



ST. MARY'S GIRLS' SCHOOL –RUNDA

Name.....

Class.....

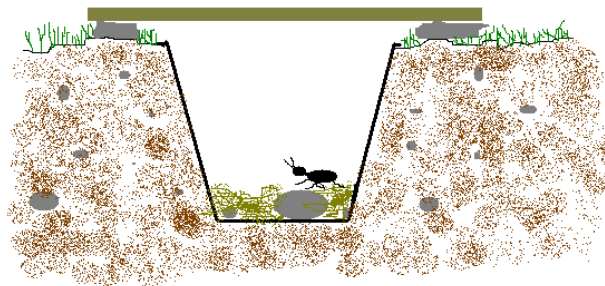
Adm. No.....

Date

FORM 4 BIOLOGY APRIL HOLIDAY ASSIGNMENT

1. State the branch of Biology that would be used in solving the problem of disputed parentage.
(1mk)

2. Study the diagram below and answer questions that follow



(i) What is the name given to the apparatus shown above (1mk)

(ii) What is its use in Biological studies? (1mks)

3.a) State the role of active transport in animal nutrition (1mk)

b) Cyanide lowers the rate of active transport. Explain? (2mks)

4.(a) Explain the two role of diffusion in human beings. (2mks)

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

(i) Crenated cell. (1mk)

(ii) Flaccid cell. (1mk)

5. The table below shows the effect of wind, still air and stomatal opening on the rate of transpiration of a plant in milligrams of water lost per hour dm^2 . Study the table and answer the following questions

Stomatal opening (μm)	1	2	3	4	5	6	7
Windy	40	63	74	86	94	110	124
Still air	0	6	12	19	23	27	30

(a) (i) Compare the rates of transpiration in windy and still air conditions (1mk)

(ii) Explain your observation in a(i) above (2mks)

(b) How does stomatal opening affect transpiration rate? [1mark]

6. Phagocytes also called granulocytes or polymorphs are cells found in the blood where they ingest pathogens and cell debris.

(i) Why are they called polymorphs? (1mk)

(ii) Name the cell organelle most abundant in phagocytes to enable them function effectively. (1mk)

7.Name the blood vessel that supplies blood to the

(a) Brain (1mk)

(b) Cardiac muscle (1mk)

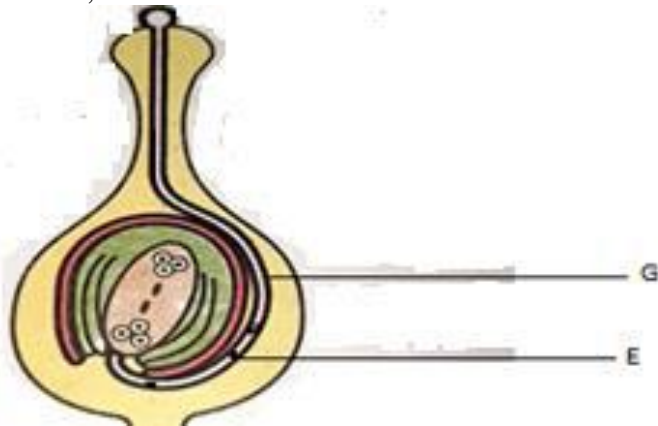
8. a) Cowpeas seeds were placed in a vacuum flask and left for five days. What is the expected change in composition of gases in the flask on the sixth day? (1mk)

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

9. a) A biotechnologist works day and night to curb food insecurity using the knowledge of polyploidy in genetics. Explain the economic importance of such practice? (2mks)

b) Define a backcross? (1mk)

10. The diagram below shows a pollen tube as it develops down the style. Use it to answer the questions that follow;



(i) Name the part labelled G. (1mk)

(ii) State two functions of structure labelled E. (2mks)

11. A group of Form Three students collected a certain specimen for study as shown below. Study it carefully and use it to answer the questions that follow.

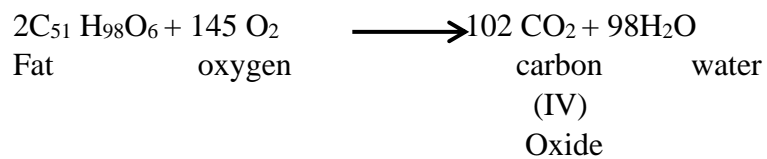


(i) Name the type of metamorphosis in the above specimen. (1mk)

(ii) Give any two advantages of the above metamorphosis. (2mks)

12. A mature coconut fruit has mesocarp which has air spaces. Explain the biological significance of that mesocarp (2mks)

13. Use the chemical formula below to answer the question that follow;



a. Calculate the respiratory quotient (RQ) (3mks)

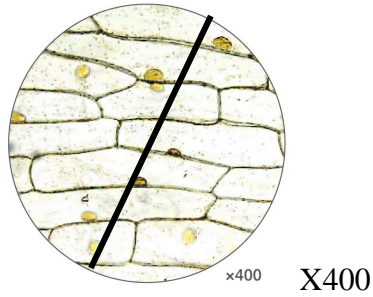
b) Under what condition do animals use tissue protein for respiration? (1mk)

