**NAME...............................................................................CLASS..........................**

**INDEX NO.........................................SIGN...................... DATE........................**

**231/1**

**BIOLOGY**

**PAPER 1**

**OCTOBER 2021**

**TIME: 2 HOURS**

**AMUKURA PARISH EXAMINATION**

**JOINT EVALUATION TEST-2021**

**KENYA CERTIFICATE OF SECONDARY EDUCATION (K.C.S.E)**

**FORM FOUR.**

**Instructions**

* Write your name, class and admission number in the space provided above.
* Write the date of the examination and sign in the space provided above.
* Answer ***all*** the questions in the spaces provided.
* You may be *penalized* for wrong spelling especially technical terms.

**For Examiner’s Use Only**

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| --- | --- | --- |
| **Question** | **Maximum Score** | **Candidate’s Score** |
| 1-33 | 80 |  |

***This paper consists of 13 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing***

1. Below is an image of a biological vector. Use it to answer questions that follow.



(a) Identify the parasite transmitted into human blood by the organism. (1 mark)

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(b) Name the blood cells that are destroyed by the parasite in (a) above. (1 mark)

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(c) State one biological method used to eradicate the larvae of this organism. (1 mark)

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2. Give the structural adaptations of the following in an insect pollinated plant.

(a) Pollen grain. (1 mark)

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(b) Stigma. (1 mark)

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3. State the causative agents of the following diseases

(i) Tuberculosis. (1 mark)

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1. a) What do you understand by the term ecologically balanced ecosystem? (1mk)

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b) Give two reasons for loss of energy from one trophic level to another in a food web (2mks)

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5. Identify the following types of responses:

(a) Pollen tube growing towards the ovary (1 mark)

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(b) Maggots moving away from light. (1 mark)

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6. State two activities of the cell that are controlled by the nucleus. (2 marks)

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7. Distinguish between botany and zoology. (1 mark)

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8. The field of view of a light microscope appeared as shown below in diagram A and the diameter in A

was occupied by cells as shown in B.



 Calculate the length of one cell. (2 marks)

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9. State two importance of water in germination of seeds. (2 marks)

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10. Why is sexual reproduction advantageous in flowering in plants? (2 marks)

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11. Below is an illustration of an organism captured by students during a practical lesson.



(a) Identify two features that enable the organism to be placed in the phylum Arthropoda. (2 marks)

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(b) Explain why the organism will die when Vaseline is applied on its thorax. (1 mark)

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12. Name two properties of enzyme amylase. (2 marks)

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13. State the significance of natural selection. (2 marks)

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14. Explain why a plant shoot develops lateral branches when its tip is removed. (2 marks)

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15. Why is eating a lot of biscuits harmful to the teeth. (2 marks)

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16. a) Name the part of the chloroplast where each of the following activities take place.

i) Light stage…………………………………………………………………………………..(1mk)

ii) Dark stage………………………………………………………………………………….(1mk)

b) Name two types of cells in a leaf that carry out photosynthesis (2mks)

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17. State any three disorders due to Gene mutation in human beings (3 marks)

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19. (a) Explain one event of mitosis that restores the genetic constitution of an organism. (1 mark)

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(b) Identify the following types of cell division:

(i) Division of generative nucleus into male nuclei. (1 mark)

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(ii) Division of cells lining the seminiferous tubules. (1 mark)

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20. State two observable characteristics that show discontinuous variations in *Drosophila melanogaster*

(2 marks)

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21. Explain why athletes breathe quickly and deeply after a 100 meters sprint. (2 marks)

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(b)(i) What is the role of blood capillary? (1 mark)

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(ii) Explain why blood does not clot in undamaged blood vessels. (1 mark)

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23.(a) List one type of chromosomal aberrations. (1 mark)

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(a) State one advantage of polyploidy in modern farming. (1mark)

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24. Explain:

(a) Why insulin is not administered orally. (1 mark)

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(b) Why stomach wall is lined with mucus (1 mark)

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25.(a) what is homeostasis? (1 mark)

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(b) State two behavioral mechanisms used by snakes to increase their body temperature. (2 marks)

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26. Explain why only a small amount of food materials taken up by herbivores is passed on to secondary consumers. (2 marks)

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(a) Name the physiological process involved in the exchange of gases in the structure above. (1 mark)

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(b) Identify the substance in cell labeled w that has high affinity for gas X. (1 mark)

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(c) State the advantage of gas Y being transported in cells labeled W (1 mark)

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28. (a) Explain why when transplanting a young plant, it is advisable to remove some leaves. (2 marks)

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(b) Give one role of xylem vessels other than transport (1 mark)

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29. Study the diagram below and answer the question that follows:

(a) Name the kingdom from which the organism belongs to. (1 mark)

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(b) State the function of the structure labelled **C**. (1 mark)

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30. State two characteristics of a bony fish which enable it to reduce friction in water. (2 marks)

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31. (a) Identify the structural difference between the wing of a bird and the wing of an insect (1 mark) ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) Identify the type of evolution exhibited by the wings of birds and insects and state the name given to such structures. (2 marks)

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32. Name two characteristics that are controlled by the gene located on:

i) Y chromosomes (2mks)

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ii) X chromosomes (2mks)

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33. (a) what is the role of a pollen tube. (1 mark)

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(b) Identify the role of the following hormones in males:

(i) Follicle stimulating hormone. (1 mark)

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(ii) Testosterone. (1 mark)

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