**MURANGA EXTRA-COUNTY SCHOOLS JOINT EXAMS**

***Kenya Certificate of Secondary Education (K.C.S.E.)***

**FORM FOUR**

**END OF TERM TWO 2022**

**BIOLOGY 231/1**

**PAPER 1**

**TIME: 2 HOURS**

**NAME……………………….……………….…ADM NO………………..CLASS……………**

**DATE…………………………………………..SIGN…………………………………………**

**INSTRUCTIONS TO CANDIDATES:**

1. *Write your name and Index Number in the spaces provided.*
2. *Sign and write the date of examination in the spaces provided.*
3. *Answer* ***ALL*** *questions in the spaces provided.*
4. *Wrong spelling especially of technical terms will be penalized.*
5. *This paper consists of* ***7*** *printed pages. Ascertain that the paper has all the printed pages.*

**FOR EXAMINER’S USE ONLY**

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| **QUESTION** | **MAX. SCORE** | **CANDIDATE SCORE** |
| 1 – 31 | 80 |  |

1. A form one girl observed a bird laying eggs in a nest which later hatched into chicks. Name two characteristics of living things that she concluded from the observations (2marks)

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2. Name the stage in meiosis where chromosomes number is reduced by a half (1mark)

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3. State two characteristics of organisms that belong to the same species (2marks)

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4. a) Live specimens should always be returned to their habitats whenever possible. What is the biological importance of this practice? (1mark)

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b) Why is a dissecting pin important in biological experiments? (1mark)

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5. Mutations form basis for variations. Name the type of mutation that cause the following human disorders

(a) Albinism (2marks)

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(b) Down syndrome

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6. a) During a field trip a plant that had flowers drew the attention of a student. Name the division of the plant.

…………………………………………………………………………………………………… (1mark)

b) Students observed an animal with the following features

* Dorsoventrally flattened body
* One pair of legs per segment
* Poison claws on the head
1. Name the class to which the animal belongs. (1mark)

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1. State the mode of feeding of the animal (1mark)

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7. Study the process below and answer the questions that follow

Glucose process P Pyruvic acid + Energy.

1. Name the process P (1mark)

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1. Name the part of a cell in which the process named in (a) above occurs (1mark)

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8. Account for the following observations.

a) When fish is taken out of water it dies (2marks)

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1. The palisade cells are closely packed together (1mark)

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9. a) Give the significance of the following features of the red blood cells.

 Being biconcave in shape. (1mark)

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b) Lacking mitochondria ( 1mark)

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10) A person fell from the third floor of a building and had part of his brain damaged. Name the part of the brain damaged if the person suffers from the following

a) Loss of speech (1mark)

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b) Inability to regulate body temperature (1mark)

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c) Lack of balance (1mark)

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11. In body cells of all organisms chromosomes occur in pairs. Members of each pair have a characteristic length and shape.

a) What is the scientific name of such a chromosome pair? (1mark)

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b) What name is given to a cell that contains one member of each pair of chromosomes? (1mark)

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c) Name the part in humans where meiosis takes place (2marks)

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12. Small birds like the European robin puff up (swell up) their feathers during winter. Explain the significance of the behavioral response. (3marks)

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13. Name the most appropriate tool that biology students can use for collecting (2marks)

i) Crawling animals

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ii) Stinging organisms

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14. During a microscopy class a student was unable to see the field of view. State two possible adjustments she needed to make to ensure that the field of view became visible. (2marks)

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15. Name the apparatures used to measure the following abiotic factors. (2marks)

i) Penetration of light in water

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ii) Light intensity

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16. A lion is an exclusive carnivore. State two dental adaptations it has to its mode of feeding (2marks)

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17. a) State an example of structures in animals whose development demonstrates adaptive radiation (1mark)

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b) Treatment of malaria is still a challenge in the world despite the invention of many antimalarial drugs. Explain. (3marks)

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18. Name two processes that brings about the translocation of manufactured food (2marks)

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19. Name the disorder of the blood described by the following symptoms (2 marks)

a) In ability of the blood to clot.

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b) Crescent shaped red blood cells with abnormal haemoglobin.

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20. Explain how a nerve impulse is passed across a synapse (3marks)

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21.a) A large crocodile can survive on 20kg meat for a year. A small sized lion cannot. Explain (3marks)

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b) Name the part of the body that helps in insulation in the following: (2marks)

i) Birds

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ii) Mammals

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22. Name **two** types of valves in the heart. (2 marks)

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23. Sometimes when one stands up very quickly after a long period of sitting, she may feel faint or dizzy. Explain. (2 marks)

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24. The diagram below represents a bone of a mammal



(a) Identify the bone. (1 mark)

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(b) Name the part marked **X**. (1 mark)

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(c) Name the bone that articulates at the part labelled **F**. (1 mark)

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(d) State two ways in which the bone is adapted to its function. (2 marks)

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25. a) Under which of the following magnifications would one see a larger part of the specimen X 40 or X 500? Give a reason. (2 marks)

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b) State how magnification is worked out in a light microscope (1mark)

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26. State two characteristics of mammals that are not externally visible (2marks)

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27. State three uses of digested food in the bodies of animals (3 marks)

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28. Which cell organelle is present in large numbers in cells that produce Insulin? Give a reason for your answer (2marks)

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29. Give three advantages of fossil records (3marks)

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30. What is the significance of diffusion to plant pollination? (1mark)

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31.a) Explain why it is not advisable to put a patient on a drip of distilled water for rehydration (3marks)

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b) Name the physiological process by which water molecules move from one cell to the other (1mark)

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