ALLIANCE HIGH SCHOOL
BIOLOGY END OF TERM 1
FORM THREE 2016

Name _____ **Class** _____ **Ad. No.**_____

1. Give one example of : (3 mks)

   i) Structural carbohydrate found in insects.

   _____

   ii) Storage carbohydrate found in cow

   _____

   iii) Structural carbohydrate found in epidermal cells.

   _____

2. Cells in the pancrease manufacture enzymes and hormones. Which cell organelle would you expect to find in large numbers in a pancreatic cell? Give a reason. (2 mks)

   Organelle_____

   Reason

   _____

   _____

3. Name the apparatus used in measurement of the following. (2 mks)

   i) Light penetration in water

   _____

   ii) Light intensity

   _____

4. What is the role of cristae in respiration? (1 mk)

   _____

5. Write down a chemical equation for the breakdown of hydrogen peroxide in presence of enzyme catalase (1 mk)

6. Give a reason why energy transfer from one tropic level to another is about 10% efficient (1 mk)

_____

7. What is the role of antidiuretic hormone when there is excess water in human body. (1 mk)

_____

_____

8. Explain why patients who cannot feed orally are given glucose in a drip. (2 mks)

_____

_____

9. Suggest two reasons why green plants are included in a fish aquarium. (2 mks)

_____

_____

10. The following is a word equation of a biological process

Water ⟶ Hydrogen atom + oxygen

a) Name the process

_____(1 mk)

b) In which organelle does the process takes place? (1 mk)

_____

c) State two conditions necessary for the process to occur (2mks)

_____

_____

11. a) If the nerve serving the heart is severed, the heart continuous to beat normally. Explain. (2 mks)

_____

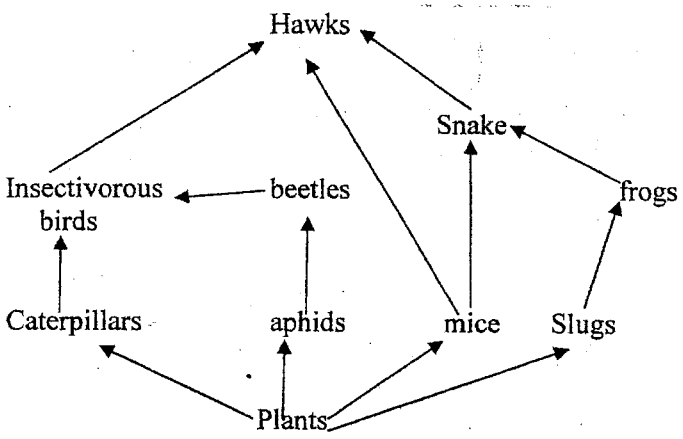
_____

b) Name the specialized region of the heart from where contractions spread to the ventricles. (1 mk)

_____

12. State three adaptations of a leaf to gaseous exchange. (3 mks)

13. The diagram below represents a food web in a certain ecosystem.



a) i) Name the group of organisms that would have the largest biomass. (1 mk)

ii) Give a reason for your answer in a(i) above. (1 mk)

b) i) Name an organism that occupies 3rd and 4th trophic levels. (1 mks)

ii) Contract food chain that ends with tertiary consumer. (2 mks)

. Tertiary consumer

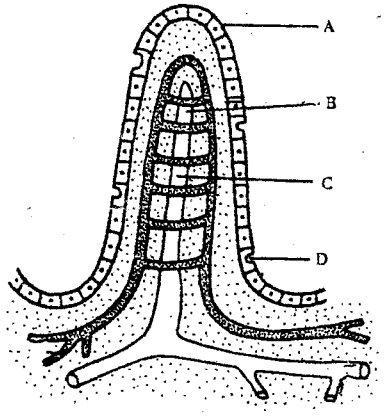
. Quaternary consumer

c) Why are bacteria and fungi important in an ecosystem? (2 mks)

_____

_____

14. The diagram below shows a structure found in the small intestine.



a) Name the structure . _____ (1 mk)

b) What is the role of this structure in animal nutrition? (1 mk)

_____

_____

c) Name the parts labeled (4 mks)

A_____

B_____

C_____

D_____

d) State the functions of the following enzymes. (2 mks)

i) Peptidase_____

_____

ii) Trypsin_____

_____

15. A student carried out an ecological study of all the organisms on an island and summarized the findings in a data as shown below.

