INSTRUCTIONS TO CANDIDATES.

➢ Write your name and index number in the space provided above
➢ Answer all questions in the spaces provided.

FOR EXAMINERS USE ONLY

<table>
<thead>
<tr>
<th>Questions</th>
<th>Total Scores</th>
<th>Candidates Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-34</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

This paper consists of 8 printed pages.
Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no question is missing.
1. Define each of the following terminologies as used in biology:-(2 marks)
a). Ecology_______________________________________________________________________________
_______________________________________________________________________________

b). Anatomy_______________________________________________________________________________
_______________________________________________________________________________

2. State the role of the DNA in a cell.(2 marks)
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

3. Name two processes that are involved in the translocation of manufactured food materials.(2 marks)
_______________________________________________________________________________
_______________________________________________________________________________

4. State two ways by which lactic acid formed in the muscles of an athlete is removed.(2 marks)
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

5. Explain why sexual reproduction is important in an organism.(2 marks)
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

6. State two aspects that distinguish Lamarckian hypothesis and Darwinian theory of evolution.(2 marks)
_______________________________________________________________________________
_______________________________________________________________________________

7. The diagram below shows the teeth of a certain animal. Use it to answer the questions that follow.
a). Identify the mode of feeding exhibited the animal shown above. (1 mark)

_______________________________________________________________________________

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

_______________________________________________________________________________

_______________________________________________________________________________

8. Explain what would happen if the nucleus of an animal cell is removed. (2 marks)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

9. Enzymes are important in various physiological processes in living things
a). Differentiate between an enzyme and a hormone. (2 marks)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

b). Name the property of an enzyme exhibited by the Lock and Key Hypothesis. (1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

10. Outline three roles of active transport in human beings. (3 marks)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

11. State the role of each of the following features found in the human gaseous exchange system: (2 marks)
a). Goblet cells

_______________________________________________________________________________

_______________________________________________________________________________

b). Rings of cartilage

_______________________________________________________________________________

_______________________________________________________________________________
12. The diagram below show a blood vessel

![Blood Vessel Diagram]

a) Giving a reason, identify the blood vessel shown above. (2 marks)
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

b) Name the enzymes present in A and D. (2 marks)
   A _______________________________________________________
   D _______________________________________________________

13. Give three disorders caused by non-disjunction (3 marks)
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

14. Oil is one of the pollutants of water in major water bodies
   a). In what ways is oil as a pollutant affect the following organisms:
      i. Fish (1 mark)
         _______________________________________________________
      ii. Mosquito larvae (1 mark)
         _______________________________________________________
      iii. Aquatic birds (1 mark)
         _______________________________________________________

15. Name two sites for gaseous exchange in floating aquatic plants: (2 marks)
    _______________________________________________________
    _______________________________________________________

16. State three qualities that a plant breeder looks at in artificial selection in breeding programmes.  

(3 marks)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

17. Explain what happens to a tadpole when there is insufficient iodine.  

(2 marks)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

18. Name the diseases caused by the following organisms.

a) Wucheraria bancrofti  

(1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

b) Treponema pallidum  

(1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

19. Explain why carbohydrates are stored in their polysaccharide forms in both plants and animals.  

(1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

20. Define the following terms:

a) Chelicerae  

(1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

b) Prothallus  

(1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

c) Alteration of generation.  

(1 mark)

_______________________________________________________________________________

_______________________________________________________________________________

21. Distinguish between the growth pattern exhibited by human beings and fish.  

(2 marks)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________
22. The cells shown below are adapted for transport in flowering plants.

![Diagram of cells](image)

a). Name the tissue in which these cells are found. (1 mark)

_______________________________________________________________________________

b). Identify and explain two observable features of these cells that adapt them to their role in transport. (2 marks)

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

23. A student smeared Vaseline jelly on the lower epidermis of a leaf of a potted green plant which had been kept in the dark for 24 hours. She then transferred the plant to the light for six hours. Starch test on the leaf of the plants were negative. Account for the observation. (3 marks)

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

24. Outline two structural differences between an egg and a sperm in humans. (2 marks)

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
25. (a) State the advantage of desert animals excreting their nitrogenous waste in the form of urea and not ammonia. (2 marks)

(b) State two modifications on the kidney nephron of desert mammals. (2 marks)

26. State two functions of gibberellins. (2 marks)

27. Differentiate between facultative and obligate anaerobes (2 marks)

28. Name the bacteria involved in the conversion of ammonium compounds to nitrites. (1 mark)

29. Differentiate between divergent evolution and convergent evolution. (2 marks)

30. A group of students carried out an ecological investigation on an ecosystem. They recorded the findings in the table below.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Number of individuals</th>
<th>Biomass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>4000</td>
<td>9.8</td>
</tr>
<tr>
<td>Q</td>
<td>2500</td>
<td>2.1</td>
</tr>
<tr>
<td>R</td>
<td>570</td>
<td>0.42</td>
</tr>
<tr>
<td>S</td>
<td>90</td>
<td>0.03</td>
</tr>
<tr>
<td>T</td>
<td>1300</td>
<td>1.1</td>
</tr>
</tbody>
</table>

a) Write down a food chain for the ecosystem. (1 mark)
i) Which organism is the producer in the ecosystem? [1 mark]

ii) What would be the last to be affected if the ecosystem experienced a prolonged drought? [1 mark]

c) Which organism recycles nutrients in ecosystem? [1 mark]

31. After fertilization in flowering plants has taken place, name three structures that wither off. [3 marks]

32. Give two structural adaptations of the chloroplast to its function. [2 marks]

33. Define the term balanced diet. [2 marks]

34. Explain why the ecosystem is said to be a self-sustaining natural unit. [1 mark]

35. State the role of the Hypocotyl in epigeal germination. [1 mark]