INSTRUCTIONS TO CANDIDATES:

Write your Name, Index Number and School in the spaces provided above. Sign and write the date of examination in the spaces provided above. Answer all the questions in the spaces provided.

FOR EXAMINER’S USE ONLY:

<table>
<thead>
<tr>
<th>Question</th>
<th>Maximum Score</th>
<th>Candidate’s Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 22</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>
1. (a) Define the term ‘parthenocarpy’. (1mk)

(b) Name two plant growth hormones that promote parthenocarpy. (2mks)

2. Name the organelle that performs each of the following functions in a cell

(i) Protein synthesis. (1mk)

(ii) Transport of cell secretions. (1mk)

3. The diagram below represents a certain organism.

(a) Identify the kingdom to which the organism belongs. (1mk)

(b) Identify the part labeled P. (1mk)

(c) What is the function of contractile vacuole? (1mk)

4. Other than carbon (IV) oxide, name other products of anaerobic respiration. (2mks)
5. (a) Name the fluid that is produced by sebaceous glands.  

(b) State two functions of sweat on the human body.

6. (a) State two characteristics that are used to divide the phylum arthropoda into classes.  

(b) Name the class with the largest number of individuals in the phylum arthropoda.

7. Why are people with blood group O referred to as universal donors?

8. An experiment was set up as shown in the diagram below. 

(a) Which process is being investigated by the above experiment?  

(b) State the expected results.
9. (a) What causes the following diseases?
   (i) Diabetes mellitus. (1mk)
   (ii) Diabetes insipidus. (1mk)

(b) How would you test that someone is a victim of diabetes mellitus in the laboratory. (3mks)

10. The following chart shows a feeding relationship in ecosystem.

    - Green plants
    - Grasshoppers
    - Lizards
    - Snakes
    - Mice
    - Domestic cat
    - Wild cat
    - Hawks

(a) Construct two food chains ending with a tertiary consumer in each case. (2mks)

(b) Which organism has the largest variety of predator in food web? (1mk)
(c) Suggest three ways in which the ecosystem would be affected if there was prolonged drought. (3mks)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

11. A man of blood group A and a woman of blood group B get married.
   (a) Using a punnet square show the possible blood groups of their offspring’s if both of them are heterozygous for their blood groups. (4mks)

   (b) What is the probability that one of the children will be blood group O? (1mk)

________________________________________________________________________

12. The diagram below shows a mature embryo sac of a flowering plant.

(a) Name the parts labeled A and D. (2mks)

A

B

(b) What is the function of the structure labeled B. (1mk)

________________________________________________________________________

________________________________________________________________________
13. (a) Name the tissues that transport water in plants. (1mk)

(b) How is the tissue you named in (a) above strengthened? (1mk)

14. The diagram below shows regions of growth in a root. Study it and answer the questions that follow.

(a) Name the zones labeled.

A ____________________________________________________________ (1mk)
B ____________________________________________________________ (1mk)
C ____________________________________________________________ (1mk)

(b) State the function of part K. (1mk)

15. The enzymes pepsin and trypsin are secreted in their inactive forms.

(a) Give the names of these inactive forms. (2mks)

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

(b) Why are they secreted in an inactive form? (1mk)

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
16. (a) Define the following terms:

(i) Evolution. (1mk)

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

(ii) Analogous structures. (1mk)

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

(b) Describe the importance of comparative embryology as evidence of evolution. (3mks)

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

17. Study the diagram below of a neurone in human being.

(a) Identify the neurone. (1mk)

_____________________________________________________________________

(b) Name the parts labeled.

A ________________________________________________________________ (1mk)

B ________________________________________________________________ (1mk)

(c) Using an arrow indicate the direction of movement of a nerve impulse along the neurone (1mk)
18. Study the diagram of the mammalian tooth below and answer the questions that follow.

(a) Identify the tooth. 

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

(c) State one adaptation of the tooth to its function.

19. The diagram below shows gaseous exchange in tissues.

(a) (i) Name the gas that diffuses.
   I To the body cells .......................................................... (1mk)
   II From body cells .......................................................... (1mk)

(b) Which compound dissociates to release the gas named in (a)(i) above. (1mk)
20. The diagram below represents one of the specialized cells found in the human body.

(a) Identify the cell. (1mk)

(b) What is the function of the cell? (2mks)

(c) What is tissue fluid? (1mk)

(d) Name the parts labeled.

K _______________________________(1mk)

L _______________________________(1mk)

M _______________________________(1mk)
21. The diagram **below** represents the anterior view of a certain vertebra shown **below**.

(a) With a reason, identify the type of vertebra shown **above**. (2mks)

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

(b) Name the parts labeled.

(i) **A** ___________________________________________________________ (1mk)

(ii) **D** ___________________________________________________________ (1mk)

(c) State the function of part **E**. (1mk)

___________________________________________________________________________

___________________________________________________________________________

22. Complete the table **below** on mineral nutrition in plants.

<table>
<thead>
<tr>
<th>Mineral element</th>
<th>Function</th>
<th>Deficiency symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Synthesis of proteins</strong></td>
<td><strong>Stunted growth and yellowing of leaves</strong></td>
</tr>
<tr>
<td><strong>Calcium</strong></td>
<td><strong>Forms part of chlorophyll</strong></td>
<td><strong>Yellowing of leaves</strong></td>
</tr>
</tbody>
</table>

(4mks)