Species	Population size	Species biomass
S	1×10^{4}	1 x 10
T	1×10^{3}	1×10^{-1}
V	1×10^{2}	1×10^{-2}
R	1 x 10	1×10^{3}

a) If all the organisms had a feeding relationship, construct a simple food chain involving all the organisms. (1 mk)

b) After one year, the student returned to the island and found that the number of species T was now 1 x 10. How was this likely to affect the following species? (3 mks)

S_____

V_____

R_____

c) (i) Name the mode of feeding for organism (2 mks)

V _____

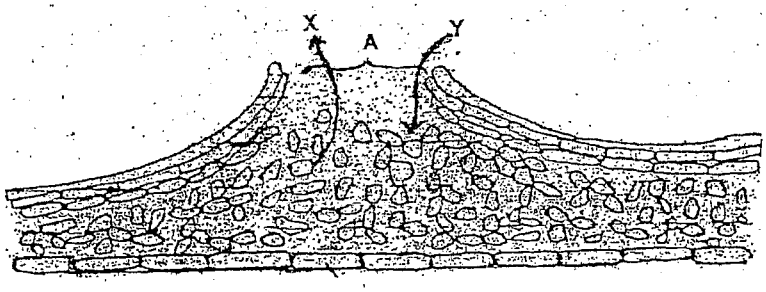
R_____

(ii) State two adaptations of organism V to its mode of feeding. (2 mks)

_____

_____

16. The diagram below represents a structure used for gaseous exchange in a woody plant.



a) Name the part labeled A.

_____ (1 mk)

b) Name the gases marked by the arrows X and Y. (2 mks)

X_____

Y_____

c) i) Name the physiological process that results in production of gas X in the plant tissue (1 mk)

_____

ii) Write down a chemical equation to represent the physiological process named in c (i) above in a plant cell. (1 mk)

d) Why does low oxygen concentration in the soil result in reduced mineral ion absorption by roots of a plant. (2 mks)

_____

_____

17. In an ecological study to estimate the population of crows in $5km^2$ areas nearby a slaughter house, a group of students captured 36 crows. They marked them using indelible ink and released them back into the field. After 3 days they made another catch of 45 crows 4 of which had been marked.

a) Name the above method used by the students. (1 mk)

_____

b) Why was the second capture done after 3 days? (1 mk)

_____

_____

c) Apart from use of indelible ink, name another appropriate method of marking the crows. _____

_____ (1 mk)

e) From the findings, calculate the population size of the crows in the area of study. (2 mks)

f) State three shortcomings of this method. (3 mks)

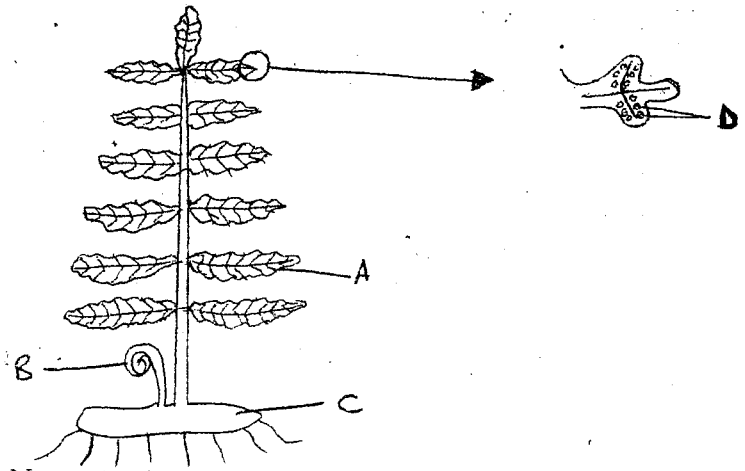
_____

_____

_____

_____

18. Below is a diagram of a plant.



a) Name structures (4 mks)

