

90

NAME \_\_\_\_\_ INDEX NUMBER \_\_\_\_\_

DATE \_\_\_\_\_ SIGNATURE \_\_\_\_\_

**BIOLOGY 231/1  
FORM FOUR  
1<sup>ST</sup> TERM 2016  
2 HRS.**

**Kenya Certificate of Secondary Education  
BIOLOGY 231/1  
FORM FOUR 1<sup>ST</sup> TERM EXAMINATION 2016**

**Instructions**

- *Answer all the questions in the spaces provided*
- *Write your name and your index number in spaces provide*

**For Examiner's Use Only**

Questions	Maximum score	Candidates score
1 - 28	80	

*This paper consists of 10 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*

1. a) Name the reagent that is used to test for starch in a leaf of a plant. (1mark)

---

---

b) State the expected result on the leaf if starch is presented. (1mark)

---

---

2. In humans, hairy ears is controlled by a gene on the Y chromosome.  
a) Using letter  $Y^H$  to represent the chromosome carrying the gene for hairy ears, work out a cross between a hairy eared man and his wife. (4marks)

3. Explain how comparative embryology is an evidence for organic evolution. (2marks)

---

---

4. Name the causative agent of typhoid. (1mark)

---

---

5.a) What is meant by the term sex-linkage? (2marks)

---

---

b) Name two sex-linked traits in humans. (2marks)

---

---

6. Distinguish between analogous and homologous structures. (2marks)

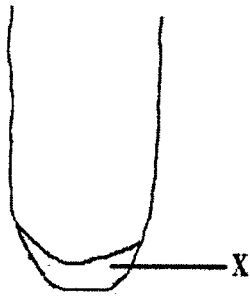
---

---

---

---

7. The diagram below represents regions of a root tip.



- a) Name the two region above X in ascending order. (2marks)

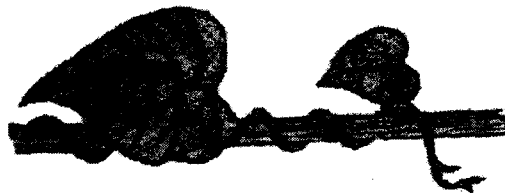
---

---

- b) State the function of the part labeled X. (1mark)

---

8. A response exhibited by a certain plant tendril is illustrated below.



- a) i) Name the type of response. (1mark)

---

- ii) Explain how the response named in (a) (i) above occurs. (3marks)

---

---

---

---

- 9.a) Name the bacterium found in the root nodules of leguminous plants. (1mark)

---

b) What is the role of the bacterium named in (a) above? (1mark)

---

10. Name the blood vessels in the mammalian circulatory system with the highest concentration of:-

a) Glucose. (1mark)

---

b) Carbon (IV) oxide. (1mark)

---

11. Using a microscope, a student counted 25 cells across a field of view whose diameter was  $5000\mu\text{m}$ . Calculate the average length of the cells in micrometers. Show your working. (2marks)

12.a) Name three mechanisms that prevent self-pollination in flowering plants. (3marks)

---

---

---

b) How is the human sperm cell structurally specialized? (2marks)

---

---

13. State three factors that cause dormancy in seeds. (3marks)

---

---

---

---

14.a) Name the gas that diffuses from the blood to the body cells in a mammal. (1mark)

---

b) Which compound dissociates to release the gas in (a) above. (1mark)

---

15(a). Distinguish between genotype and phenotype. (2marks)

---

---

---

---

(b) State one cause of chromosomal mutation. (1mark)

---

---

---

---

(c). Give one example of a genetically inherited disorder due to gene mutations. (1mark)

---

---

16. (a). What are vestigial structures? (1mark)

---

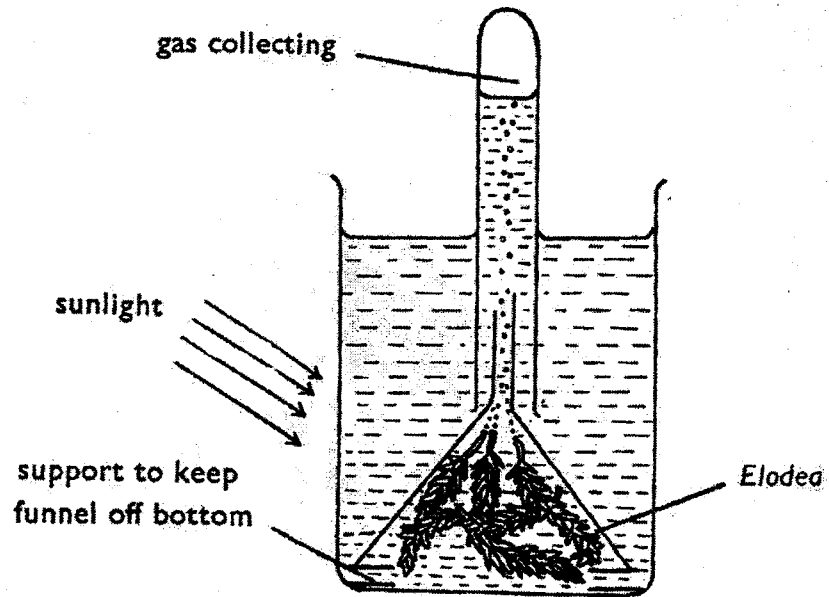
---

(b). State the importance of divergent evolution in living organisms. (1mark)

