

Candidate's Examination Number \_\_\_\_\_

**SMZ**

**ZANZIBAR EXAMINATIONS COUNCIL  
FORM THREE ENTRANCE EXAMINATION**

**044**

**BIOLOGY**

**TIME: 2:30 HOURS**

**TUESDAY, 22<sup>ND</sup> DECEMBER 2020 A.M**

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**INSTRUCTIONS TO CANDIDATES**

- 1. This paper consists of THREE (3) sections A, B and C.**
- 2. Answer ALL questions in section A and B, and any TWO (2) questions in section C. Question NINE (9) is compulsory.**
- 3. Write your examination number in each page.**
- 4. Write all answers in the spaces provided.**
- 5. Use a blue or black pen in writing. Diagrams must be in pencil.**
- 6. Cellular phones and unauthorized materials are not allowed in the examination room.**

<b>FOR EXAMINER'S USE ONLY</b>		
<b>QUESTION NUMBER</b>	<b>MARKS</b>	<b>SIGNATURE</b>
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		
<b>6</b>		
<b>7</b>		
<b>8</b>		
<b>9a</b>		
<b>9b</b>		
<b>10</b>		
<b>11</b>		
<b>Total Marks</b>		

**This paper consists of 12 printed pages**

**SECTION A: (30 Marks)**

**Answer ALL questions in this section.**

1. Choose the correct answer and write its letter in the table below.
  - i. The first step used in the scientific methods is
    - A. Experimentation
    - B. Asking questions
    - C. Identifying the problem
    - D. Formulating the hypothesis
  - ii. Which of the following does not emit gaseous waste
    - A. Car
    - B. Washbasin
    - C. Incinerator
    - D. Insecticide spray
  - iii. One among the following diseases is not transmitted by sexual contact
    - A. HIV and AIDS
    - B. Syphilis
    - C. Gonorrhoea
    - D. Malaria
  - iv. Hepatitis B can be prevented by
    - A. Injecting vaccination
    - B. Using mosquito nets
    - C. Eating balance diet
    - D. Staying under quarantine
  - v. One of the following pairs do not constitute macro-elements
    - A. Nitrogen and Potassium
    - B. Magnesium and Phosphorus
    - C. Zinc and Chlorine
    - D. Phosphorus and Potassium
  - vi. Which one of the following secretes bile into the ileum and helps in the digestion of fats
    - A. Pancreas
    - B. Liver
    - C. Gall bladder
    - D. Stomach
  - vii. People with blood group O have
    - A. Antigen B
    - B. Antigen A and B
    - C. Antigen A
    - D. No antigen
  - viii. The following are suspended in the plasma except
    - A. Red blood cell
    - B. Platelets
    - C. Capillaries
    - D. White blood cells
  - ix. Gaseous exchange takes place in the leaves through
    - A. Spongy mesophyll
    - B. Sieve tube elements
    - C. Epidermis
    - D. Stomata

- x. Anaerobic respiration in plant leads to the production of
- |            |                |
|------------|----------------|
| A. Ethanol | B. Lactic acid |
| C. Oxygen  | D. Hydrogen    |

**Answers**

i	ii	iii	iv	v	vi	vii	viii	ix	x

2. Match the processes and structures in **LIST A** with the related response of digestive system in **LIST B** by writing the letter in the table below.

<b>LIST A</b>	<b>LIST B</b>
i. Enamel	A. The lining of the ileum that has finger-like projection.
ii. Mucus	B. The hard whitish outer part of tooth made of minerals.
iii. Peristalsis	C. The process by which harmful by products of metabolism are removed from the body of the organism.
iv. Cardiac sphincters	D. The involuntary waves of contraction of smooth muscles that conveys food boluses.
v. Villi	E. The junctions between the stomach and oesophagus.
vi. Excretion	F. It breaks fats and oil into small droplets.
vii. Tongue	G. The disorder caused by increase intake of sugary, hot and cold food.
viii. Bile	H. The junctions between the stomach and the duodenum.
ix. Dental caries	I. It rolls the food and pushes it into the pharynx.
x. Pyloric sphincters	J. A substance that lines the stomach to prevent it from corrosion by hydrochloric acid.
	K. The process by which food is broken down into a form that can be absorbed.
	L. The undigested food substances coming out from the body.

