BSJE JOINT EXAMINATION

- 2024 -

Kenya Certificate of Secondary Education

231/1 Biology (Theory) Paper 1

July, 2024 TIME: 2 Hours

Name: ……..…… Admission No: ……

Stream: …….. Signature: …….....

School: ……

Instructions

a) *Write your name and admission number in the spaces provided above.*
b) *Sign and write the date of the examination in the spaces provided above.*
c) *Answer all questions in the spaces provided.*
d) ***This paper consists of 10 printed pages. Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing***
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FOR EXAMINER'S USE ONLY.

Question	Maximum score	Candidate's score
1-28	80	

Answer all the questions in the spaces provided

1. Name the **two** main components of an ecosystem (2 marks)

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2. a) Name an element which is present in proteins but not in carbohydrates. (1 mark)

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b) State **two** functions of proteins in the human body (2 marks)

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3. State the importance of a dichotomous key in the study of biology? (1 mark)

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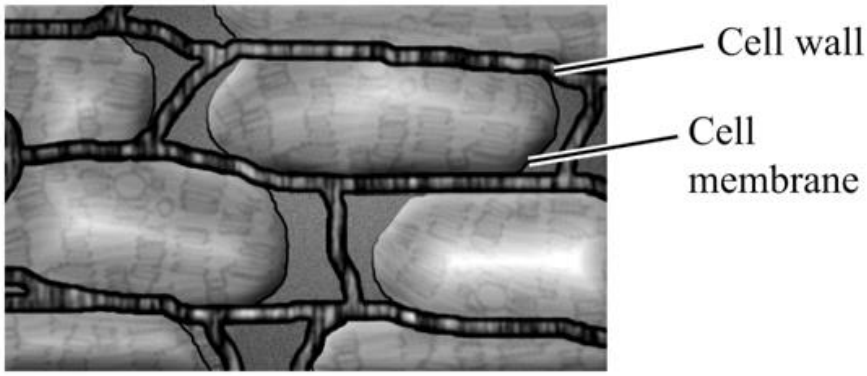
4. The photograph below shows cells from potato chips placed in saturated salt solution.



Explain the appearance of these cells. (3 marks)

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5. State the function of the following parts of the kidney nephron: (2 marks)

(i) Proximal convoluted tubule

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(ii) Loop of Henle

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6. a) Give the differences between the following structures in wind and insect pollinated flowers.

(3 marks)

Structure	**Wind pollinated flower**	**Insect pollinated flower**
Anther		
Pollen grains		
Stigma		

b) What is the importance of cross pollination? (1 mark)

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7. Explain **three** ways in which the alveolus of the human lung is adapted to its function. (3marks)

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8. State **one** way certain plants excrete the following metabolic wastes: (2marks)

a) Excess water

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b) Caffeine

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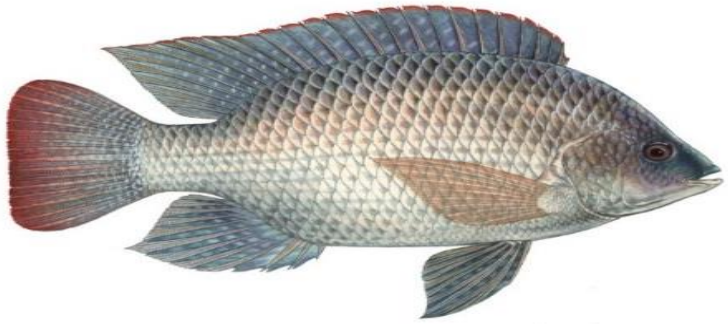
9. The diagram below illustrates an organism commonly found in fresh water lakes. Study it and answer the questions that follow.



a) Name the class to which the organism belongs (1 mark)

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b) Using observable features on the diagram, give **two** reasons for your answer in (a) above.

(2 marks)

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10. a) Name **two** diseases babies should be immunized against soon after birth. (2 marks)

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b) State **two** importance of blood clotting after an injury. (2 marks)

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11. Explain the role of a producer in a food chain (1 mark)

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12. State **two** functions of aerenchyma tissue in aquatic plants (2 marks)

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13. What changes take place during exhalation in the following parts of a mammalian breathing system?

i) Intercostal muscles (1 mark)

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ii) Diaphragm (1 mark)

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14. State **three** differences between mitosis and meiosis (3marks)

Mitosis	**Meiosis**
i)	
ii)	

iii)	

15. Name **two** plant processes in which diffusion plays an important role. (2marks)

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16. Describe how you would estimate the population of grasshoppers in your school Football field (4 marks)

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17. a) In what form is energy stored in muscles? (1 mark)

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b) Write a word equation for anaerobic respiration in plants (1 mark)

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c) Give a reason why fats are respired less often in the human body yet they yield higher amounts of energy per unit weight than carbohydrates. (1 mark)

