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

**231/1** Candidate’s Signature …………..……………

**BIOLOGY** Date: …………………………

**PAPER 1**

**THEORY**

**JULY/AUGUST 2014**

**TIME: 2 HOURS**

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

**231/1**

**Biology**

**Paper 1**

**2 hours**

**INSTRUCTIONS TO CANDIDATES**

* Write your **name** and **indexnumber** in the spaces provided above
* **Sign** and write the **date** of examination in the spaces provided.
* Answer ***all*** the questions in the spaces provided.

**For Examiners Use Only**

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

*This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*

***Answer ALL the questions in the spaces provided.***

1. State the name given to the study of (2mks)
2. the blood

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

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

1. classification of living organisms.

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

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

1. (a) Name the products of complete hydrolysis of sucrose. (1mk)

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

1. (b) What happens to these products named in (a) above, when they are excess in the

body of man. (2mks)

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

3. (a) State the roles of light in plant nutrition. (2mks)

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

(b) Give a reason why glucose formed at the end of photosynthesis is converted at once

into starch. (1mk)

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

1. (i) What is respiration? (1mk)

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

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

(ii) State any **two** importance of respiration. (2mks)

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

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

1. (a) State the formula for calculating linear magnification of a specimen when using a hand lens.

(1mk)

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

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

(b) Give **one** functional adavantgae of use of the following microscopes. (2mks)

(i) Light Microscope

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

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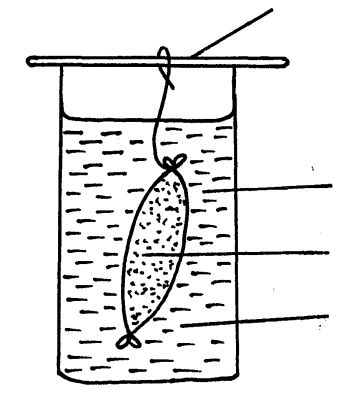
(ii) Electron Microscope.

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

1. An investigation was set up as shown in the diagram below.

**Glass rod**



**Visking tubing**

**Starch suspension**

**Iodine solution**

After 30 minutes, starch suspension had turned blue-black while iodine solution retained its colour.

1. Name the physiological process that was being investigated in the experiment. (1mk)

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

1. Account for the results observed after 30 minutes. (3mks)

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

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

1. a)(i) Name the bacteria found in the root nodules of leguminous plants. (1mk)

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

(ii)What is the nutritional relationship between this bacteria and the leguminous plant. (1mk)

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

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

1. (a) Distinguish between homodonts and heterodonts. (1mk)

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

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

(b)A certain mammal has no incisors, no canines, 6 premolars and 6 molars in the upper jaw.

In the lower jaw, there are 6 incisors, 2 canines, 6 premolars and 6 molars.

1. Write down the dental formular of this mammal . (1mk)

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

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

1. What is the mode of nutrition of this mammal? ( 1mk)

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

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

1. (a) (i) Name the blood vessel that supplies the cardiac muscles with its requirements. (1mk)

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

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

1. State the corgenical defect of the above blood vessel resulting from prolonged large intake of cholesterol in the blood. (1mk)

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

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

(b) What is the importance of the thicker muscular wall of the left ventricle of a mammalian heart?

(2mks)

…………………………………………………………………………………………………

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

1. (a) (i) Name the respiratory surface in insects. (1mk)

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

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

(ii)State any **one** feature that adapts the structured named in a(i) above to its function. (1mk)

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

1. Why are the fish gills highly vascularized? (1mk)

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

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

1. a) (i) what would happen if a person secreted lee A.D.H? (1mk)

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

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

(ii) Name the condition described in a(i) above. (1mk)

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

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

(b)What is the role of the loop of Henle in homeostasis? (1mk)

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

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

1. (a) Name the products of anaerobic respiration in plants. (1mk)

