P530/2

**BIOLOGY (THEORY)**

**PAPER 2**

JULY/AUGUST 2016  
2½ HOURS

NTUNGAMO PRIVATE SECONDARY SCHOOLS

JOINT MOCK EXAMINATIONS

Uganda Advanced Certificate of Education

**BIOLOGY**

**PAPER 2**

2 HOURS 30 MINUTES

**INSTRUCTIONS TO CANDIDATES:**

* Answer question **one** in section A and **three** other questions in section B
* All answers should be written on the sheets provided
* Candidates are advised to read the questions carefully, organize their answer and present them precisely and logically.

**SECTION A (40 MARKS)**

1. An experiment was carried out using mitochondria isolated from muscle cells of a

mammal. The mitochondria were placed in a buffer solution into which similar

amount of glucose and amino acids had been added. The variation in the quality of

glucose, amino acids and ATP liberated were monitored for a period of two hours.

The results are shown in figure 1 below.

ATP

Amino acids

Glucose

0

20

40

60

80

100

120

0

120

100

80

60

40

20

0

200

400

600

800

1000

1200

Time in minutes

Quantity of Glucose and Amino acids (mg)

Quantity of ATP in arbitorary units

(a). Explain the variation in the quantity of

(i). Glucose *10mks*

(ii). Amino acids *09mks*

(iii). ATP *05mks*

(b). Explain why:

(i). The experiment was carried out using a buffered solution *03mks*

(ii).Quantity of glucose and amino acids remained constant at the beginning of the experiment *02mks*

(c) (i). Calculate the rate of depletion of each of the substrate *04mks*

(ii). Giving reasons predict the likely changes if the experiment was allowed to continue for another two hours *06mks*

(d) (i). Suggest why the quantity of ATP does not begin from Zero *02mks*

(ii). What is the importance of ATP in mammaliam body cells? *02mks*

**SECTION B (60MARKS)**

2(a). Differentiate between diffusion and osmosis *03mks*

(b). Explain the need for a transport system in multicellular organism *06mks*

(c). Explain the mechanism by which mineral salts are transported up a tall plant

*11mks*

3(a). How does the body of a human prevent entry of micro-organisms that cause disease? *10mks*

(b). Explain the mode of action of lymphocytes *10mks*

4(a). Describe the source of the major excretory products in animals *06mks*

(b). Explain how marine fish have been able to overcome their osmoregulatory

challenges. *14mks*

5(a). Describe how support is achieved in terrestrial dicotyledonous plants and aquatic plants *10mks*

(b). Comment on the suitability of the exoskeleton to provide support and locomotion in Arthropods *10mks*

6(a). Describe the mechanism by which individuals are produced by natural selection

*10mks*

(b). Discuss the conditions that may lead to changes in allele frequencies in a population *10mks*

**END**