**NAME:…………………………………………….………………………….………….. CLASS:…………. ADM NO…………….**

**231**

**BIOLOGY**

**FORM 3 JANUARY 2023 TERM 1 OPENER EXAM**

**TIME: 2**$\frac{1}{2}$ **Hours**

**FORM 2**

**INSTRUCTIONS TO CANDIDATES**

* *Write your* ***name, Admission******number*** *in the spaces provided above*
* *Answer* ***all*** *the questions in the spaces provided.*
* *Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*
1. What do the following branches of Biology deal with? (2mks)

(a) Physiology

 (b) Morphology.

1. a) What is a species? (1mks)

 b) Give **two** characteristics that distinguish scientific names of organisms from the ordinary names.

 (2mks)

1. List down two functions of the endoplasmic reticulum. (2mks)

1. Write down the formula used to calculate the diameter of a cell when using a microscope.(1mk)

1. Write any two properties of cell wall. (2mks)

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1. (i) An epidermal cell was found to have a diameter of 300 micrometers. Convert that diameter into

 Centimeters. (3mks)

(ii) Identify the cells drawn below and state its functions



Identity (1mk)

Functions (2mks)

1. (i) Name parts of a light microscope that raises and lowers the body tube. (2mks)

 (ii) Name the part of microscope that hold the microscope slide firmly on stage. (1mk)

 (iii) Why should a microscope not be placed near the edge of a working bench? (1mk)

1. Illustrated below is the movement of material in a certain physiological process

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1. **(i)** Name the physiological process illustrated above (1mk)

 ii) Give **two** examples of applicability of the process named in **(a) (i)** above in plants. (2mks)

1. State **two** ways by which the movement of the dye molecules would be slowed down. (2mks)

1. (a) Explain the role of oxygen in Active transport. (1mk)

1. Name two processes that depend on Active transport in animals. (2mks)
*
1. How does a sunken stomata help a plant avoid excessive water loss during transpiration? (3mks)

1. Name the blood vessel that supplies blood to the

(a) Brain (1mk)

(b) Cardiac muscle (1mk)

1. Name the valve which opens during:

i) Systole. (1mk)

ii) Diastole. (1mk)

1. A student was found to have blood group B+. Name the antibody present in his plasma? (1mk)

1. The diagram below shows the tracheal system of an insect.

 

a. Name structure **X** (1mk)

b. State the role of the spiral band on the trachea. (1mk)

 c. How is ventilation maintained in the tracheal system? (1mk)

1. (a) state the use of the following excretory products in plants

 (4mks)

|  |  |
| --- | --- |
| **Excretory product** | **Economic use** |
| Caffeine  |  |
| Papain  |  |
| Gum arabica |  |
| tannin |  |
|  |  |

 (b) Name any two plant wastes that are recycled/reused by the same plant.. (2mks)

1. a) Apart from the kidney and skin name any other organ in human body involved in excretion. (1mk)

1. Name two hormones involved in glucose level regulation in man and the structure that secrete

them. (3mks)

Hormones –

Structure that secretes them -

(c) Through which processes do poikilotherms obtain heat from their surrounding? (2mks)

1. An experiment was set up to investigate a certain process as shown in the diagram below.



 The set-up above was left in bright sunlight for 4 hours.

1. State the aim of the experiment. (1mk)

 (b) Name **X** and **Y** (2mks)

 **X** -

 **Y** -

(c) Other than sunlight name three factors that would affect the experiment. (3mks)

 (d) State how the identity of X could be confirmed. (1mk)

 (e) Explain why only submerged water plants was used in this experiment. (1mk)

1. (a) What prevents blood in veins from flowing backwards? (1 mk)

1. The photograph below shows red blood cells that have been put in different solutions. Examine them and answer the questions that follow.



1. Identify the type of solution in which cells F placed . (1mk)

1. State the process which the red blood cells underwent in illustration E. (1mk)

1. Account for the appearance the red blood cells underwent in illustration G. (3mks)

1. Explain what would happen if plant cells are placed in the solution, in which the cells G were immersed. (2mks)

1. The diagram below shows part of the mammalian digestive system



a) Name the parts labeled A, D and F (3mks)

A

B

 D

b) State the functions of the parts labeled C and E (2mks)

C

E

c) What are the adaptations of the stomach to its function (2mks)

d) Name a deficiency disease resulting from lack of proteins in the diet (1mk)

1. a) Study the diagram below to enable you answer the questions that follow.

 

1. Above is the functional unit of kidney, on part labelled Q indicate using an arrow the direction of blood flow. (1mk)
2. Name the process that take place in parts labelled : (3mks)

R –

S –

T –

1. Name a hormone that stimulate part U to enhance reabsorption of salts back into the blood.

 (1mk)

1. A thirsty patient drinks a glass full of water. Name a hormone that stimulates Loop of Henle

to reabsorb water back into the blood stream to restore water level. (1mk)

1. Fluid W flowing out into the pelvis was tested and found to contain glucose molecules. Which part of the functional unit was faulty? (1mk)

1. Explain the functions of parts of the mammalian skin. (20mks)
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