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

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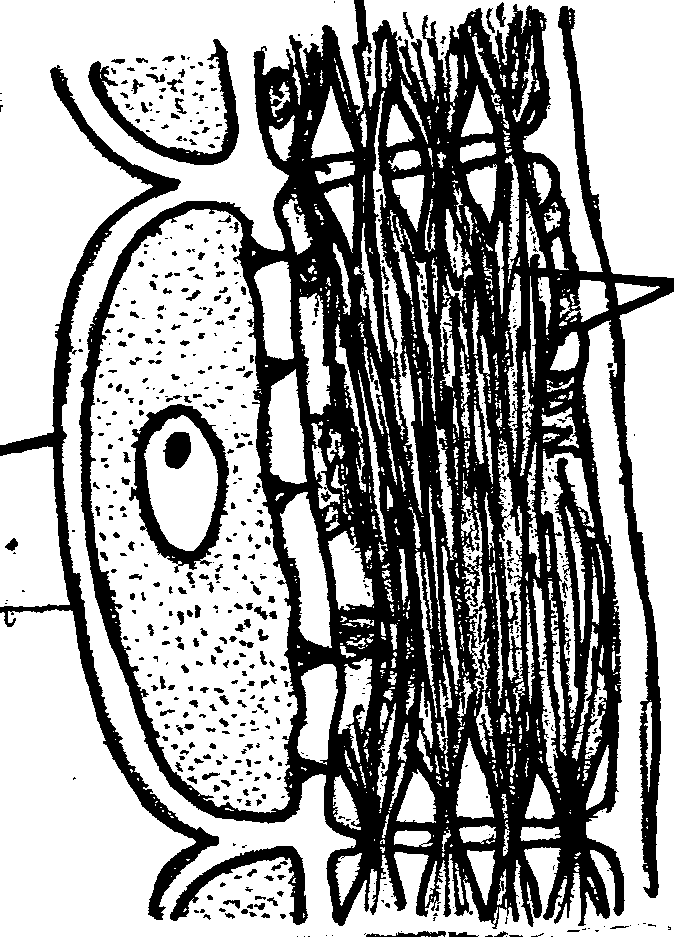
(b)Give any **two** economic importances of the products named in (a) above. (2mks)

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

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

1. The diagram below illustrate part of phloem tissue.

**X**



**Y**

**Z**

1. Name the parts labeled. (2mks)

**X**…………………………………………………………

**Y**…………………………………………………………

(b)State the function of the part labeled **Z** (1mk)

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

1. State **two** roles of water in germination? (2mks)

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1. (a) State any **one** role of the pollen tube during fertilization. (1mk)

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

1. A female frog lays many eggs, spaced out along jelly – like straw.

State **two** importance of this. (2mks)

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

1. The following charts illustrate the quantity of urine passed out by four mammals of different species in different habitats.

Quantity of Urine

**C**

**B**

**A**

Animals

1. Name the forms in which the following organisms are likely to excrete their nitrogenous wastes.

(2mks)

Animal **B**

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

Animal **C**

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

1. Give **two** structural modification of the nephron of animal B that enables it to survive in its habitat. (2mks)

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

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

1. After an ecological study of nutritional relationships in an ecosystem, a student constructed the following food web.

Large bird

mussels

algae

Zooplanton

Small Fish

Bird K

Bird L

Bird J

1. Name the ecosystem in which the ecological study was done. (1mk)

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

1. State **one** short term effect of the eradication of all mussles from this ecosystem. (1mk)

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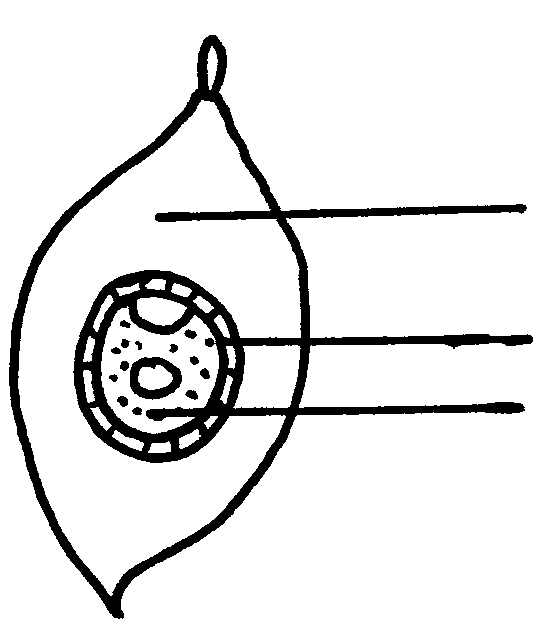
1. Some organisms which play a role in the ecosystem were not included.

