



MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education
MOCK EXAMINATIONS 2021

231/1

BIOLOGY

Paper 1

December 2021 – 2 Hours

Name: Adm No:

Class:Candidate's Signature:Date:/12/2021.

INSTRUCTIONS TO CANDIDATES

1. Write your name, date, admission number and class in the spaces provided.
2. This paper consist of 28 questions.
3. Answer **all** the questions in the spaces provided.

FOR EXAMINER'S USE ONLY

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1-28	80	

1. Identify the respiratory surfaces used by the following organisms.

(i) Locust (1 mark)

(ii) Paramecium (1 mark)

(iii) Name the causative agent of Tuberculosis (1 mark)

2. Explain the biological significance of the following:

(i) The mammalian testis hanging outside the body. (1 mark)

(ii) Coiled nature of the epididymis. (1 mark)

(iii) Breeding season of amphibians coincides with long rainy season. (1 mark)

3. State **two** ways by which plants manage their solid wastes. (2 mark)

4. State the effect of movement of the diaphragm muscles during inhalation in mammals. (3 marks)

5. The following are text messages on a cellphone that represent gene mutation.

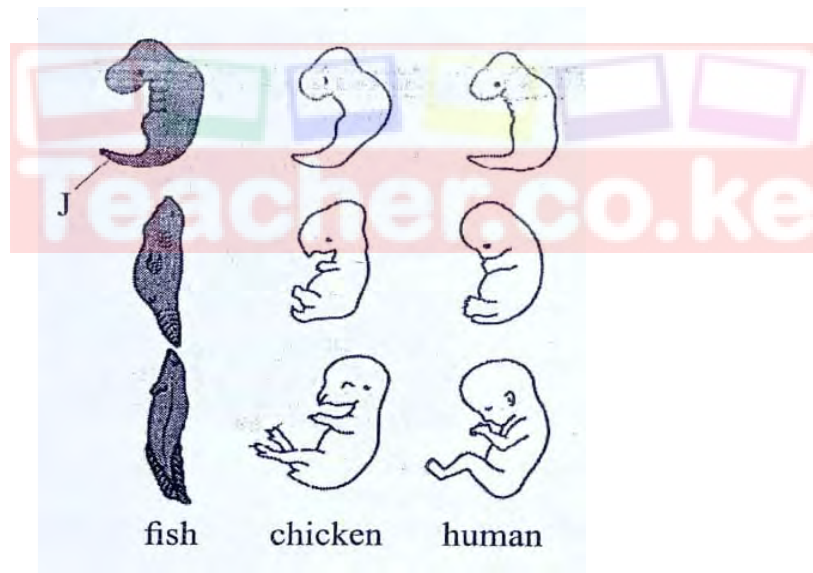
	Intended message	Actual message
I	I hate meat	I ate meat
II	This is my team	This is my mate

(a) Identify the type of gene mutation represented in each case

I. _____ (1mark)

II. _____ (1mark)

7. Below are diagrams representing developmental stages of three different vertebrates.



(a) State the evidence of evolution illustrated by the vertebrates in the diagrams above. (1mark)

(b) Suggest why the structure labeled **J** has been retained throughout the evolution of fish. (2marks)

8. An individual is of blood group **B+**

(a) Name the antigens in the individual's blood group. (2marks)

(b) Give the reason why this individual **cannot** receive blood from a blood group **A** donor. (2marks)

9. Colour blindness is a sex linked trait controlled by a recessive gene **b**. If a mother is a carrier and the father is normal, what is the probability that their son will be colour blind? Show your working. (4marks)

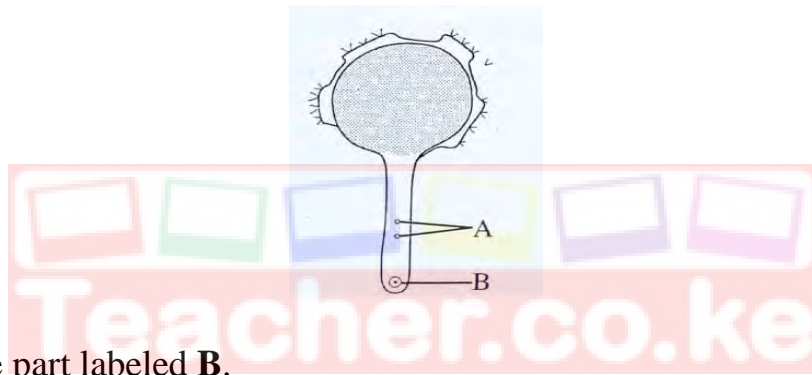
10. (a) Explain the **two** role of diffusion in human beings. (2marks)

(b) What is meant by each of the following terms?

