Uganda Martyrs University

FACULTY OF EDUCATION
SEMESTER TWO EXAMINATIONS 2022/23
DIPLOMA IN EDUCATION (PRIMARY) YEAR 1
INTEGRATED SCIENCE

Paper 1: Nutrition, Respiration, Excretion, And Transport In Plants And Animals; Laboratory Organisation And Management
DATE:20 /05/20223 **Time: 9:30 AM- 12:30PM**

Instructions:
Attempt one question from each section and question 7 is compulsory.

Begin each question on a fresh page

SECTION A: NUTRITION IN PLANTS AND ANIMALS

Answer one question from this section

1. (a) (i) Explain the term 'photosynthesis' . **03 marks**
   (ii) Mention the products of photosynthesis other than glucose. **03 marks**
   (iii) State the site of photosynthesis within the leaves. **02 marks**
   (b) State four ways in which the leaves of green plants are adapted to the process of photosynthesis. **08 marks**
   (c) Of what use is the dark stage of photosynthesis. **03 marks**
   (d) Describe any three factors that determine rate of photosynthesis. **06 marks**

Total = 25 marks

2. (a) Heterotrophic nutrition involves digestion which can either be intercellular or extra cellular.
   (i) What is meant by heterotrophic nutrition? **03 marks**
   (ii) With examples in each case, differentiate between intercellular digestion and extra cellular digestion. **06 marks**
   (c) Absorption of the digested food mostly occurs in small intestine. State three ways in the small intestine is adapted to the function of absorption. **06 marks**
   (d) List any three classes of food and their associated deficiency diseases in man. **06 marks**
   (e) Physical digestion in mammals occurs in the mouth. In what ways are any two kinds of teeth you have identified in man adapted to their functions. **04 marks**

Total = 25 marks

SECTION B: GASEOUS EXCHANGE, RESPIRATION AND EXCRETION IN PLANTS AND ANIMALS

Answer one question from this section.

3. (a) Describe four characteristics of an efficient respiratory system. **08 marks**
   (b) Name any five diseases associated with respiratory system in man. **05 marks**
   (c) Define the following terms:
   (i) Anaerobic respiration **02 marks**
   (ii) Aerobic respiration **02 marks**
   (iii) Respiration Quotient **02 marks**
   (d) State any three mechanisms of cellular respiration **06 marks**

Total = 25 marks

4. (a) What is meant by the term excretion **03 marks**
   (b) The nitrogenous wastes excreted by organism are ammonia, uric acid and urea. For each of the nitrogenous waste excreted, give an example of organism which excretes it and reason for excretion of the waste in that form. **06 marks**
   (c) In man, nitrogenous waste is eliminated by kidney and the functional unit of kidney is nephron. Name the main parts of nephron. **05 marks**
   (d) Name the part of nephron in which the following occur.
   (i) Water is reabsorbed **02 marks**
   (ii) Excretes hydrogen ions and retains hydrogen carbonate ions. **02 marks**
   (e) Explain how the human skin maintains constant body temperature during hot day. **07 marks**

Total = 25 marks

SECTION C: TRANSPORT IN PLANTS AND ANIMALS

Answer one question from this section.

5. (a) Explain the term 'transpiration' **03 marks**
   (b) Explain four environmental factors that affect rate of transpiration. **12 marks**
   (c) State one use of the following vessels in plants:
   (i) Phloem **02 marks**
   (ii) Xylem **02 marks**
   (d) State three routes through which water can move up to the leaves. **03 marks**
   (e) Name three theories formulated to explain movement of water in plants. **03 marks**

Total = 25 marks

6. (a) With examples explain the following terms.
(i) Open circulation system
(ii) Closed single circulation system
(iii) Closed double circulation system **09 marks**

b) State one major disadvantage of open circulation system **02 marks**

(c) (i) Name the three components of a circulatory system and state one use of each of the components. **09 marks**

(ii) State three types of blood **03 marks**

(d) State any two diseases of circulatory system in man. **02 marks**

Total = 25 marks

SECTION D:LABORATORY MANAGEMENT AND ORGANISATION

This question is compulsory

7. a) Define the term laboratory. **02 marks**

b) Describe five basic principles of laboratory design and usage **10 marks**

c) State the systematic ways of recording experimental data. **07 marks**

d) Describe any six factors to be considered when enacting laboratory rules and regulations. **06 marks**

Total = 25 marks

The End