**NAME…………………………..……………….. DATE …………………………**

**INDEX NO. ……….……….…………………...…..… SIGNATURE ……………..…………..**

**231/1**

**BIOLOGY**

**PAPER 1**

**(THEORY)**

**TIME: 2 HOURS**

**MBOONI EAST SUB - COUNTY FORM FOUR JOINT EVALUATION TEST, 2014**

*Kenya Certificate of Secondary Education*

**231/1**

**BIOLOGY**

**PAPER 1**

**(THEORY)**

**JULY /AUGUST 2014**

**TIME: 2 HOURS**

**INSTRUCTIONS TO CANDIDATES.**

* Write your name and index number in spaces provided above.
* Sign and write the date.
* Answer **ALL** the questions in the spaces provided.
* Answers must be written in the spaces provided in the question paper. Additional pages must not be inserted.
* This paper consists of 8 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

**FOR EXAMINER’S USE ONLY.**

|  |  |  |
| --- | --- | --- |
| **Questions** | **Maximum score** | **Candidate’s score** |
| 1 - 27 | 80 |  |

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231/1

Biology Paper 1

1. Insects’ blood is noted to lack a respiratory pigment. Explain (1 mark)

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1. State the function of the following parts of a nephron.
2. Loop of Henle (1 mark)

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1. Distal convoluted tubule. (1 mark)

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1. Most terrestrial plants do not grow well in water logged soils. Give a reason for this (1mark)

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1. The diagrams below show a pair of homologous chromosomes. Study them and answer the questions that follow.
2. State the phenomenon shown above (1mark)

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(ii) What is the genetic significance of the phenomenon above? (2 marks)

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1. Give two destinations of food translocated from the leaves of plants. (2 marks)

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1. Name the organelle that is likely to be found in abundance in:
2. An enzyme secreting cell.

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1. Cells producing lipid related secretions.

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1. Areas where the cells have raptured

………………………………………………………………………………………………………………………

1. A small boy remarked that his dog looks larger on cold days than on hot days. Give a biological explanation for this. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………….………………………..………………………….

1. The table below shows the percentage composition of carbon (IV) oxide and oxygen in inhaled and exhaled air.

|  |  |  |
| --- | --- | --- |
| Gases | Inhaled air | Exhaled air |
| Oxygen | 20 % | 17% |
| Carbon (IV) oxide | 0.04% | 4.0% |

Explain the differences in percentage of the two gases in inhaled and exhaled air.

1. Oxygen (2 marks)

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1. Carbon (IV) oxide (2 marks)

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1. The diagram below represents a pyramid of biomass derived from a certain ecosystem.

Consumer

Producer

1. Suggest the type of ecosystem from which the pyramid was derived (1 mark)

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1. State the significance of short food chains in an ecosystem. (1 mark)

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1. State two features of neurones that increase the rate of impulse transmission (2 marks)

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1. Distinguish precisely between diabetes mellitus and diabetes insipidus ( 2 marks)

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1. The set up below shows apparatus to demonstrate a certain biological process



1. What biological process was being investigated in the experiment (1 mark)

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1. Write down a word equation that represents the reaction above. (1 mark)

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1. In the above set up, why was it important to boil and cool glucose before adding yeast? (1 mark)

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1. Explain how the following occur during gene mutation.
2. Substitution ( 2marks)

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1. Insertion (2marks)

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1. (a) What are meristems? ( 1mark)

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(b) (i) what is the role of cork – cambium in secondary growth? (1mark)

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 ii) Name the meristem that is responsible for increase in length of stems (1mark)

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1. State two functions of the spleen (2 marks)

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1. Name the excretory products eliminated by the following animals.
2. Tilapia. (1 mark)

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1. Chicken. (1mark)

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1. State the functions of the following parts of the human ear. (1mark)
2. Ossicles (1mark)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Pinna (1mark)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Name the causative organism of the following diseases.
2. Malaria (1mark)

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1. Bilharzia (1mark)

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1. Identify the part of light microscope which serve each of the functions described below
2. Making rough focus ( 1mark)

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1. Reflecting light from the source (1 mark)

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1. State two characteristics of aerenchyma tissue. (2marks)

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1. What is the significance of transpiration in plants? (3marks)

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1. State two ways in which xylem vessels are adapted to their functions. ( 2marks)

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1. Distinguish between convergent and divergent evolution (1mark)

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1. State the characteristics that distinguish the following organisms into their respective classes (3 marks)

 Millipedes,spider and tsetse fly.

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1. How do identical twins and fraternal twins arise?
2. Identical twins (2 marks)

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1. Fraternal twins. (2 marks)

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1. The diagram below illustrates part of a nephron from a mammalian kidney.
2. Name the fluid found in the part labeled Q. (1 mark)

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1. Identify the process responsible for the formation of the fluid named in (a) above (1mark)

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1. Which two hormones exert their effect in the nephron? (2 marks)

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1. The diagram below shows a tip of a plant coleoptiles with light coming towards it from one side.



1. How would the plant respond to light? (1 mark)

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1. Give the name of such a response (1 mark)

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1. What is the advantage of plants responding in this way? (2marks)

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1. The experiment illustrated below was set up to investigate a certain physiological process using a raw tuber.



1. Suggest a possible physiological process that was being investigated. (1 mark)

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1. Explain the results obtained in the above experiment after a few hours (2 marks)

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1. State the observations that would have been made if the experiment was repeated using boiled potato.

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1. (a) Give two functions of blood as a tissue. (2 marks)

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1. The figures below illustrate specialized cells in an animal body.
2. Identify the cells M and N (2 marks)

M

………………………………………………………………………………………………………..…….

N

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1. State the structural differences between M and N (2marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Which of the above specialized cells is found in the gut? (1mark)

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