the body?  
.....  
.....

(iv) From the results shown in Table 1 above, which range of time represents the period of recovery?

.....  
.....

(v) Write a word equation for anaerobic fermentation in plants.

.....  
.....

**SECTION C**

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 food preservation using the following guidelines.

- Definition of food preservation
- Methods used in food preservation
- Examples of food preserved in each method.

10. Write an essay on gonorrhoea using the following guidelines.

- Causative agent.
- Ways of transmission
- Symptoms
- Parts of the body affected
- Cure and preventative measures