**NAME……………..………………………………… ADM. NO……...........…CLASS………**

**SCHOOL……………………………………………… DATE………..………………**

**231/2**

**BIOLOGY**

**PAPER 2**

**(THEORY)**

**OCTOBER 2023**

**TIME: 2 HOURS**

**JOINT EXAMINATION**

**Kenya Certificate of Secondary Education**

**BIOLOGY**

**PAPER 2**

**(THEORY)**

**TIME: 2 HOURS**

**INSTRUCTIONS TO CANDIDATES**

1. *Answer all question to section A in the spaces provided.*
2. *In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.*
3. *This paper contains 9 printed pages*

**FOR EXAMINER’S USE ONLY**

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **Question** | **Maximum**  **Score** | **Candidates**  **Score** |
| **A** | **1** | **8** |  |
| **2** | **8** |  |
| **3** | **8** |  |
| **4** | **8** |  |
| **5** | **8** |  |
| **B** | **6** | **20**  **20** |  |
| **TOTAL SCORE** | | **80** |  |

**SECTION A (40 MARKS)**

Answer all the questions in this section in the spaces provided.

1. a) Distinguish between guttation and transpiration. (2mks)

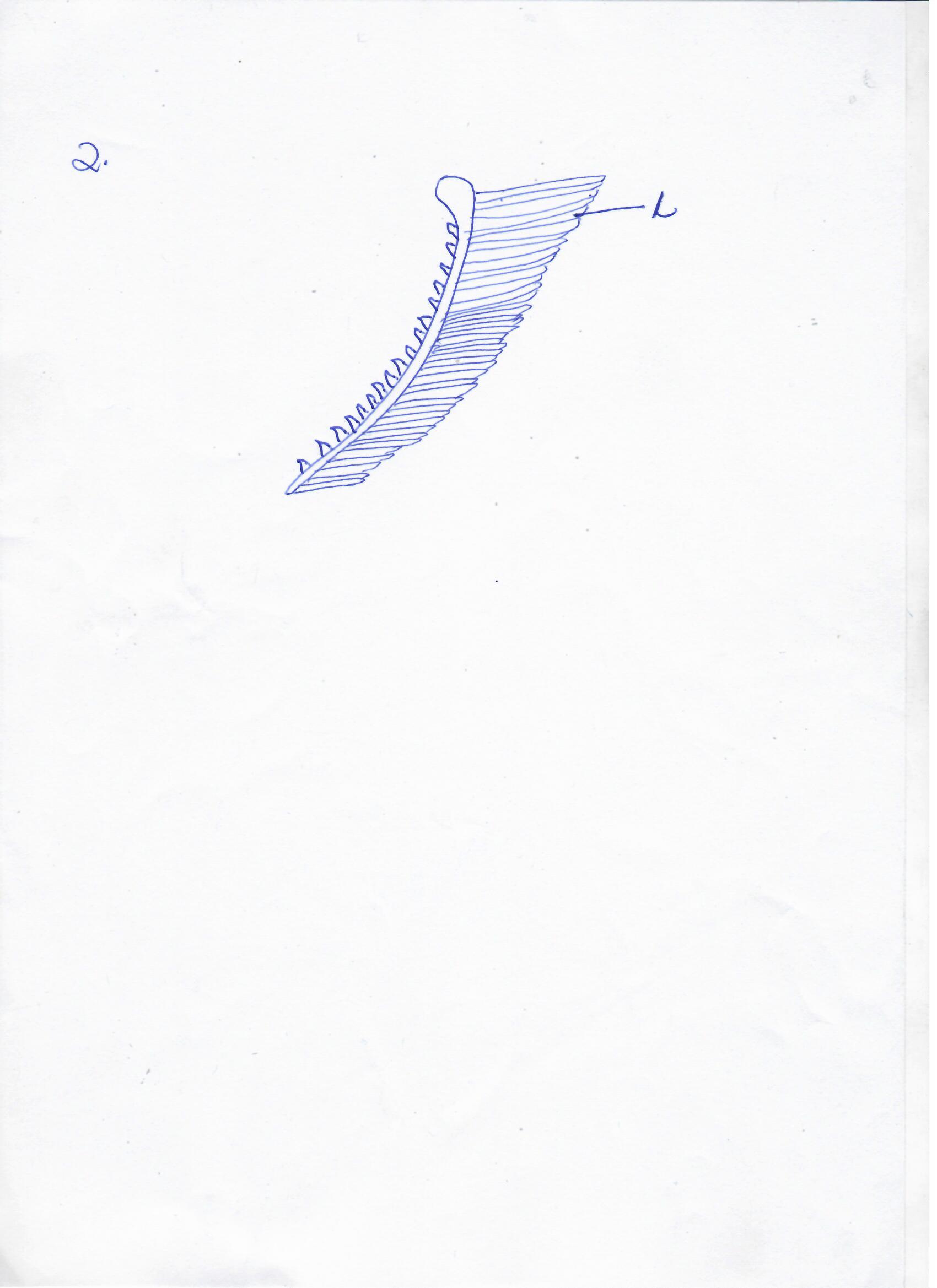
.

