

NAME.....CLASS.....SET.....

MASENO SCHOOL
Kenya Certificate of Secondary Education 2021

BIOLOGY – Paper 1

DEC. 2021 - 2 hours

THE MASENO SCHOOL MOCK

Instructions to candidates

- a. Write your name and class in the space provided above*
 - b. Sign and write the date of the examination in the spaces provided above*
 - c. Answer all the questions in the spaces provided*
 - d. This paper consists of 10 printed pages*
 - e. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.*
 - f. Candidate should answer all the questions in English*
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FOR EXAMINERS USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1- 32	80	

1. Identify the following. (2mrks)

i. Type of movement in cells.

.....

ii. Arrangement of leaves on a plant.

.....

2.

i. Explain how adequate water supply increases the rate of glucose formation in plants. (1mrks)

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.....

ii. Name the element obtained from insects by insectivorous plants. (1mrk)

.....

.....

3.

a. A mushroom research station would like to employ a researcher. Which scientist is most appropriate. (1mrk)

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b. Name the branch of biology that deals with phylogenetic relationship between organisms. (1mrk)

.....

4. State the role of the diaphragm.

i. In the light microscope. (1mrk)

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ii. During ventilation in man. (1mrk)

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5. Explain why plants absorb water in waterlogged soil but not mineral salts. (2mrks)

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6. A biological washing detergent removes stains like oils from cloths.

i. Name the enzyme that it contains. (1mrk)

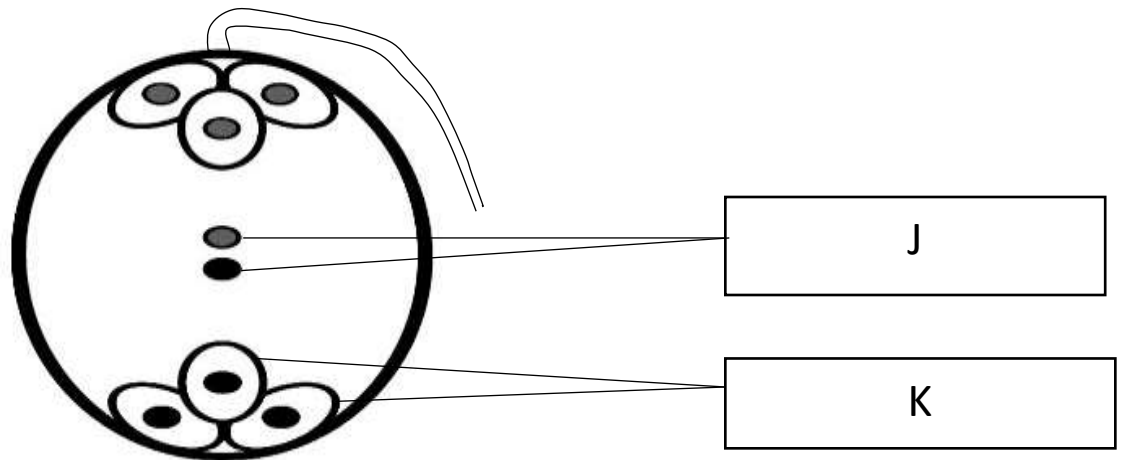
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ii. Explain why the stains would be removed faster with the detergent in water at 35°C rather than at 15°C. (1mrk)

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7. Below is a diagram of an embryo sac.



Identify the structures labelled. (2mrks)

J-.....

K-.....

8. Explain why low temperature will cause seed dormancy by not very high temperatures. (1mrk)

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.....

9.

a. Explain why the average length of the chicken egg is 6cm while that of a human is 0.1mm. (1mrk)

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- b. Identify two features that enable mammalian fallopian tubes perform their function.
(2mrks)

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.....

10.

- a. State a limiting factor of using a potometer to measure the rate of transpiration.
(1mrk)

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.....

- b. Name the tissue that transports hormones in plants. (1mrk)

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11. To control the spread of malaria, fish are introduced into water bodies near residential area.

- a. Name this method of population control. (1mrk)

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- b. State an advantage of the above method. (1mrk)

.....

12. Apart from vaccination, state two ways of controlling highly infectious disease among animals. (2mrks)

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13.

- a. Name the enzyme that breaks down hydrogen carbonate ions in mammalian blood to release carbon (IV) oxide. (1mrk)

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- b. Explain why obligate anaerobes die in presence of oxygen. (1mrk)

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14.

a. Name the group of sporangia born on fern leaves. (1mrk)

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b. Why are fruits not produced in gymnosperms? (1mrk)

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15.

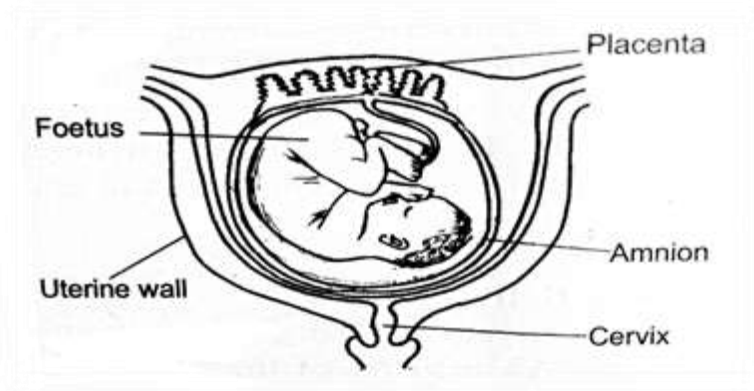
a. Explain why lactating mothers need extra energy. (1mrk)

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b. State the function of interstitial cells found in the testes. (1mrk)

.....