**Answers**

i	ii	iii	iv	v	vi	vii	viii	ix	x

3. Read the sentences below very carefully and then fill the blank spaces. Use one word for each space.
- a. Organisms of the same species can \_\_\_\_\_ to produce fertile \_\_\_\_\_.
  - b. Human beings produce \_\_\_\_\_ which are biological catalyst.
  - c. Muscle needs \_\_\_\_\_ from respiration for movement.
  - d. During sports activity Lactic acid accumulated is converted by oxygen to harmless \_\_\_\_\_ and \_\_\_\_\_.
  - e. The smallest blood vessels in the body are \_\_\_\_\_.
  - f. Fungi produce poisons called \_\_\_\_\_. The most common is \_\_\_\_\_.
  - g. A quadrat is a square frame enclosing a known area to estimate the \_\_\_\_\_ of organisms.

**SECTION B: (50 Marks)**

**Answer ALL questions in this section.**

- 4
- a. Name three (3) external features of the leaf that make it well adapted for Photosynthesis.
    - i. \_\_\_\_\_.
    - ii. \_\_\_\_\_.
    - iii. \_\_\_\_\_.
  - b. List down the main products of photosynthesis in both light and dark stages.
    - i. In the light stage the main products are \_\_\_\_\_.
    - ii. In the dark stage the main products are \_\_\_\_\_.
  - c. Write down an important element for the formation of chlorophyll in plant.  
\_\_\_\_\_.
  - d. Mention the cells in mesophyll that have many chloroplasts.  
\_\_\_\_\_.
  - e. Write the forms of glucose that can be converted after it has been manufactured in the process of photosynthesis.  
\_\_\_\_\_.

5. a. Outline four (4) general characteristics of Kingdom plantae.
- i. \_\_\_\_\_
  - ii. \_\_\_\_\_
  - iii. \_\_\_\_\_
  - iv. \_\_\_\_\_
- b. Draw a well labeled diagram of the Moss plant.

- c. Mention the reproductive parts of a moss plant.
- \_\_\_\_\_
- \_\_\_\_\_

6. a. i. What do you understand by the term "Muscle cramps"?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- ii. Outline three (3) causes of muscle cramps.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- iii. Mention the two (2) types of muscle cramps that are likely to occur.
- \_\_\_\_\_ and \_\_\_\_\_.

- b. List any three (3) situations that require First Aid.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

7. a. Briefly explain four (4) ways of spreading communicable diseases.

- i. \_\_\_\_\_  
\_\_\_\_\_
- ii. \_\_\_\_\_  
\_\_\_\_\_
- iii. \_\_\_\_\_  
\_\_\_\_\_

b. Explain in short the following diseases.

i. Cholera

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ii. HIV and AIDS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. a. Mention two (2) main types of nutrition in organisms.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b. Briefly explain the following terms.

i. Commensalism

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ii. Mutualism

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iii. Parasitism

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c. Name two (2) main groups of vitamins.

i. \_\_\_\_\_ vitamins

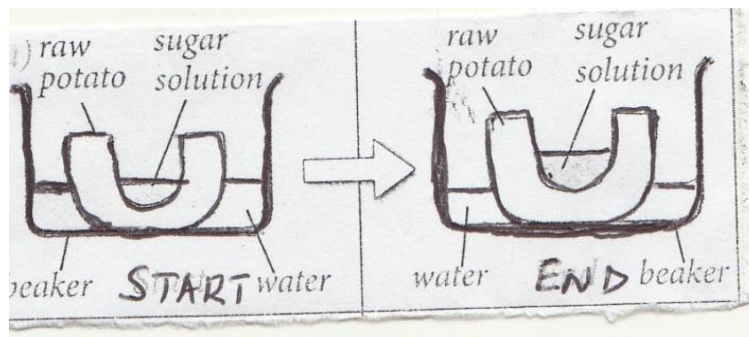
ii. \_\_\_\_\_ vitamins

**SECTION C: (20 Marks)**

Answer **ANY TWO (2)** questions in this section. Question 9 is **COMPULSORY** and has two (2) items (9a) and (9b). Answer either item (9a) or (9b).