---

---

17. The diagram below represents a set up used to investigate a certain aspect of photosynthesis.



- a) State the aim of the investigation. (1mark)

---

---

- b) State two factors that would affect the process under investigation. (2marks)

---

---

- c) Describe one role of light in photosynthesis. (1mark)

---

---

18. State three benefits of polyploidy in plants to a farmer. (3marks)

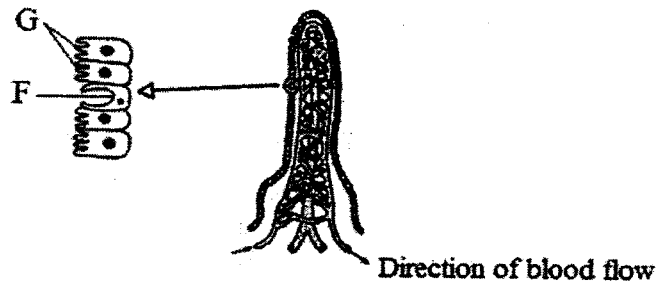
---

---

---

---

19. Below is a diagram showing a villus found along the human alimentary canal.



- a) Name the region of the alimentary canal where the villus is found. (1mark)

---

- b) State the function of the parts labeled F and G. (2marks)

i) F:

---

ii) G:

---

20. a) What is gene mutation? (1mark)

---

- b) The statement 'THE WIPER PLAYS FLUTE' was rewritten as:-  
i) THE PIPER PLAYS FLUTE.

ii) THE WIPER PAYS FLUTE

State the type of gene mutation represented in each of statements (i) and (ii) above.

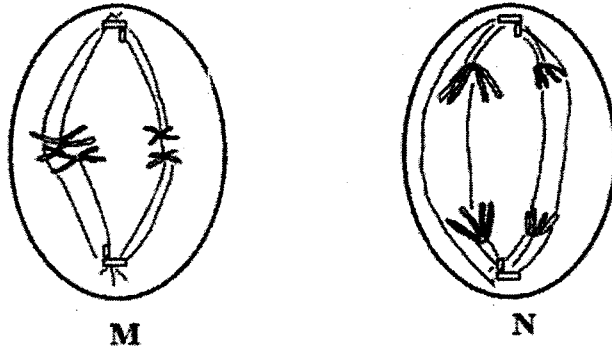
- i) Statement (i). (1mark)

---

- ii) Statement (ii). (1mark)

---

21. The figures below represent two phases during cell division.



a) Identify the phase in:-  
i) M. (1mark)

---

ii) N. (1mark)

---

b) Explain the importance of phase M in evolution of organisms. (2marks)

---

---

---

---

22. Define the following terms:  
a) Stimulus. (1mark)

---

---

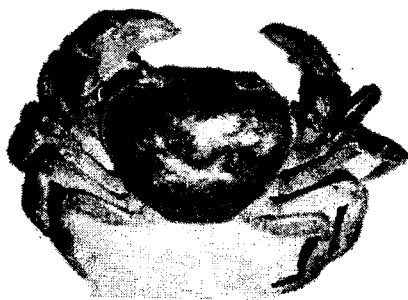
b) Response. (1mark)

---

---



23. The diagram below represents a certain organism collected by a student at the sea shore.



- a) Name the class to which it belongs. (1mark)

---

- b) Give three reasons for your answer in (a) above. (3marks)

---

---

---

---

24. Name the type of response described below:

- a) Euglena moving from a region of 10° C to 20° C. (1mark)

---

- b) Mosquitoes flying away from insecticide repellents. (1mark)

---

- c) Motile bacteria moving toward source of oxygen. (1mark)

---

25. Why is the spongy mesophyll layer of a leaf said to be a tissue? (1mark)

---

---

26. Describe three protective functions of the mammalian blood. (3marks)

---

---

---

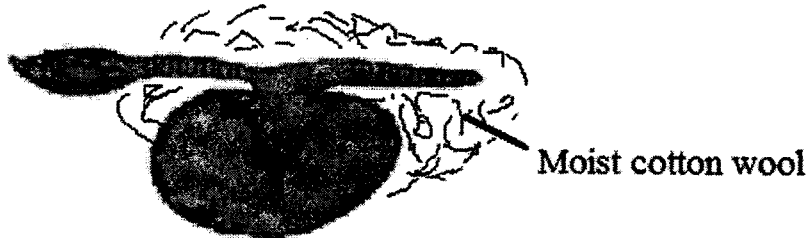
---

27. State the importance of moulting to an insect. (1mark)

---

---

28. In an experiment, a bean seedling was placed horizontally on wet cotton wool as shown below.



a) State the expected observations after three days. (2marks)

---

---

b) Account for the observations for the root. (3marks)

---

---