

NAME: _____ ADM. NO: _____

DATE: _____

CLASS: _____

BIOLOGY**Form 4****January 2021****TIME: 1 HOUR****MARANDA HIGH SCHOOL****Post Mock 1- 2021***Kenya Certificate of Secondary Education (K.C.S.E.)***Biology-Form 4****1 hour****INSTRUCTIONS TO CANDIDATES**

- *Write your name, admission number, date and class in the spaces provided.*
- *Answer **all** the questions in this paper.*
- *Answers should be written in the spaces provided.*

FOR EXAMINER'S USE ONLY

QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
1-24	80	

1. The study of birds is referred to as?

(1 mark)

Ornithology; ✓

2. A field of view had a radius of 2cm. A student observed 10 onion cells across the field of view. Calculate the size of each of the onions cells. (2 marks)

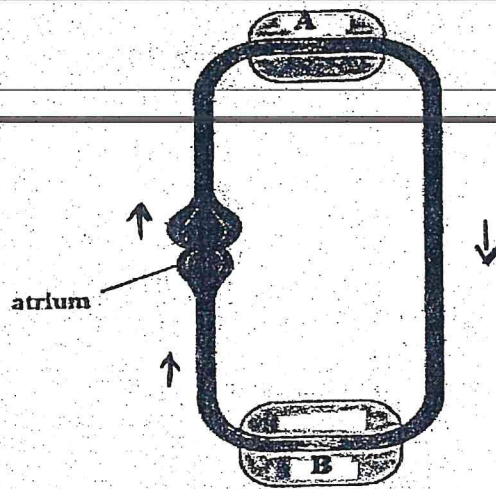
In microns $\frac{2 \times 2 \times 1000 \times 10}{10}$; ✓ = 4000 μm ; ✓

OR

In mm = $\frac{2 \times 2 \times 10}{10}$; ✓ $\Rightarrow$ 4 mm ; ✓

In cm $\frac{2 \times 2}{10}$; ✓ = 0.4 cm ; ✓

3. Below is a diagram of a certain circulatory system.



a) (i) Identify the circulatory system.

(1 mark)

Single (circulatory system); ✓

(ii) In which class would you find the animals with this type of circulatory system?

(1 mark)

Class Pisces; ✓

b) Name the parts labeled A and B:

(2 marks)

A Gills; ✓

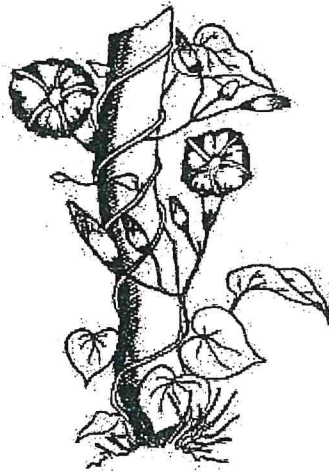
B Body (tissue); ✓

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4. A food substance is suspected to contain proteins. Briefly describe the test you would carry out on the food substance to confirm that it contains protein. (4 marks)

Put 2ml / 2cm³ of the food substance into a test tube; ✓
 Add 2ml / 2cm³ of NaOH solution and shake the mixture; ✓
 Add CuSO₄ solution dropwise; ✓ Purple / violet color
 indicate presence of proteins; ✓

5. The diagram below shows a certain stem twining clockwise around a support.



- a) Identify the type of response shown. (1 mark)

Thigmotropism / Haptotropism; ✓

- b) Describe how the response occurs. (3 marks)

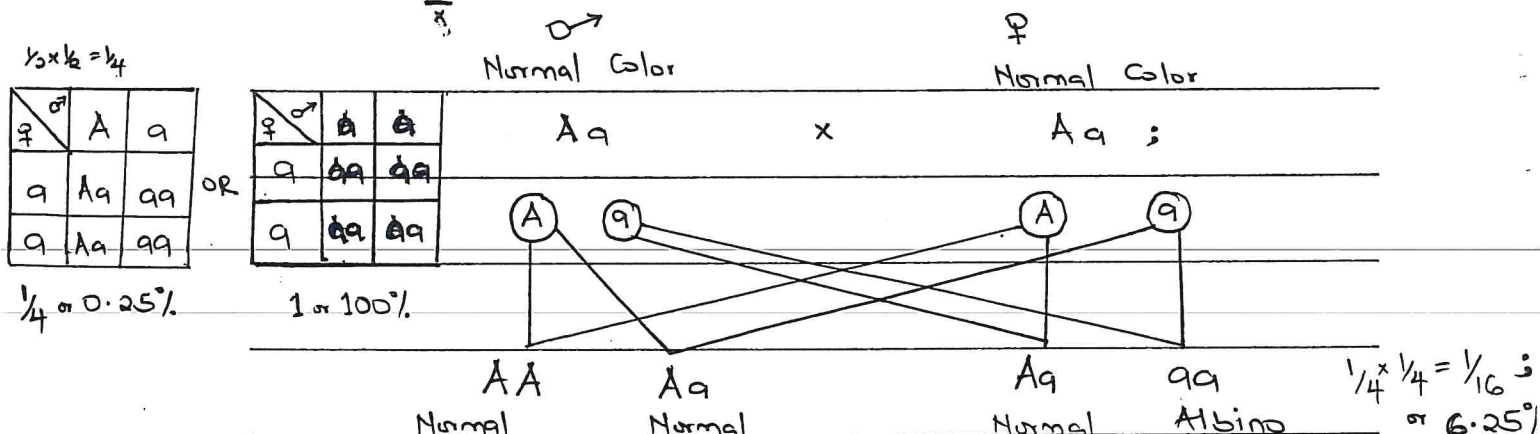
Contact causes lateral migration of auxins to the
 outer side of the stem; the higher conc. of auxins
 on the outer side; causes faster growth on the outer
 side than part in contact with the object; ✓

