**NAME ……………………………………………ADM N…………………………..CLASS…………….**

**OPENER EXAMINATION: TERM 1 2024**

**231/1**

**BIOLOGY**

**PAPER 1**

**(Theory)**

**2 HOURS**

**FORM 4**

**INSTRUCTIONS TO CANDIDATES**

* Write your name and ADM Number in the spaces provided above.
* Sign and write date of examination in the spaces provided above.
* Answer **ALL** questions in the spaces provided.
* All workings **must** be clearly shown where necessary.
* This paper consists of 7 Printed pages.

Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing

**FOR EXAMINERS USE ONLY.**

|  |  |  |
| --- | --- | --- |
| **Question** | **Maximum Score** | **Candidates Score** |
| 1 – 30 | 80 |  |

1. (a) Name the kingdom whose members have a cell wall made of chitin. ( 1mark)

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(b) Besides the abdomen, name the other body part of the members of class arachnida. ( 1mark)

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2. A certain species of flowering plants relies entirely on sexual reproduction for propagation. The chromosomes number of its ovary tissue is 16.Predict the chromosome number in

(i) Male nucleus ( 1mark)

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(ii) A cell of the endosperm ( 1mark)

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3. The equation below represent certain reactions in living organism.

(i) C6H12O6 2C2H5OH + 2CO2 + 210 KJ

(ii) C6H12O6 + 602 6H2O + 6CO2 + 2880KJ

1. Name the reaction represented by the equation (i) and (ii) above. (2 marks)

(i)

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(ii)

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1. Calculate the respiratory quotient (RQ) for the reaction (ii) in a (ii) above. ( 2marks)

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4. a) State where the light stage of photosynthesis process occur in a chloroplast. ( 1mark)

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1. Give two importance of the light stage in photosynthesis. ( 2marks)

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5. Name three support tissues found in woody plants. ( 3marks)

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6. State two characteristics of the alveoli of the mammalian lungs. ( 2marks)

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7. The following is a dental formula of certain group of mammals.

i3 c 1 , pm 4 , m 2

3 1 4 3

a) Work out the total number of teeth present in the mammal. ( 2marks)

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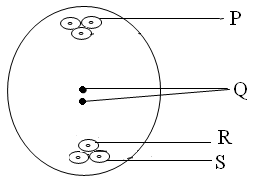
1. (i) State the likely mode of feeding for the group of mammals. ( 1mark)

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(ii) Give a reason for your answer in (b) (i) above . (1 mark)

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8. The diagram below represents a mature embryo sac. Study it and answer the questions below.



1. Name parts P, Q , R and S (4 marks)

P

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Q

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R

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S

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1. Name the type of fertilization in flowering plants. ( 1 mark)

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9. A crystal of potassium manganate (vii) was gently placed in a beaker of distilled water. It was later realised that the water turned purple.

a) Suggest the possible physiological process which was being investigated. (1mark)

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1. Suggest three possible ways of increasing the rate of process in (9) (a) above. ( 3 mark)

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10. (i) What is seed dormancy ( 1mark)

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(ii) Name a growth inhibitor in seeds. ( 1 mark)

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11. State the importance of each of the following excretory products in plants (2 marks)

a) rubber

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1. Papain

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12. State **two** advantages of metamorphosis to the life of insects. (2 marks)

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13. During which phase of meiosis does crossing over occur (1mark)

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14. Define the following terms (2marks)

a) Excretion

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1. Secretion

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15. State **two** roles of oestrogen during the menstrual cycle. (2marks)

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16. Give **two** reasons why primary productivity in an aquatic ecosystem decreases with depth. (2marks)

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17. State **two** ways in which floating leaves of aquatic plants are adapted to gases exchange. (2 marks)

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18. Name the major metallic elements in the composition of the following. (2marks)

a) haemoglobin

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1. Chlorophyll molecule.

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19. State two functions of placenta in mammals. (2 marks)

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20. a) What is meant by single circulatory system. (1mark)

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1. State the disadvantages of this type of circulation to organisms. ( 2marks)

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21. Name two components of blood that are not present in the glomerular filtrate. (2marks)

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22. Name the taxon ( taxonomic unit)

a) With the largest number of members. (1marks)

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1. With the fewest number of members. ( 1mark)

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23. Explain why an individual with blood group O cannot receive blood from a person of blood group AB.

(2marks)

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24. a) Name the instrument used to measure the rate of transpiration. (1mark)

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1. State three importance of transpiration in plants. ( 3 marks)

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25. Name two homeostatic roles played by the kidney. (2marks)

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26. a) Name the organ where secretion of hormone testosterone occur in mammalian body. (1mark)

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b) Explain why pregnancy in human can be terminated when the ovary is removed before the end of four months but will not be terminated when removed after four months. (3 marks)

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27. a) Name the carbohydrate that

i) Is stored in mammalian muscles. (1mark)

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ii) Is most abundant in human blood ( 1mark)

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1. Explain the role of enzyme catalase produced in plants and animals tissues. ( 2 mark)

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28. The diagram below represents an organelle in a cell.

1. Identify the organelle. ( 1mark)

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1. How is the structure labelled K adapted to its function? ( 2marks)

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1. Name a waste product in the organelle shown above. ( 1 mark)

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29. a) If pepsinogen and tripsinogen were produced in their active form ,what would be their effect on the alimentary canal? (1 mark)

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1. How else is the alimentary canal protected from the effect stated in ( a) above. ( 1mark)

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30. a) Suggest two reasons why animals require specialized excretory organs as compared to plants. (2marks)

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1. Name the part of the kidney nephron where counter current flow occur. ( 1mark)

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