16. Below is a diagram showing a foetus in the uterus.



state two observations showing that parturition is about to take place. (2mrks)

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17. The symptoms of typhoid disease include high fever, vomiting and diarrhoea. Explain why they may lead to death if not treated. (2mrks)

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18. The table below represents a chromatid which undergoes a mutation, the letters genes.

Before mutation

L	M	N	O	P	Q
---	---	---	---	---	---

After mutation

L	O	N	M	P	Q
---	---	---	---	---	---

a. Name the type of mutation. (1mrk)

.....

b.

i. Identify the nucleic acid whose base sequence is shown below. (1mrk)

G-A-C-U-A-G-A-C-G

.....

ii. If the above strand was involved in protein synthesis, how many amino acids would the protein have? (1mrk)

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19. Explain why resistance to antibiotics is considered an example of evolution. (2mrks)

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.....
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20.

a. People are encouraged to take the corona virus disease vaccine. How does it work? (1mrk)

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b. What is the significance of;

i. Red blood cells lacking mitochondria. (1mrk)

.....

ii. Xylem vessels being dead. (1mrk)

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21. Use of fossil fuel as source of energy causes global warming. Governments are being encouraged to use 'clean energy'. State two sources of this energy. (2mrks)

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.....

22. An athlete training to take part in an international competition moved to a high altitude area to train for 12 days. He took his pulse rate per minute and recorded as shown below.

Day	1	2	3	4	5	6	7	8	9	10	11	12
Pulse rate	72	78	89	92	92	90	86	80	77	74	72	72

Account for the change in the pulse rate from.

- i. Day 1-5. (2mrks)

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- ii. Day 6-12. (2mrk)

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.....

23. A patient complained of frequent thirst. A sample of the patient's urine was found not to have any sugar.

- i. Name the hormone the person was deficient of. (1mrk)

.....

- ii. Name the gland that secretes the above hormone. (1mrk)

.....

24.

- a. The paddles of a whale and fins of a fish adapt them to aquatic habitat.

- i. Name the evolutionary process that may have given rise to these structures. (1mrk)

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- ii. What name is given to such structures? (1mrk)

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- b. State two advantages of natural selection. (2mrks)

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25.

- a. Explain why ingestion of salty food may reduce the amount of water passed out in urine. (2mrks)

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- b. Explain why small birds puff their features when cold. (2mrks)

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26.

- a. Explain why halophytes have pneumatophores. (1mrk)

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- b. Explain how the following features adapt root hairs cells to absorption

- i. Large sap vacuole. (1mrk)

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.....

- ii. Numerous mitochondria. (1mrk)

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.....

27. A certain metabolic pathway takes place following sequence.

J-K-L-M-N

An inhibitor was added to the reactants during an experiment. At the end of the experiment, there was more K and little L, M and N.

- a. At what stage of the sequence was the inhibitor added. (1mrk)

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- b. Briefly explain how the inhibitor affected the reaction. (2mrks)

.....
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28.

- a. Suggest a change in the diet of a person whose liver is damaged. (1mrk)

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- b. State the importance of caecum in herbivores. (1mrk)

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- c. Name the polysaccharide that offers mechanical support in;

- i. Arthropods (1mrk)

.....

- ii. Plants. (1mrk)

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29.

- a. Explain why an effective respiratory system is associated with the circulatory system. (2mrks)

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- b. Distinguish between haemoglobin and myoglobin. (2mrks)

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30.

- a. New born babies have a higher heart beat than adults. Explain why? (2mrks)

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- b. What Is the advantage of oxyhaemoglobin over carboxyhaemoglobin? (1mrk)

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31. Explain why;

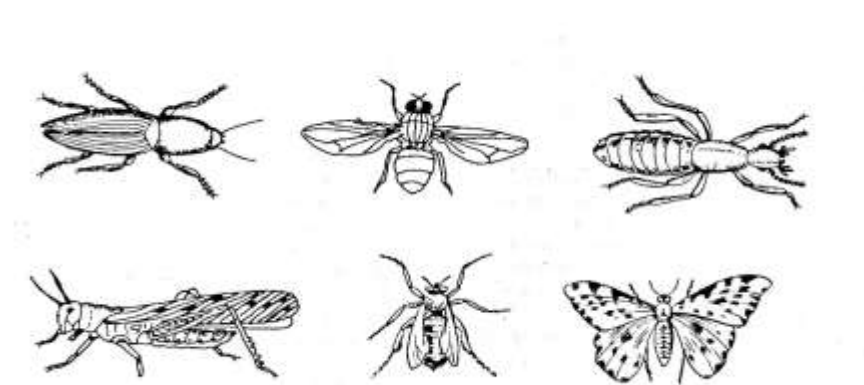
- i. Fish pass a lot of water over the gills frequently. (1mrk)

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- ii. Lack of magnesium leads to yellowing of leaves. (1mrk)

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32. The organisms below belong to kingdom Animalia.



- a. Name the phylum and class where they belong. (2marks)

i. Phylum.....

ii. Class/..

- b. Give a reason for placing the organisms in the class in (a(ii)) above. (1mrk)

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