

NAME.....CLASS.....

ADM NO.....SIGN..... DATE.....

231/1  
 BIOLOGY  
 PAPER 1  
 AUGUST 2022  
 TIME: 2 HOURS

## SUKELLEMO EXAMINATION

### JOINT EVALUATION TEST-2022

#### 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

Question	Maximum Score	Candidate's Score
1-23	80	

*This paper consists of 11 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing*

1. (a) Name two branches of Biology that an oncologist needs to study in detail. (2 marks)

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b)Some form one students wanted to collect the following animals for study in the laboratory.

State the **suitable** apparatus they should use.

i) Housefly (1 mark)

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ii) Scorpion (1 mark)

.....

2. A group of students were walking in the forest and they came across two organisms A and B showing the following characteristics

A	B
- two pairs of walking legs per segment	- one pair of walking legs per segment
- one pair of antennae	- one pair of antennae
- jointed appendages	- jointed appendages

State the class to which each organism belongs (2 marks)

A-.....

B-.....

3. Name the organelle responsible for; (4marks)

a) i. Detoxification.

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ii. Synthesis of Adenosine triphosphate molecules.

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iii. Synthesis of ribosomes

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iii. Transport of packaged glycoproteins

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b) Give reasons for carrying out the following procedures during preparation of temporary wet mounts of plant tissues. (2marks)

i. Making thin sections.

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ii. Placing a cover slip over the plant section.

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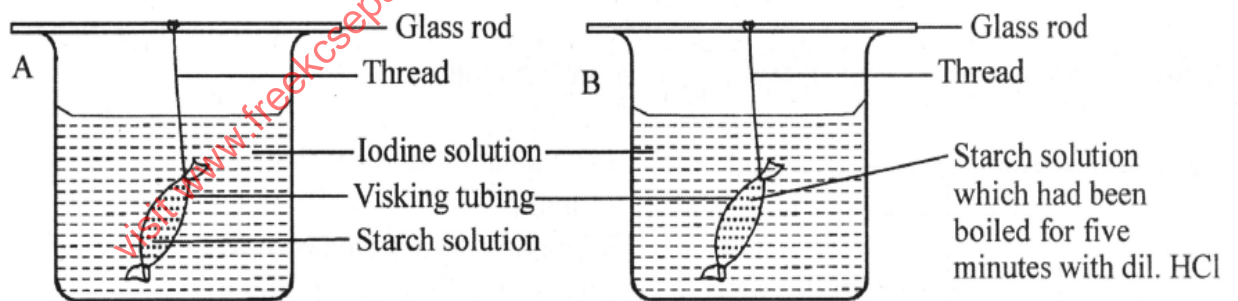
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4. Write down the part of microscope that plays the following role. (2 marks)

Role played	Part of microscope
Movement of stage through large distance	
Attachment of objective lenses	

5. A group of students set up an experiment as shown below. The experimental setups were left for 20 minutes.



The observations after 20 minutes were as shown in the table below

Setup	Observations	
	Inside tubing	Outside tubing
A	Blue black colour	Colour of iodine
B	Colour of iodine	Colour of iodine

(a) State the process being demonstrated in this experiment. (1mark)

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(b) Why was there no blue black colour inside the visking tubing in setup B? (2marks)

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6. (a) Explain the role of the liver in digestion process (3 mark)

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b) State the roles of the mouth in digestion (2 marks)

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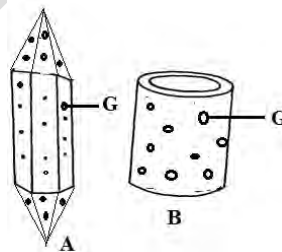
(a) Blood group AB is a universal recipient. Explain. (1mark)

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(b) Describe the characteristics of blood group AB<sup>+ve</sup>. (3marks)

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.....

7. The diagrams below show two conducting elements of the xylem tissue



(a) What makes the cellulose side walls of both A and B able to prevent collapsing?

(1mark)

.....

(b) Name the structures labeled G and state their function. (2marks)

Name-

.....

Function-

.....

(c) What property makes **B** to be more efficient in function than A? (1mark)

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8. (a) State **two** adaptations of the alveolus to its functions. (2marks)

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(b) Suggest a reason for asthmatic patient producing a wheezing sound during breathing? (1mark)

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(c) What is the significance of the cartilage found in the human trachea being incomplete (c- shaped rings) (1mark)

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10. (a) Guard cells are specialized epidermal cells. State **two** structural features which suit them to their function. (2marks)

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11. (a) Distinguish between respiratory quotient and oxygen debt. (2 marks)

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(b) Name the site where glycolysis occurs in the cell. (1 mark)

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12. A certain organ **K** was surgically removed from a rat, later drastic increase in glucose level in the blood was reported but when substance **Q** was injected into the animal the whole process was reversed.