9. a. A potato was cut into a half, peeled and a hole was made at the centre. The half piece of potato was placed in a beaker containing water, and at the centre a strong sugar solution was placed then the set-up was placed for several hours. The level of the water was marked from the beaker and on the piece of potato, before and after the experiment.

The set up of the experiment is shown below.

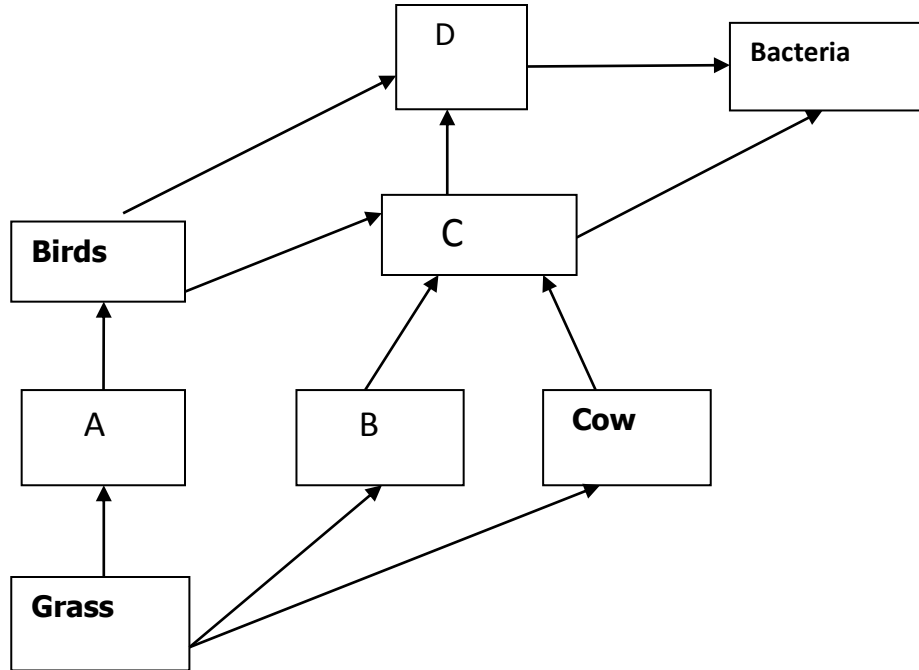


- i. The aim of this experiment was \_\_\_\_\_  
\_\_\_\_\_
- ii. What do you observe on the levels of the water after the experiment in the beaker and that in the sugar solution on the piece of potato?  
Level of water in the beaker \_\_\_\_\_  
Level of sugar solution in the potato \_\_\_\_\_
- iii. What will happen if the experiment is repeated with a potato that has been boiled?  
\_\_\_\_\_  
\_\_\_\_\_
- iv. What is the importance of this experiment in plants?  
\_\_\_\_\_  
\_\_\_\_\_
- v. If the two solutions have the same water potential they are said to be \_\_\_\_\_  
\_\_\_\_\_



9. b) You are given a flow energy chart of a food web with four (4) missing Organisms A, B, C and D in the chart. They are Lion, Hawks, Insects and Zebra (They are not in order).

Study it and answer the questions that follow.



- i. Identify the missed organisms named by the letters with their correct place from the chart.

A \_\_\_\_\_ B \_\_\_\_\_  
 C \_\_\_\_\_ D \_\_\_\_\_

- ii. Name the organisms which are herbivores \_\_\_\_\_  
 iii. Name the organisms which are carnivores \_\_\_\_\_  
 iv. Identify Primary consumers \_\_\_\_\_  
 v. Identify Secondary consumers \_\_\_\_\_  
 vi. Name an organism which is a producer \_\_\_\_\_  
 vii. Name an organism which is a decomposer \_\_\_\_\_

10. Study the figure X below and answer the questions that follow.



i. Identify the figure X.

\_\_\_\_\_

ii. Name the parts labelled A to D.

A \_\_\_\_\_ B \_\_\_\_\_

C \_\_\_\_\_ D \_\_\_\_\_

iii. What is the meaning of the term 'chewing cud'?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

iv. The gap in a lower jaw in the cow is known as a

\_\_\_\_\_

11. Write short notes on how pathogenic bacteria spread diseases and infections. Use the following guide lines.

- a. Fimbriae/pili
- b. Toxins
- c. Transformation
- d. Resistance
- e. Flagella