A _____

C _____

B _____

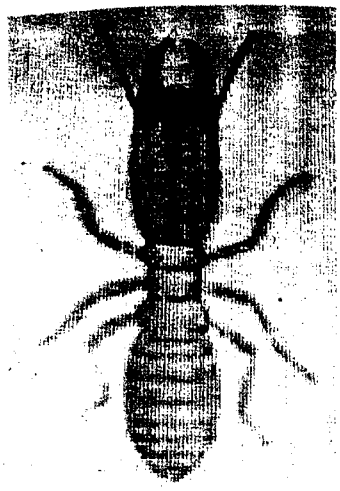
D _____

b) Classify the plant into the following taxonomic units: - (2 mks)

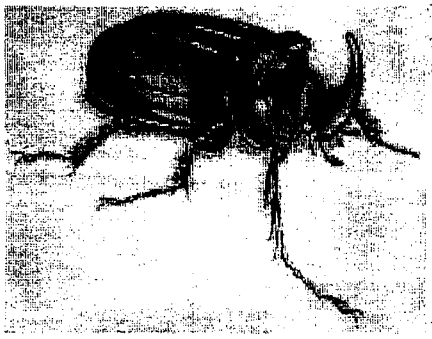
i) Division _____

ii) Sub – division _____

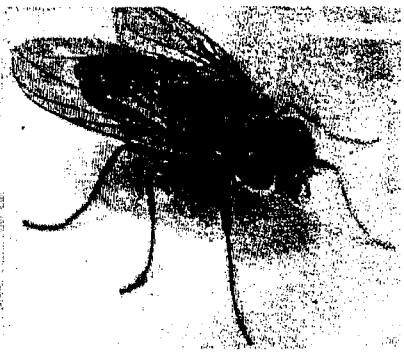
19. You are provided with photographs of specimen S, T and V.



S



T



V

Below is a dichotomous key to enable you to identify the orders to which each specimen belongs.

1. a) Animals with more than three pairs of legs .....Go to 2

   b) .....Go to 3

2. a) Animals with one pair of legs per segment .....Chilopoda

   b) _____ ....Diplopoda

3. a) Animals with wings ..... Go to 4

   b) Animals without wings ..... Isoptera

4. a) _____Diptera

   b) Animal with two pairs of wings..... Go to 5

5. a) Animal with two pairs of membranous wings ....Hymenoptera

   b) Animal with a pair of hard forewings and a pair of membranous hind wings .....Coleoptera.

a) Complete the dichotomous key by writing out the missing statements. (3 mks)

b) Using the complete key, identify the order to which the organisms S, T and V belong. State the steps followed to arrive to the identity. (6 mks)

Specimen	Steps followed	Identity
S	_____	_____
T	_____	_____
V	_____	_____

c) i) To which phylum do the three specimen belong to? (1mk)

_____

ii) To which class do the specimen belong to? (1 mk)

_____

Give two reasons to support your answer in c (ii) above (2 mks)

_____

_____

21. The data provided below represents populations of a predator and its prey over a fifty years period.

Time in years	P	Q
5	24500	17000
10	30,000	20500
15	33500	26000
20	33500	30000
25	31000	33000
30	27000	32000
35	25000	30000
40	29000	27500
45	32000	28000
50	34000	28500

a) Using the same axis, draw graphs of the relative populations of P and Q against tissue (7 mks)

b) With a reason, identify the curve that represents the prey. (2 mks)

_____

_____

_____

c) Account for the two populations between 25 and 32 years. (3 mks)

i) When were the two populations equal? (2 mks)

ii) A part from predation, state three biotic factors that may have led to the decline of the prey population. (3 mks)

Name two benefits that a parasite derives from the host. (2 mks)