**NAME ADM NO CLASS**

**DATE SIGNATURE INDEX NUMBER**

**231/1**

**BIOLOGY**

**PAPER 1**

**TIME: 2 HOURS**

**TERM TWO 2021**

**MECS CLUSTER JOINT EXAMINATION**

***Kenya Certificate of Secondary Education***

**INSTRUCTIONS TO CANDIDATES**

* Write your name and admin number in the spaces provided above
* Sign and write the date of examination in the spaces provided above
* Answer **ALL** questions in the spaces provided
* This paper consists of 8 printed pages
* Candidates should check the question paper to ascertain that all the pages are printed and that no questions are missing

**FOR EXAMINERS USE ONLY**

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| **QUESTION** | **MAX. SCORE** | **CANDIDATE’S SCORE** |
| **1-29** | **80** |  |

1. Name the product of anaerobic respiration that is essential in:                         (2marks)

a) The brewing industry

b) The bread making industry

**2.** (a)What part of the human body is affected by the virus that causes poliomyelitis? (1mark)

  (b) What is a vaccine? (1 mark)

(c) Other than poliomyelitis name another immunizable disease in Kenya (1mark)

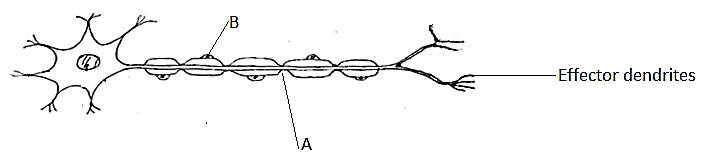
3. A student mixed a sample of urine from a person with Benedict’s solution and heated, the colour changed to orange.

a) What was present in the urine sample? (1 mark)

b) What did the student conclude on the health status of the person? (1mark)

c) Which organ in the person may not be functioning properly (1mark)

4. Study the diagram **below** of a neuron in human being.



(a)Identify the type of neurone. (1mark)

(b) Name the parts labelled A and B. ( 2 mks)

A

B

(c) On the diagram indicate the direction of movement of a nerve impulse along the neuron

(1 mark)

5. In an experiment, it was observed that when maggots are exposed to light, they move to dark areas. On the other hand, Euglena and Chlamydomonas move towards light.

1. Name the type of response exhibited by the organisms (1mark)

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1. State one advantage of the response shown by Euglena and Chlamydomonas (1mark)

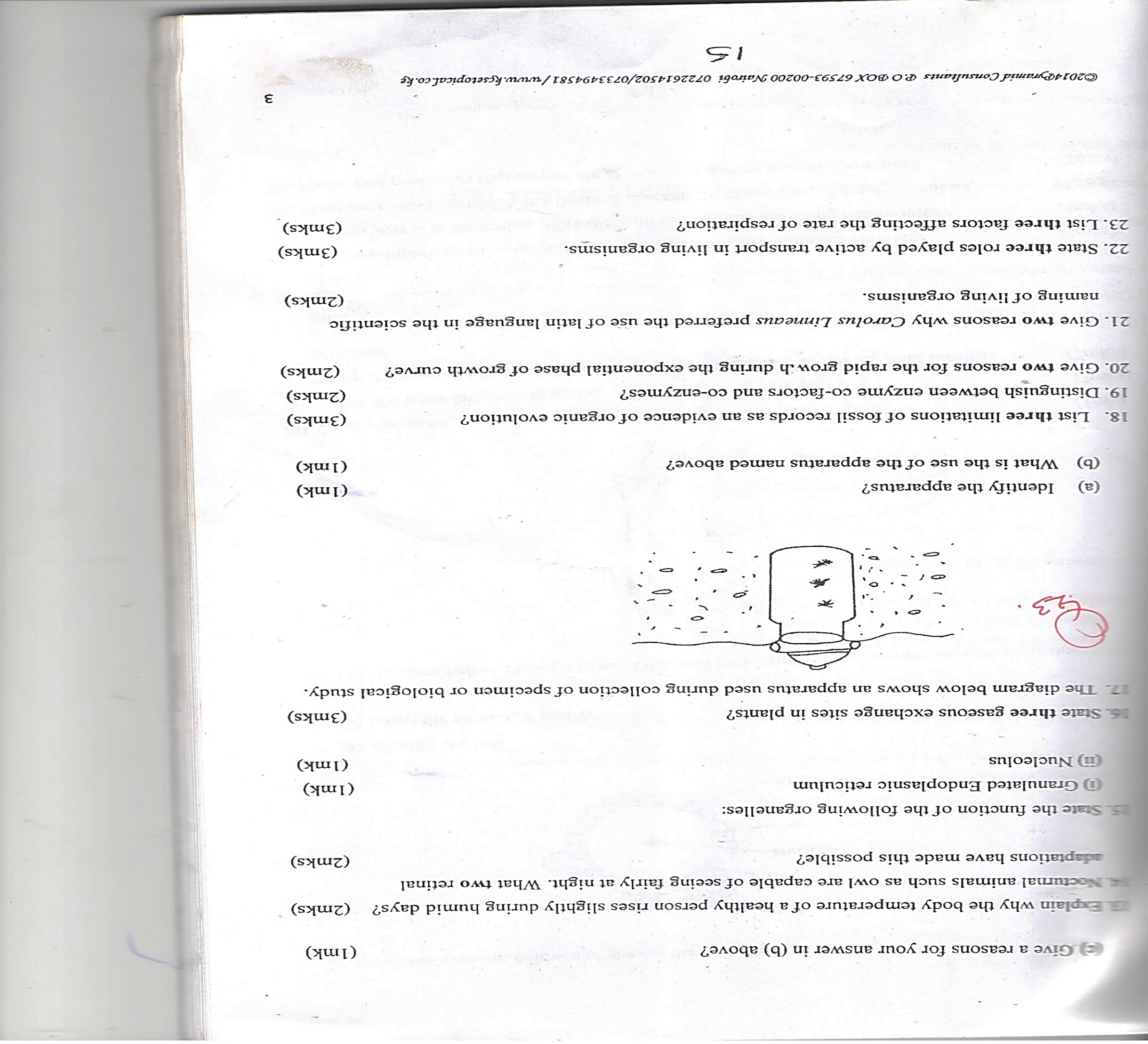
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1. a) Name two features used to group organisms in the phylum Arthropoda into classes. (2marks).