Identify:

(i) Organ **K** ..... (1mark)

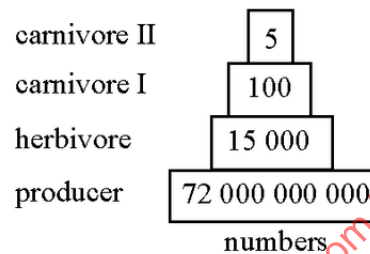
(ii) Substance **Q**..... (1mark)

(iii) Other than substance **Q**, name one other substance secreted by organ **K** (1mark)

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13. Study the diagram below and answer the questions that follow (2 marks)

a) Identify the diagram (1 mark)

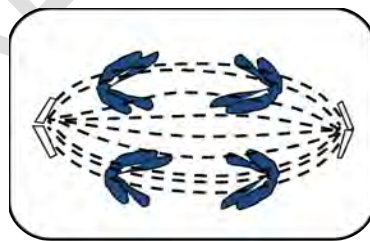


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b) Give two reasons for the shape of the diagram shown. (2 marks)

.....  
.....  
.....

14. The diagram below represents a stage during cell division.



a) Name the stage of cell division. (1mark)

.....  
.....  
.....

b) Give two reasons for your answer in a) above. (2marks)

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.....  
.....

c) State the significance of this stage of cell division in living organisms. (1mark)

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15. State **two** differences between an individual who has sickle cell anaemia and another one who has sickle cell trait. (2marks)

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16. a) What is the basic unit of a DNA molecule (1mark)

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b) Name the chemical components of the unit you have named in (a) above. (3marks)

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.....

17. State **two** possible ways of establishing the genotype of an organism whose genotype is unknown. (2marks)

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18. (a) Evolution is an ongoing process and is still going on even today. **State two** pieces of evidence which suggests that evolution is still taking place. (2marks)

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(b) **Explain** how the following factors influence natural selection. (2marks)

(i) Predators

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.....  
.....

(ii) Diseases

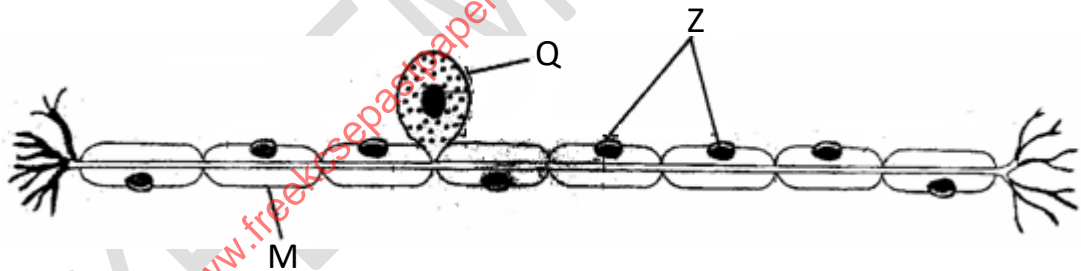
(2mark)

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.....  
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(c) All insects are believed to have arisen from a common ancestor. However, modern insects differ widely in a variety of ways such as in the adaptation of their mouthparts for different modes of feeding. What kind of evolution is this? (1mark)

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19. The diagram **below** represents a sensory cell.



(a) Identify with a reason the type of neurone above. (1 mark)

.....

Reason: (1 mark)

.....  
.....

(b) Name parts labeled. (2 marks)

Q .....

Z .....



20.

(i) Name the type of response exhibited by the growth of pollen tube towards the ovary in a flowering plant. (1mark)

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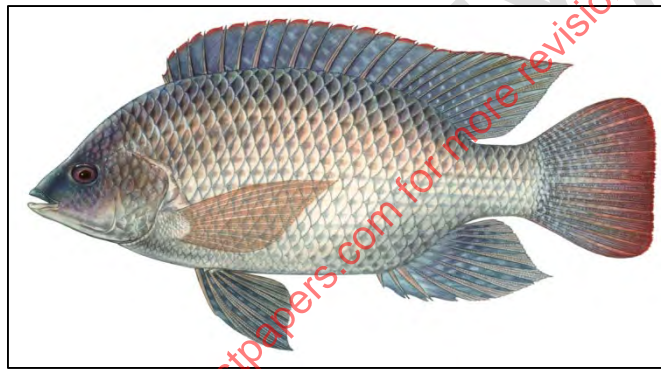
(ii) State **two** importance of response named in 26 (i) above to the plants. (2marks)

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21. State the significance of etiolation in plants growing in the dark (1 mark)

.....

22. You are provided with a photograph below. Examine it carefully.



(a) State the **observable** features that adapt the organism to: Forward movement. (3marks)

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.....

.....

23. (a) State **two** distinctive characteristics of members of kingdom Fungi (2 marks)

.....

.....

(b) In terms of hearing, name the structures that distinguish the organisms of the following groups:

Pisces: ..... (1 mark)

Amphibia: ..... (1 mark)