**Name …………………………………………………. ADM NO………………\…………**

 **Candidate’s signature ……………………….. Date ……………………………………………**

 **231/1**

 **BIOLOGY**

 **PAPER 1**

 **(THEORY)**

 **2 HOURS**

**FORM 4**

**Instruction to candidates**

1. Write your name and index number in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above**.**
3. Answer all the questions in the spaces provided.
4. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
5. Name two nutrients that are absorbed without being digested by enzymes in humans. (2mks)

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1. a) Describe the condition known as varicose veins (2mks)

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b)What is the role of blood platelets in the blood clotting process? (2mks)

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3. Name the organelle that is involved in each of the following: (2mks)

 a) Manufacturing of lipids.

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 b)Formation of lysosomes.

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1. a) Give two differences in the products of anaerobic respiration between plants and animals. (2mks)

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 b) Name the site of anaerobic respiration in a cell. (1mks)

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5. The diagram below represents a certain plant.



1. What is the likely habitat for the plant? (1mk)

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1. Give two reasons for your answer in (a) above. (2mks)

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 6. a) (i) What is meant by vestigial structures? (1mk)

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 (ii) Give an example of a vestigial structure in human (1mk)

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1. Explain why certain drugs become ineffective in curing disease after many years of use. (2mks)

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 7. a) Name the part of a light microscope used to bring an image of a specimen into a sharp focus. (1mk)

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1. Why is it recommended to keep the stage of a microscope dry? (1mk)

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 8. State three external differences between diplopoda and chilopoda. (3mks)

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 9. State three factors that affect the rate of diffusion. (3mks)

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 10. The diagram below represents a bone obtained from a mammal.



1. Name the bone. (1mk)

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1. Name the:
2. Bone which articulates with the bone named in (a) above at the cavity labeled K. (1mk)

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1. Joint formed by the two bones. (1mk)

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1. State the function of the part labeled J. (1mk)

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 11. a) A part from the lungs, name two gaseous exchange surface in a frog. (2mks)

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 b)Write an equation that summarizes the process of aerobic respiration. (1mk)

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 12. The diagram below illustrates the structure of a bread mould.



1. Name the structure labeled N. (1mk)

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1. State the functions of the structure labeled K. (2MKS)

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13. What is meant by the following terms?

 a) Habitat: (1mk)

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 b) Ecosystem; (1mk)

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14. State one economic importance of each of the following plant excretory products. (3mks)

 a) Tannin

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b)Quinine

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1. Caffein

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15. In an investigation, a student extracted three pieces of pawpaw cylinders using a cork bovver. The cylinders were cut back to 50mm length and placed in a beaker containing a solution. The results after 40 min were shown in the table below

|  |  |
| --- | --- |
| **Feature** | **Results** |
| Average length of cylinders(mm) | 56mm |
| Stiffness of cylinders | stiff |

1. Account for the results in the table above. (3mks)

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1. What would be the control experiment for the investigation? (2mks)

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16. How does nutrition as a characteristic of living organisms differ in plants and animals? (2mks)

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17. 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 of a light microscope. The results were as shown in the table below.

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| --- | --- | --- |
| **Leaf** | **Upper Surface** | **Lower Surface** |
| X | 4 | 12 |
| Y | 20 | 23 |

1. Which of the two leaves would be expected to have a lower rate of transpiration? (1mk)

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1. Give a reason for your answer in (a) above (1mk)

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18. State the changes that occur in arterioles in the human skin during thermoregulation. (2mks)

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19. State two advantages of internal fertilization in humans. (2mks)

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20. a) What is meant by the following terms:

 (i) Hybrid Vigour; (1mk)

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 (ii) Polyploid? (1mk)

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1. State two causes of chromosomal mutations (2mks)

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21. What is the functions of the following structures in human reproductive organs?

 a) Fallopian tubes. (1mk)

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 b) Epididymis (1mk)

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 c) Scrotal sac. (1mk)

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22. State the differences in content of oxygen and carbon (iv) oxide in the air that enters and leaves the human lungs. (2mks)

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23. State three factors that contribute to the deceleration phase in the population curve of an organism. (3mks)

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24. Name two kidney diseases. (2mks)

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25. The diagram below represents a transverse section of an ovary from a certain flower.



1. (i) Name the structure labeled W. (1mk)

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1. Name the type of placentation illustrated in this diagram. (1mk)

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26. a) What is meant by the term non-disjunction? (1mk)

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1. Give an example of a genetic disorder caused by:
2. Non-disjunction. (1mk)

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1. Gene mutation. (1mk)

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27. State how the rough endoplasmic reticulum is adapted to its function. (2mks)

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28. a) What is a tropic response? (1mk)

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 b) State three ways by which auxins regulate growth in seedlings. (3mks)

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29. What is meant by the term apical dominance? (3mks)

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