(i) Crenated cell. (1 mark)

(ii) Flaccid cell. (1 mark)

11. The diagram below illustrates a growing pollen tube.



(a) Name the part labeled **B**. (1 mark)

(b) Explain the role of the part labeled **A**. (2 marks)

12. (a) State **one** function of each of the following parts of a mammalian eye:

(i) Eye lashes. (1 mark)

(ii) Lachrymal gland. (1 mark)

(b) Give a reason why the image is **not** formed when the light is focused on the blind spot. (1mark)

13 (a) Define the term **field of view** as used in microscopy. (1mark)

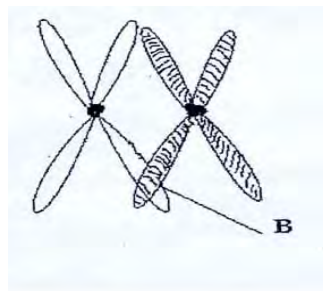
(b) State **one** functions of the body tube of a light microscope. (1marks)

14. How is the human stomach adapted to:

(i) Protein digestion. (2marks)

(ii) Churning. (2marks)

15. The diagram below shows a phenomenon which occurs during cell division.



(a) Identify the stage of cell division in which this phenomenon occurs. (1mark)

(b) Explain the importance of the phenomenon taking place in the part labeled **B** on the diagram above. (2marks)

16. A wild beast in maasai mara national park was found to be infested with a lot of ticks. State the trophic level occupied by the following organisms.

(a)(i) Wild beast. (1mark)

(ii) Ticks. (1mark)

(b) Sketch a pyramid of numbers to represent the above feeding relationship.

(1mark)



17. (a) Define seed dormancy. (1mark)

(b) State **two** causes of seed dormancy. (2marks)

18. Name the type of response exhibited by the following:

(i) A pollen tube growing towards the embryo sac. (1 mark)

(ii) A maggot moving from lit side of a box to the dark side. (1 mark)

19. The diagram below illustrates a mammalian bone.



(a)(i) Identify the bone. (1 mark)

(ii) Name the region in the human body where the bone named above is found. (1 mark)

(iii) Name the type of joint formed by the bone at the proximal end. (1 mark)

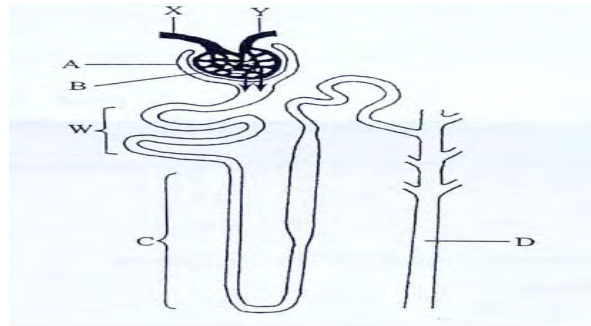
(b) What is the role of the inter-vertebral disc? (1 mark)

20. Name the hormone that sustain the larval stage in insects and the structure that produces it.

Hormone. _____ (1 mark)

Structure. _____ (1 mark)

21. The diagram below represents a nephron from a mammalian kidney.



(a) Name the parts labeled **B** and **C**. (2marks)

B _____

C _____

(b) Name the component of blood present in part labeled **B** but absent in part labeled **C**. (1mark)

(c) State one substance that is reabsorbed at the part labeled **W**. (1mark)

22. (a) What is glycolysis? (1mark)

(b) Where in the cell does it take place? (1mark)

23. State how the following parts of the mammalian ear are adapted to their functions.

(a) cochlea. (2marks)

(b) Pinna. (2marks)

24. Two students used identical microscopes separately. Student A observed 10 bacteria while student B saw 50 bacteria from the same slide. Suggest a reason for the difference in numbers. (1mark)

25. (a) what are fossils? (1mark)

(b) Name the type of placentation where:

(i) Placenta appears as one ridge on the ovary wall. (1mark)

(ii) Placenta is at the center of the ovary with ovules on it and the dividing walls of the carpel disappear. (1mark)

26. (a) Name the cell organelle found in abundance in the white blood cell.(1mark)

(b) Give a reason for your answer in (a) above. (1mark)

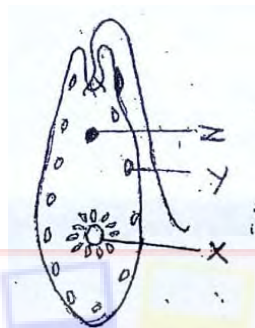
27.(a) In which form do the following organism excrete their nitrogenous waste.

(i)Insects and birds _____ (1mark)

(ii) fresh water amoeba_____ (1mark)

(b) What advantage do the insects have by excreting the nitrogenous waste named in (i) above? (1mark)

28. Below is a diagram of *Euglena gracilis*.use it to answer questions that follow.



(a) Classify the organism into the following taxa.

(i) Kingdom_____ (1mark)

(ii) Genus_____ (1mark)

(b) Name the structure labeled X. (1mark)

(c) How is the structure Y adapted to its function? (1mark)

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