1. State the significance of transpiration to a plant. (3mks)

.

1. State the structural differences between arteries and veins (3mks)

Arteries veins

1. The diagram below represents a n organ in a bony fish.
2. Name the organ. (1mk)

.

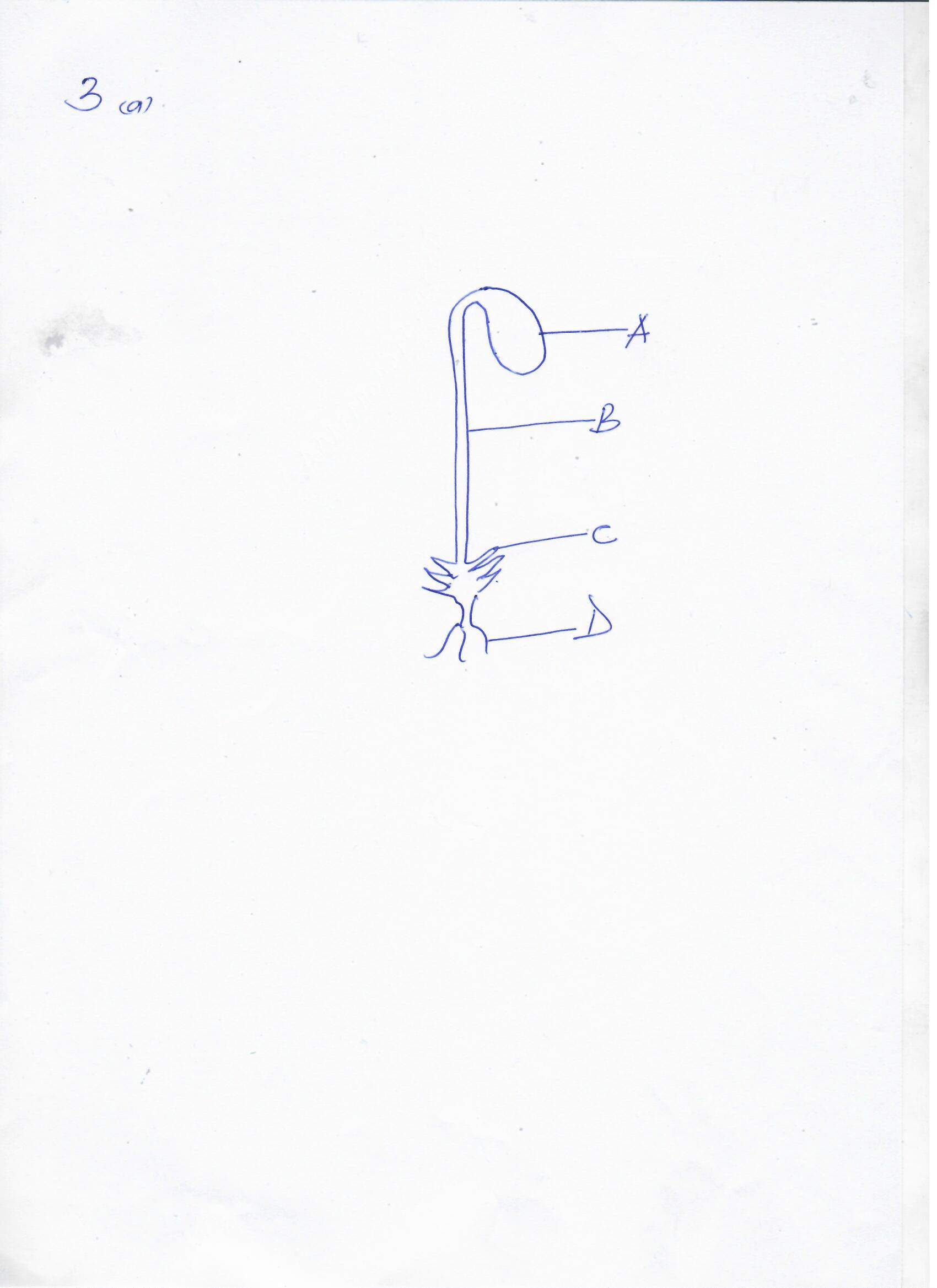
1. On the diagram label the three parts of the organ. (3mks)

