**Name:** ………………………………………………..…**Adm No**: ….…………**Class:** ………… **Candidate’s Sign**: ………...............**Date:** ………………..........................................

**OPENER EXAMS**

**TERM 3 2023**

**FORM TWO BIOLOGY**

1. State the name given to the study of: (2 marks)
2. Cell

…………………………………………………………………………………………………………...

1. Micro organism

…………………………………………………………………………………………………………...

1. The diagram below represents an apparatus used to collect specimens for study.



1. Identify the apparatus. (1 mark)

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1. State why it is advisable to have the apparatus illustrated above made of glass. (2 marks)

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1. State two functions of a cell sap. (2 marks)

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1. Using a microscope, a student counted 55 cells across a field of view whose diameter was 6000µm . Calculate the average length of cells. Show your working. (2 marks)

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1. State two functions of endoplasmic reticulum. (2 marks)

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1. Distinguish between diffusion and osmosis. (2 marks)

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1. a) What is meant by wilting? (1 mark)

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b) Explain how an increase in temperature affects the rate of active transport. (2 marks)

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1. State the role of light in photosynthesis. (2 marks)

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1. The diagram below represent a cell;



X

Y

 a) Name the parts; (2 marks)

 X ………………………………………………………………………………………

 Y……………………………………………………………………………………….

 b) Suggest why the structure labeled X would move on one side then the other. (1 mark)

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 c) Name the end product that is formed at part labeled X. (1 mark)

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 10. Sketch a graph on the axis below showing how light intensity affects the rate of photosynthesis.

 Rate of photosynthesis

Light intensity

 (1 mark)

 b) Give two limiting factors. (2 marks)

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11. The diagram below illustrates a set of biological process in a green plant.

Green Plant

Polysaccharide P

Glucose

Process N

hydrolysis

1. Name; (2 marks)

Process N

…………………………………………………………………………………………………………...

Polysaccharide P

…………………………………………………………………………………………………………...

1. State two environmental condition necessary for process N to take place. (2 marks)

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12. State two ways in which xylem vessels are adapted to their functions. (2 marks)

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13. The number of stomata on the lower and upper surface of two leaves from plant species X and Y were

 counted under the field of view over light microscope. The results were shown in the table below.

|  |  |  |
| --- | --- | --- |
|  | **Number of stomata** |  |
| **Leaf** | **Upper surface** | **Lower surface** |
| X | 4 | 12 |
| Y | 20 | 23 |

1. Which of the two leaves would be expected to have a low rate of transpiration. (1 mark)

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1. Give a reason for your answer. (2 marks)

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14. Explain three ways in which red blood cells are adapted to increase surface area. (3 marks)

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15. State the role of each of the following in the mammalian respiratory system.

 a) Mucus (2 marks)

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 b) Cartilage rings. (1 mark)

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16. i) State two adaptation of the frog’s skin to gaseous exchange. (2 marks)

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 ii) Explain how the human nasal cavity is adapted to gaseous exchange. (3 marks)

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 iii) Explain why the amoeba does not require an elaborate gaseous exchange system. (2 marks)

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 iv) Name the respiratory disease caused by Bordetella portusis. (1 mark)

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17. i) What is single circulatory system. (1 mark)

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 ii) Name an organism which has the single circulatory system. (1 mark)

…………………………………………………………………………………………………………...

 iii) Name the opening to the chamber of the heart of an insect. (1 mark)

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 iv) State three structural differences between arteries and veins in mammals. (3 marks)

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 v) Name a disease that causes thickening and hardening of arteries. (1 mark)

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18. In an investigation, a student extracted 3 pairs of pawpaw cylinders using a cork borer. The cylinders

 were cut to 50mm length and placed in a beaker containing a solution. These results after 40 minutes

 were as shown in the table below.

|  |  |
| --- | --- |
| **Feature** | **Results** |
| Average length of the cylinder in mm | 56mm |
| Stiffness of the cylinder | Stiff |

1. Account for the results in the table above. (4marks)

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1. What would be a suitable control set up for the investigation? (2 marks)

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