**Name……………………………………………………… Index No………………………..**

231/1

BIOLOGY **Date……………………………**

(Theory)

YEAR 2020 **Sign……………………………**

**TIME: 2 hours**

**DECEMBER 2020**

KENYA NATIONAL EXAMINATIONS COUNCIL

(*Kenya Certificate of Secondary education*)

***Instructions***

* + 1. Write your Name and Index Number in the spaces provided above.
		2. Write the date of the examination in the space provided above.
		3. Answer all the questions in the spaces provided.

***For Examiner’s use only***

|  |  |  |
| --- | --- | --- |
| **Question** | **Maximum Score** | **Candidate’s Score** |
| 1-27 | 80 |  |

***This paper consists of 10 printed pages.***

***Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.***

1. The equation below shows a reaction that occurs in plants.

 6CO2+12H C6H12O6+ 3O2

1. Identify the process. [1mk]
2. In which part of the chloroplast does the process represented by the above reaction occur? [1mk]
3. Write down the part of microscope that plays the following role. (2mks)

|  |  |
| --- | --- |
| Role played | Part of microscope |
| Movement of stage through large distance |  |
| Attachment of objective lenses |  |

1. a. Blood group **AB** is a universal recipient. Explain [1mk]
2. Describe the characteristics of blood group **AB**+ev. [3mks]

 4. A certain organ **K** was surgically removed from a rat, later drastic increase in glucose level in the blood was reported but when substance **Q** was injected into the animal the whole process was reversed.

 Identify: a. Organ **K**………………………………………. [1mk]

 b.Substance **Q** ……………………………………… [ 1mk]

 5. State the two major characteristic of members of the kingdom plantae. [2mks]

6. The diagram below represents a plant cell that had been placed in a certain solution.

 Study it and answer the questions that follow.

 

a. What term is used to describe the condition of the above cell? [1mk]

b. What term is used to describe the solution to which the cell had been placed. [1mk]

 7. A variegated leaf was tested for starch.

 a. Name the reagent used. [1mk]

 b. State the expected results. [1mk]

 c. What was the aim of the experiment? [1mk]

8. State two characteristic of anemorphilous flowers. [2mks]

9. Name two processes that are involved in the translocation of manufactured food materials. [2mks]

10. State two ways by which lactic acid formed in the muscles of an athlete is removed. [2mks]

11. Explain why sexual reproduction is important in an organism. [2mks]

12. Study the diagram below.



1. Name the division the organism belongs. [1mk]
2. Name the parts **B$C**. [2mks]
3. State two functions of the part labelled **D**. [2mks]

13. In rats, black colour is dominants over white.

 a. Using appropriate letter symbols make a cross of two heterozygous black rats. [4mks]

 b. Indicates the genotypic and phenotypic ratios of their off springs. [2mks]

14. Explain double fertilization in flowering plants. [4mks]

15. Explain three adaptations of the root hair cell to perform its function. [3mks]

16. Distinguish between ecological niche and habitat. [2mks]

17. The diagram below shows the internal structure of a broad bean seed. Study it and answer the questions that follow.

 

1. Name the part labelled **B**. [1mk]

1. Why is it important that the part labelled **A** develops first during germination? [2mks]

18. State three preventive measures of schistosomiasis in human beings. [3mks]

19. A form one student observing onion epidermal cells under the low power objective counted 5 cells on a field of view measuring 5mm

 a. If the eye piece magnification used was ×10 and that of the objective lens was×10. What was the magnification of the microscope? Show your working. [2mks]

 b. what is the role of centrioles in animal cells? [1mk]

 c. How is support achieved in herbaceous plants? [1mk]

20. Explain why amoeba cannot burst when placed in hypertonic solution. [2mks]

21. What is the effect of contraction of diaphragm muscle breathing in mammals? [3mks]

22. a. Describe three homeostatic functions of the mammalian skin. [3mks]

 b. Why do desert animals excrete nitrogenous wastes in form of uric acid? [2mks]

23. a. Give two precautions taken when collecting biological life specimen. [2mks]

 b. State the function of the following biological apparatus. [2mks]

 i. hand lens

 ii. Pit fall tap

24. Distinguish growth from development. [2mks]

25. a. Name the hormone that stimulate milk secretion in female mammals. [1mk]

 b. State the function of lytic enzyme secreted by acrosome in the sperm. [1mk]

 c. Give two reasons why cross breeding is better than inbreeding. [2mks]

26. Why would burning charcoal in a poorly ventilated room cause death? [2mks]

27. State three differences between aerobic and anaerobic respiration. [3mks]