Name **one** of them. (1mk)

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

1. The diagram below represents the vertical section of a fruit.



**Fibrous Mesocarp**

**Hard waterproof endocarp**

**Endosperm**

1. Suggest the possible agent of dispersal of this fruit. (1mk)

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

1. Explain **two** observable features that adapt the fruit to its mode of dispersal.

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

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

1. State **one** function of each of the following hormones. (3mks)
2. Follicle stimulating hormone

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

1. Oxytocin

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

1. Oestrogen

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

1. State **two** advantages of natural selection. (2mks)

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

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

1. (a) What are alleles? (1mk)

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

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

1. Stateany **two** advantages of hybrid vigour. (2mks)

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

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

1. What is meant by the term vestigial structures? (1mk)

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1. Name the type of evolution illustrated by (3mks)

(i) Hind limbs of birds

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

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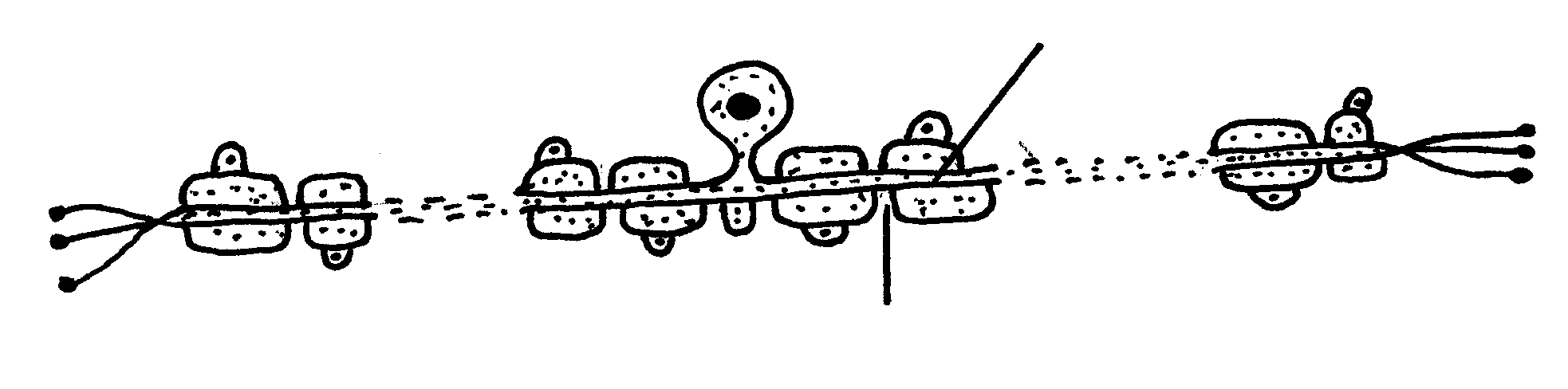
(ii)Wings of birds and insects

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

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

1. The diagram below illustrate a neurne

**Axon**



**Node of ranvier**

1. Name the neurone drawn above. (1mk)

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

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

1. (i) What is the function of the neurone named in (a) above? (1mk)

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

(ii)What is the role of the node of ranvier? (1mk)

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

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

1. (a) Distinguish between a hinge-joint and a ball and socket joint. (1mk)

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

(b)(i) Name the cartilage found between the bones of the vertebral column. (1mk)

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

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

(ii) State the function of the cartilage named in b.(i) above. (1mk)

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

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

1. In an experiment, it was observed that when termites are exposed to light, they move to darker areas.

(a)Name the type of response exhibited by the termites. (1mk)

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

(b) What are survival values of the type of response exhibited by the termites? (2mks)

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

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

26. Oil can be applied on stagnant water to control the spread of malaria.

(a) How does this practice control the spread of malaria? (1mk)

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

(b) Give a reason why this practice should be discouraged. (1mk)

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1. Give three reasons for the loss of energy from ne trophic level to the next in a food chain. (3mks)

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