08

and x
or +

4

6. A man and a woman got a child who was an albino. What is the probability of their 5th and 6th children being albino? show your working (5 marks)



7. Why is it difficult to calculate the respiratory quotient (RQ) in plants?

(2 marks)

Some CO₂ produced during respiration is used in

photosynthesis; while some O₂ produced during photosynthesis is used in respiration;

8. Below is a sequence of the bases along the DNA strand.

T	C	G	A	G	C	T	A
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- (a) Draw a m-RNA strand that would be gotten from this DNA strand. (1 mark)

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

- (b) State three structural differences between DNA and RNA. (3 marks)

DNA	RNA
Double strand	Single strand ; ✓
Has deoxyribose sugar	Has ribose sugar ; ✓
Has bases G, C, T & A (Has Thymine)	Has bases G, C, U and Adenine ; ✓ (Has uracil)

9. (a) State the functions of oxytocin hormone in females. (2 marks)

Rj. Milk Pnsh
(Prolactin)

Stimulate milk release / milk let-down from mammary glands; ✓

Rj. endometrium

Stimulates contraction of myometrium during parturition; ✓

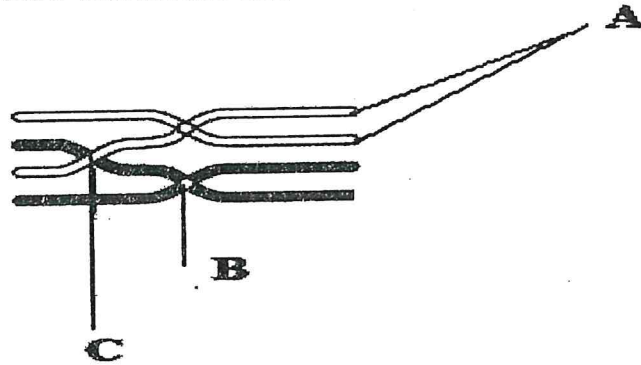
(b) What is the role of luteinizing hormone in human in males? (2 marks)

Stimulates production of androgens; ✓ by the interstitial
cells of the testes; ✓

10. Distinguish between transpiration and guttation. (2 marks)

Transpiration is loss of water from plants in form of vapour through
stomata / cuticle / lenticels while guttation is loss of excess of water
in form of droplets through hydathodes; ✓

11. The diagram below shows the structures of chromosomes.



(a) Name the parts labeled A, B and C. (3 marks)

A Chromatids; ✓

B Centromere; ✓

C Chiasma; Rj. chiasmata ✓

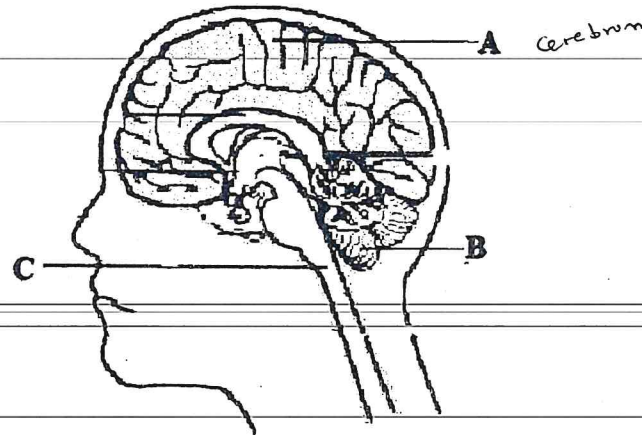
(b) Identify the type of nuclear division illustrated in the diagram below.

(1 mark)

Meiosis I

Rj. meiosis only

12. The diagram below shows surface view of human brain.



(a) Name the parts labelled B and C.

(2 marks)

B Cerebellum;

C Medulla oblongata

(b) State what would happen if the part labelled B was damaged. (1 mark)

Loss of muscle co-ordination / balance / posture;

(c) State two functions of the part labelled A.

(2 marks)

✓ Controls learning / memory;

✓ Controls voluntary body movement / locomotion;

✓ Site for intelligence

✓ Intergration of sensory impulses

13. Name the type of response exhibited by the following.

(3 marks)

a) Leaves of *Mimosa pudica* when they fold after being touched.

Haptonasty / thigmonasty;

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b) Euglena when it swims towards source of light.