14. Name the causative agent of the following disease.

i. Acquired immune deficiency syndrome (1mk)

ii. Syphilis (1mk)

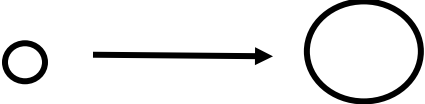
15. The diagram below shows onion cells in a field of view of a light microscope



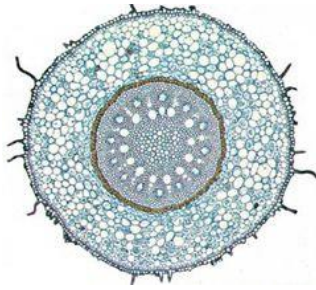
Using the dark line as diameter of field of view, determine the actual diameter of one cell (4mks)

16. Identify the functions of a light microscope as shown by the following diagrams (2mks)

a)  Function

b)  Function

17. The following is a cross-section of part of a plant

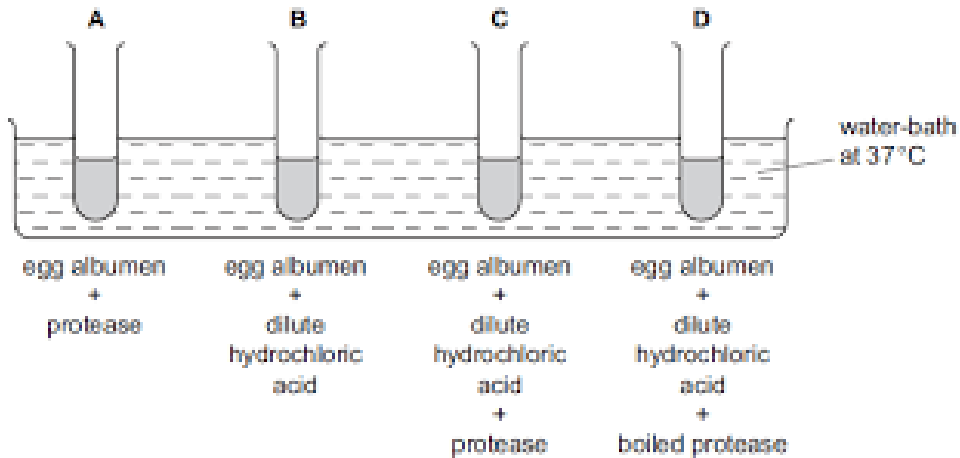


Samwel observed that this diagram represents a monocot root. Give a reason why

i) It is a root (1mk)

ii) It is from a monocot plant (1mk)

18. An experiment was carried out as shown below to study enzymatic reactions. After 30 minutes, Biuret's test was carried out on contents of each test tube to get results. Fill in the table below to offer explanation for the results obtained (4mks)



Test Tube	Result	Explanation
C	Blue	
D	Purple	

19. State two characteristics that make alveolus and buccal cavity suitable for gaseous

exchange. (2 Marks)

20. State the changes that take place during inhalation in mammals in the following structures.

a) Rib Cage (1mk)

b) Diaphragm. (1mk)

21. Explain two ways in which the trachea is adapted to perform its functions. (2marks)

22. State two control measures of bilharzia. (2 Marks)

23.a. What is eutrophication? (2 marks)

b. What are the effects of eutrophication? (2 marks)

24. In an experiment to determine the population size of mosquitoes in Kisumu Museum, Kenya Research Institute researchers caught 600 mosquitoes which they marked and released. After 24hrs 300 mosquitoes were caught out of which 100 already had the marks.

a) Suggest a possible instrument of capturing the mosquitoes 1mk)

b) Estimate the population size of mosquitoes in Kisumu Museum. (2mks)

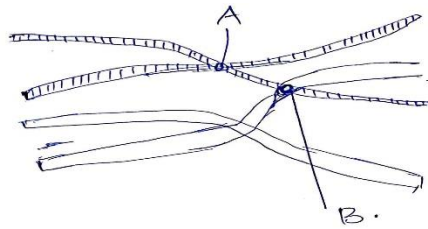
25. Give two classes of the phylum Chordata whose members are all poikilothermic. (2mks)

26. State the role of the following in a nitrogen cycle:

a) Nitrogen fixing bacteria. (1mk)

b) Nitrifying bacteria. (1mk)

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



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

b. State the biological importance of the part labeled B. (1mark)

c. Identify the type of cell division in which this phenomenon occurs. (1mark)

d. Name the organs in human being in which the phenomenon occurs. (2marks)

28.a) Give two sex linked traits found on the Y-chromosome. (2mks)

b) Below is a nucleotide strand

A	A	G	T	C
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i) Identify the type of nucleic acid.

(1mk)

ii) Give a reason for your answer in (a) above.

(1mk)

29.a) Distinguish between homologous and analogous structures. (2mks)

b) Give one reason why organisms become resistant to drugs.

(1mk)