

Name..... Index No.....

231/1

BIOLOGY
(Theory)S

Date.....

Sign.....

2 hours

SUKELEMO JOINT EXAMINATIONS–2023

(Kenya Certificate of Secondary Education)

Instructions

- Write your Name and Index Number in the spaces provided above.
- Write the date of the examination in the space provided above.
- Answer all the questions in the spaces provided.

For Examiner's use only

Question	Maximum Score	Candidate's Score
1-29	80	

***This paper consists of 9 printed pages.
Candidates should check the question paper to ascertain that all the pages are printed
as indicated and no questions are missing.***

1. Students at Ikumbi high school observed that when sodium chloride was poured onto grass, the grass dried up. Explain this observation. (2mks)

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2. Explain why food is stored in an insoluble form in the cells of living things. (2mks)

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3. (a) Name the blood vessel that connects arteries to vein. (1mk)

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(b) Explain three ways in which the vessel named in (a) above are adapted to carry out their functions. (3mks)

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4. How does hot water of about 35⁰C act as a pollutant when it is discharged from industries into rivers? (2mks)

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5. Explain how the following factors hinder self pollination in plants:

(i) Protogyny (1mk)

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(ii) Dioecism (1mk)

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6. Name the causative agents of the following diseases in humans. (2mks)

(a). Amoebic dysentery.

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(b). Candidiasis.

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7. a) Define the term immunity. (1mk)

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b) Distinguish between natural immunity and acquired immunity. (1mk)

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c) Identify one immunizable disease in Kenya. (1mk)

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8. What happens to glucose synthesized during photosynthesis.

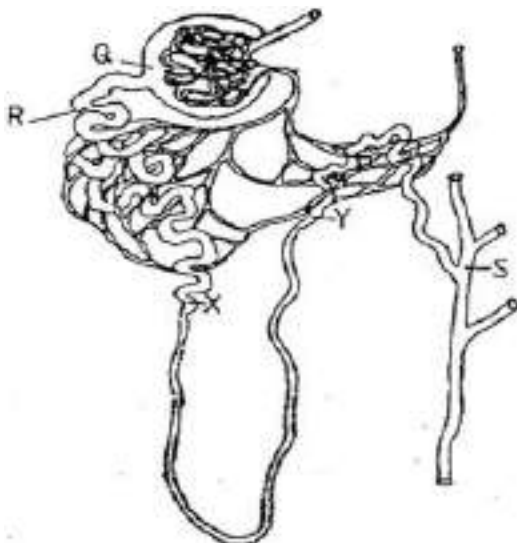
(2mks).

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9. Give two advantages of polyploidy in plants. (2mks).

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10. The diagram below illustrates part of a nephron from a mammalian kidney.



a) Name the fluid found in the part labeled Q. (1mk)

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

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c) Which two hormones exert their effect in the nephron? (2mks)

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11. Describe double fertilization in flowering plants. (4mks)

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12. Explain how blood sugar level is maintained constant in human blood (3mks)

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13. State two unique characteristics of members of the class crustacea . (2mks)

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14. How is mammalian skin adapted for excretion (3mks)

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15. The paddles of whales and the fins of fish adapt these organisms to aquatic habitats.

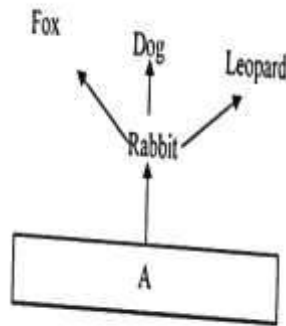
a) Name the evolutionary process that may have given rise to these structures. (1mk)

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b) What is the name given to such structures? (1mk)

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16. The diagram below show part of a food relationship in an ecosystem



a. Name the food relationship shown in the diagram (1mk)

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b. Name the trophic level occupied by organism A (1mk)

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c. What is the main source of energy in the ecosystem shown in the diagram above (1mk)

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17.a) Name a protein and vitamin involved in blood clotting.

i) Protein. (1mk)

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ii) Vitamin (1mk)

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(b). Explain why blood from a donor whose blood group is A cannot be transfused into the recipient whose blood group is B. (2mks)

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18.(a). State two effects of Gibberellins on shoots of plants. (2mks)

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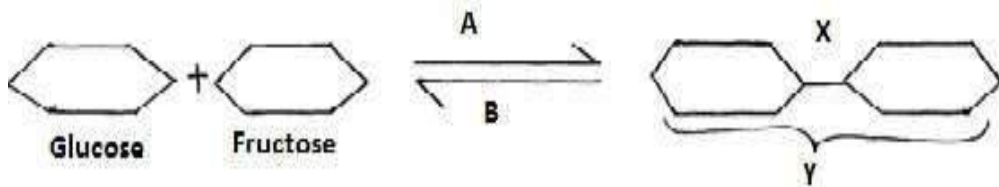
(b). Account for loss in dry weight of cotyledons in a germinating bean seed. (1mk).

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19. Explain why a pregnant woman excretes less urea compared to a woman who is non pregnant. (2mks)

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20. Study the reaction below and answer the questions that follow.



a) What biological processes are represented by A and B? (2mks)

A

B

b) Identify the product Y. (1mk)

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c) State the bond represented by X. (1mk)

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21. Explain what happens during the light stage of photosynthesis. (3mks)

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22. State two characteristics of aerenchyma tissue. (2mks).

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23. (a). Name the substance that accumulates in muscles when respiration occurs with insufficient oxygen. (1mk).

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(b). Give the end products of anaerobic respiration in plants. (2mks).

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24. What is the importance of carrying out the following procedures when preparing temporary slides in the laboratory? (3mks).

(a). Adding water to the specimen.

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(b). Staining the specimen.

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(c). Using a sharp blade to make sections.

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25. In an experiment the shoot tip of a young tomato plant was decapitated as shown in the diagram below



- a. State the expected results after 2 weeks (1mk)
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- b. Give a reason for your answer in (a) above (2mks)
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26. Name two internal factors that necessary for seed germination. (2mks)
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27. Certain animals have the following dental formula

A; i 3/3, c 1/1, pm 4/4, m 2/3 B. i 0/3, c 0/1, pm 2/2, m 3/3

- i) What is the most likely mode of feeding for animals A and B. (2mks)
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- ii) Give a reason for your answer in (i) above. (1mk)
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28. Name the components of a DNA molecule. (3mks)
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29. A horse has 64 chromosomes in its somatic cells while a donkey has 62. A mule is produced produced when a horse mates with a donkey.

- a. Work out the number of chromosomes in a mule, show your working. (2mks)

- b. Why is a mule sterile (1mk)
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