Positive phototaxis;

c) Sperms when they swim towards the ovum.

Positive chemotaxis;

14. Distinguish between ligaments and tendons.

(2 marks)

Ligament is a tissue that hold two or more bones together
while tendons attach a bone to a muscle;;

15. Most of the carbon (IV) oxide is transported from tissues to the lungs within red blood cells and not within the plasma. State **two** advantages of this mode of transportation.

(2 marks)

16. A tilapia fish was found to be 40cm in length and its length from its anus to tail was 20cm.

(a) Calculate the tail power of the fish.

(2 marks)

$$\frac{\text{Anus to tail tip}}{\text{Mouth to tail tip}} \times 100\% = \frac{20}{40} \times 100\% = 50\%$$

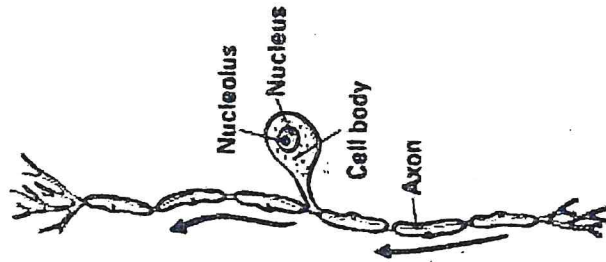
(b) What is the significance of a high tail power?

(1 mark)

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17.(a) Identify with a reason the nerve cell represented below.

(2 marks)



Identity Sensory neurone;

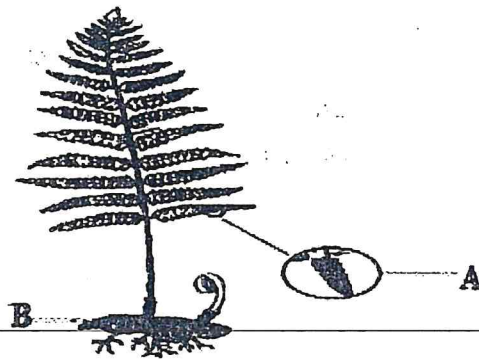
Reason cell body off the axon;

(b) What is the function of this nerve cell?

(1 mark)

transmits impulses from the receptors to the C.N.S

18. The diagram below represents a fern plant.



(a) Name the parts labeled A and B:

(2 marks)

A Sorus / sori;

B Rhizome;

(b) Name the division to which the plant belongs.

(1 mark)

Pteridophyta;

(c) State the function of the part labeled A.

(1 mark)

Encloses sporangia which produces spores;

(d) A camel stores fat in the hump primarily as water source. By what metabolic process would water be made available from fat? (1 mark)

Respiration

19. State **three** functions of Golgi apparatus. (3 marks)

Secretion of synthesized proteins;

Production of lysosomes;

Packaging of glycoproteins;

Transport of glycoproteins;

20. Explain the role of antidiuratic hormone when there is excess water in the human body. (3 marks)

21. Give **one** word for the following descriptions. (3 marks)

(i) Occurrence of deposits of insoluble salts uric acid, or amino acids in the kidneys.

(ii) Occurrence of sugar in the urine due to insufficient insulin in blood.

(iii) Infection of glomeruli by bacteria or virus.

22.(a) State **three** important events that occur during interphase of mitosis. (3 marks)

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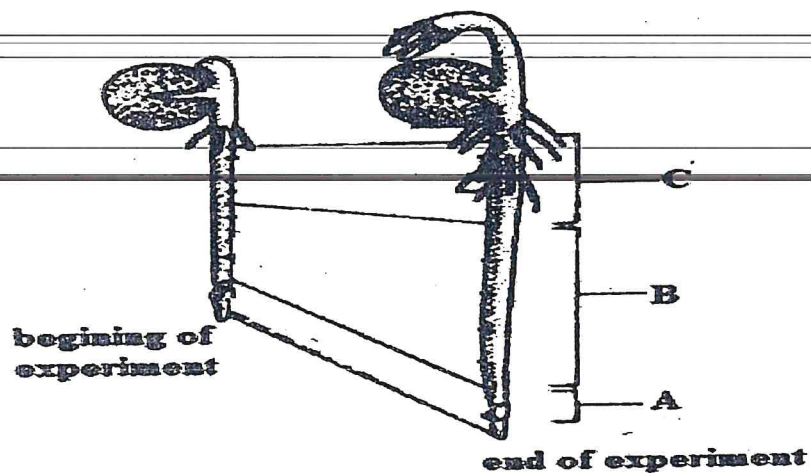
(b) In a certain flowering plant, the number of chromosomes in each cell in the radicle is 16. State the number of chromosomes in the: (3 marks)

(i) The zygote _____

(iii) Cell of endosperm _____

(iv) Generative nucleus _____

23. The diagram below show the results obtained in an experiment on growth of a bean seedling.



(a) Suggest the aim of the experiment. (1 mark)

(b) State the processes that occur in each of the regions marked: (2 marks)

B _____

C _____

24. Identify the respiratory surfaces used by the following organisms: (3 marks)

i) Locust _____

ii) Nile perch _____

iii) Paramecium _____