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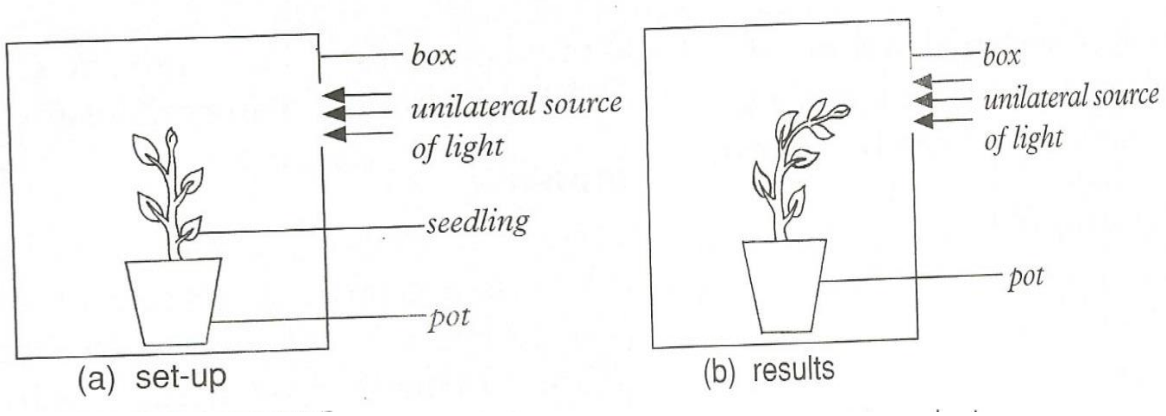
18. An experiment was set up to investigate a certain aspect of response in plants. A seedling was exposed to unidirectional light as shown in figure (a) below. After 48 hours, the result of the set up was as shown in figure (b).



i) Name the response exhibited by the seedling (1 mark)

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ii) Explain the growth response shown by the seedling. (2 marks)

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19. a) In a certain bird species, the spotted pattern of feathers is controlled by a dominant gene **B**, and the plain pattern by a recessive gene **b**. If a heterozygous spotted bird were crossed with a plain feathered bird, work out the genotypes of the F1 generation. (4 marks)

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b) Give an example of a genetic disorder in human caused by:

i) Non-disjunction of chromosomes. (1 mark)

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ii) Gene mutation (1 mark)

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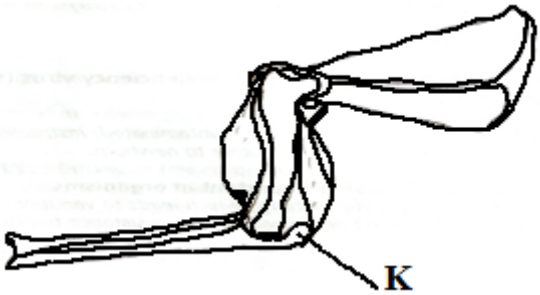
20. State **two** differences between the composition of blood entering the liver via hepatic portal vein and blood leaving the liver to the heart via hepatic vein. (2 marks)

Blood entering the liver	**Blood leaving the liver**
i)	
ii)	

21. The diagram below shows the arrangement of bones and muscles in a human arm.



a) Name part **K** of a bone at the elbow and state it`s significance (2 marks)

Name……

Significance……

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b) Explain how the muscles shown in the diagram work to extend the arm at the elbow. (2 marks)

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22. a) Apart from temperature, list **two** other factors that affect active transport in plant roots. (2 marks)

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b) Explain how temperature affects active transport in plant roots (2 marks)

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23. a) Define the term 'fossil'. (1 mark)

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b) Name the type of evolution that lead to formation of homologous structures? (1 mark)

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c) Give **two** examples which offer evidence of natural selection in action. (2 marks)

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24. Explain the role of the following parts of the mammalian skin. (2 marks)

i) Malpighian layer

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ii) Sweat gland

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25. a) Name the tissue responsible for secondary growth in dicotyledonous plants. (1 mark)

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b) List the stages of metamorphosis in a cockroach (1 mark)

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26. a) A student looks at a clock at the far end of a classroom and then looks at a diagram on her examination paper. State the changes that would take place in her eyes so that she can focus the image of the diagram on the retina. (2 marks)

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b) Name the part of the human brain responsible for body balance and posture (1 mark)

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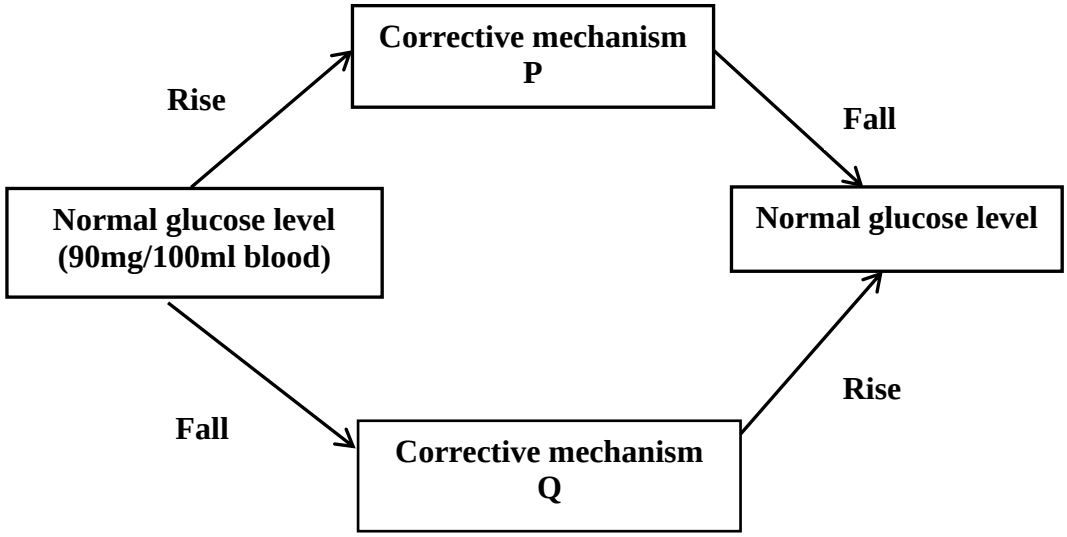
27. The diagram below shows how blood glucose level is regulated in the mammalian body.



a) Explain what happens during corrective mechanism **P.** (3 marks)

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b) Name the hormone involved in corrective mechanism **Q.** (1 mark)

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28. State **two** importance of support in plants. (2 marks)

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