**FORM 2 BIOLOGY DECEMBER HOLIDAY ASSIGNIMENT -2015**

1. What is meant by the following terms, give relevant examples: (10mks)
2. Excretion?
3. Egestion?
4. Thermo- regulation?
5. Secretion?
6. Homeostasis?
7. Explain why plants do **not** have an elaborate waste excretory system (2mks)

**3 a).** What are Alkaloids? (2mks)

**b)** What is the **economic** importance of plants excretory products? (18mks)

**4.** Using a relevant diagram, explain how unicellular organisms like **Amoeba** get rid of their waste products. (5mks)

**5.** Name **three** animal excretory tissues and organs, giving an example in each case. (3mks)

**6.** Give **five** main functions of the mammalian skin. (5mks)

**7.** Describe the **structural** adaptations of mammalian skin to its functions. (20mks)

**8.** Describe what happens in the **two** phases of aerobic respiration. (20mks)

**9.** a) List **five** differences between aerobic and anaerobic respiration.(5mks)

b) What is the significance of anaerobic respiration? (2mks)

c) Give examples of food in your **community** which provides us with a lot of energy. (3mks)

**10.** What is the **economic** importance of anaerobic respiration in industry? (10mks)

**11** a) The equation below represents oxidation of a certain food substrate.

**C57H104O6 + 80 O2 57 CO2 + 52 H2O + Energy**

1. Calculate the respiratory quotient of the food substrate. (2mks)
2. Which type of food substrate is being oxidized? (1mk)

b.) What is meant by the term oxygen debt? (2mks)

**12.** Describe **five** factors affecting the rate of respiration. (10mks)

**13.** Describe **five** respiratory diseases, their symptoms, treatment and control. (10mks)

**14.** Describe the mechanism of gaseous exchange in a **bony fish**. (20mks)

**15.** Explain how the mammalian heart is **structurally** adapted to perform its functions. (20mks)

**16.** Describe how **structural** and **environmental** factors affect the rate of transpiration. (20mks)

**17.** Describe how the **small intestines** are adapted to their functions. (20mks)

**18.** Name two nutrients that do **not** require digestion before they are absorbed. Explain why this is so? (3mks)

**19.** State the **factors** that determine energy requirements in human beings? (5mks)

**20.** Name the **carbohydrate** that is:

a) Found in abundant in mammalian blood. (1mk)

b) Stored in the mammalian liver. (1mk)

c) Stored in plant seeds. (1mk)

**21.** Explain why:

a) Red blood cells **burst** when placed in distilled water while plant cells remain intact. (2mks)

b) Fresh water protozoa like amoeba do **not** **burst** when placed in distilled water. (2mks)

**22.** Describe how the plants leaves are structurally adapted to perform their **photosynthetic functions.** (10mks)

**23.** The table below shows the approximate distribution of blood groups in a sample of 100 people in a population.

|  |  |  |  |
| --- | --- | --- | --- |
| **Blood group** | **Frequency** | **Rhesus +ve** | **Rhesus -ve** |
| **A** | **26** | **22** | **4** |
| **B** | **20** | **18** | **2** |
| **AB** | **4** | **3** | **1** |
| **O** | **50** | **43** | **8** |

1. Calculate the percentage of Rhesus negative (Rh-ve) individuals in the population? (1mk)
2. Account for

(i) The large number of blood group O individuals in a population. (2mks)

(ii) The small number of individuals with blood group AB. (2mks)

1. The diagram below represents a blood smear on a glass slide.

A

B

C

(i) State the importance of structure C being large numbers in the blood smear. (1 mark)

(ii) Give a reason why structure C would be found in large numbers in high altitude than in low altitude. (1 mark)

(iii) Name the process by which structure A would engulf structure B. (1 mark)

1. An experiment was carried out to investigate transpiration and absorption of water in sunflower plants in their natural environment with adequate supply of water. The amount of water was determined in two hour intervals. The results are shown in the table below.

|  |  |  |
| --- | --- | --- |
|  | **Amount of water in grammes** | |
| **Time of day** | **Transpiration** | **Absorption** |
| 1100-1300  1300-1500  1500-1700  1700-1900  1900-2100  2100-2300  2300-0100  0100- 0300 | 33  45  52  46  25  16  08  04 | 20  30  42  46  32  20  15  11 |

1. Using the same axes, plot graphs to show transpiration and absorption of water in grammes against time of the day. (7 marks)
2. At what time of the day was the amount of water the same for transpiration and absorption? (1 Mark)
3. Account for the shape of the graph of

(i) Transpiration (3marks)

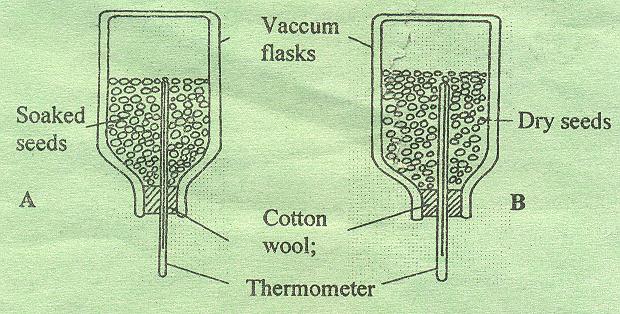
(ii) Absorption (3marks)

1. What would happen to transpiration and absorption of water if the experiment was continued till 0050 hours.(2 marks)
2. Name two factors that may affect transpiration and absorption at any given time. (2 marks)
3. Explain how the factors you named in (e) above affect transpiration. (2marks)
4. Describe the

(i) Process of inhalation in mammals (10 marks)

(ii) Mechanism of opening and closing of stomata using potassium ions theory. (10 marks)

1. A student set up an experiment using soaked and dry seeds as shown below



1. State the objective of this experiment (1mk)
2. State the observations made in each of the flask after 24 hours (2mks)
3. Account for the observation made in (b) above (2mks)
4. Suggest why vacuum flasks were used in this experiment (1mk)
5. What alteration would you make in the set-up to make the results more reliable (1mk)
6. Why should the seeds be washed with antiseptic/10% formalin? (1mk)

**27.** Give the name to the study of:

1. The cell (1mk)
2. Micro-organism (1mk)

**28.** State one function of each of the following cell organelles. (2mks)

1. Lysosomes
2. Ribosomes

**29.** A student drew a 3cm long diagram of a plant flower. If the actual length of the flower was 6cm, calculate the magnification of drawing made by the student. Show your working. (2mks)

**30.** Why are enzymes pepsin and trypsin secreted in precursor forms? (2mks)

***END.***