b) Name three economic importance of organisms in kingdom Fungi. (3marks)

1. Name three tissues responsible for secondary growth in flowering plants. (3marks)

1. A certain plant was found to have 22 chromosomes in its calyx cells. State the number of chromosome present in: (2marks)
2. Egg cell
3. Endosperm cell
4. The diagram below shows an apparatus used during collection of specimen



1. Identify the apparatus (1mark)
2. What is the use of the apparatus named above (1 mark)

10. A DNA strand has the following base sequence G C C T A G A T C A C

What is the sequence of the:

1. Complementary DNA strand (1 mark)

1. m-RNA strand copied from this DNA strand (1 mark

11. Phagocytes, also called granulocytes or polymorphs are cells found in the blood where they ingest pathogens and cell debris

1. Why are they called polymorphs? (1 mark)

1. Name the cell organelle most abundant in phagocytes to enable them function effectively (1 mark)

12. a) State three evidence of organic evolution. (3marks)

b) Explain why continuous use of antibiotics results to resistance. (2marks)

13. State three biotic factors that could affect a zebra living in the Nakuru National Park. (3marks)

14. List three methods used to show energy flow through the ecosystem. (3 marks)

15. Name three organelles that would be abundantly present in secretory cells (3 marks)

16. Name the part of the seed whose growth brings about epigeal germination. (1 mark)

17. State three aspects of light that affect the rate of photosynthesis. (3 marks)

18. a) State two environmental problems that can be solved by studying biology. (2 marks)

b) State two characteristics of organisms that are easily observed in both animals and plants.   
 (2marks)

19. A student smeared the abdomen of a locust with Vaseline.

(a) What were the likely results after ten minutes? (1 mark)

(b) Account for the results obtained above. (2marks)

(c) When the locust blood was analysed it was found that the blood does not have blood pigments such as haemoglobin. Explain (2marks)

20. Name the causative agents of the following diseases:

(a) Cholera (1 mark)

(b) Malaria (1 mark)

21. Name the only epidermal cell in plants that contain chloroplast (1 mark)

22. Name two end products of the dark stage of photosynthesis. (2 marks)

23. Name the fins that prevent the following movements of fish during swimming (3marks)

a) Yawing

b) Pitching

c) Rolling

24. The scientific name of a bean is *Phaseolus vulgaris*. What do these names represent?

1. *Phaseolus*  (1 mark)
2. *vulgaris*  (1mark)

25.a)Name the process by which urea is formed in the liver (1mark)

b) Name one class of animals that excrete their nitrogenous waste product mainly in the form of uric acid. (1mark)

26. State two functions of sweat in the human body (2marks)

27. Name two vitamins which their absence in the diet may cause a dental disease called gingivitis (2marks)

28. State three reasons why *Drophila melanogaster* is preferred for genetic study. (3marks)

29. a) Explain what would happen to a plant cell if it is placed in a concentrated salt solution.   
 (3marks)

b) How can plasmolysis be reversed? (1mark)