.

1. Describe how the part labeled L is adapted to its functions. (4mks)

.

1. a) The diagram below represents a plant in the division Bryophyta.



1. Name the parts labeled B and D. (2mks

B………………………………………….

D…………………………………………..

1. State one function for each of the parts labeled A and C. (2mks)

A………………………..

C…………………………

b). The diagram below represents a member of Kingdom Animalia.



1. Name the phylum to which the organism belongs. (1mk)

.

1. Using observable features in the diagram give three reason for the answer in (b) (i) above. (3mks)

.

1. The equation below represents a process that takes place in plants.

6CO2 + 6H2O C6H12O6 + 6O2

1. Name the process. (1mk)

.

1. State two conditions necessary for the process to take place. (2mks)

.

1. State what happens to the end –products of the process. (5mks)

.

1. a) State the function of a mirror in a light microscope. (1mk)

.

b) Give reasons why the coarse adjustment knob should not be used to lower the high power objective lens. (2mks)

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c)(i).State four differences between electron microscope and light microscope. (4mks)

**Electron microscope** **Light microscope**

ii) Give a reason for staining cells before viewing. (1mk)

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**SECTION B (40 MARKS)**

**answer question 6 (Compulsory) and either question 7 or 8 in the spaces provided after question 8.**

1. A scientist carried out an investigation to find out the population growth of mice under laboratory conditions. Twenty young mice were placed in a cage. The results obtained from the investigation were as shown in the table below.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time in months | 0 | 2 | 4 | 6 | 7 | 10 | 12 | 16 | 18 |
| Number of mice | 20 | 20 | 65 | 115 | 310 | 455 | 450 | 145 | 160 |

1. On the grid provided draw a graph of the number of mice against time. (6mks)
2. Account for the changes in mice population between
3. 0 to 2 months. (2mks)

.

1. 2 to 6 months ` (2mks)

.

1. 6 to 10 months (2mks)

.

1. 10 to 12 months (2mks)

.

1. I) between which two months was the population change greatest? (1mk)

.

II) Calculate the rate of population change over the period in (c) (i) above. (2mks)

.

1. What change in population would be expected if the investigation was continued to the 19th month. (1mk)

.

1. To obtain the observed results state two variables that were kept constant during the investigation. (2mks)

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1. Describe the role of hormones in the human menstrual cycle . (20mks)

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1. (a) Explain how excretion take place in plants. (4mks)

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(b) Describe the role of the human skin in homeostasis. (16mks)

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