Name……..……**Stream**……

Sign……

(Write your name and stream in the spaces provided)

530/2
BIOLOGY
(Theory)
Paper 2
MARCH.2024
2½hours

CODE HIGH SCHOOL SEETA BAJJO-MUKONO

UGANDA ADVANCED CERTIFICATE OF EDUCATION

BEGINNING OF TERM ONE EXAMINATIONS 2024
BIOLOGY
PAPAR 2
S.6
TIME: 2 ½ HOURS

Instructions to candidates

Answer 1 question in section A plus three others from section B
Candidates are advised to read questions carefully, organise their answers and present them precisely and logically.
Illustrate wherever necessary, with well-labelled diagrams.

SECTION A: [40 MARKS]

1. An investigation was carried out to determine the effect of a strong saline solution on the rate and concentration of urine produced by a dog.
   The experiment begun with the dog first being allowed to drink water to its fill. Then ten minutes later, it was injected with a strong saline solution

through the carotid artery. The dog was then monitored closely and the relevant measurements taken.
Table 1 below shows the results obtained. The rate of urine production was expressed in cm^3 per minute while the corresponding concentration of the urine produced was expressed in arbitrary units.
Study the table and then answer the questions that follow

Time (Minutes)	0	10	20	30	40	50	60
Rate of urine production [cm^3/min]	6.5	7.3	1.0	2.0	3.3	5.0	6.5
Concentration of urine [arbitrary units]	2.0	2.0	8.0	6.0	3.7	2.0	2.0

(a) Using appropriate scales and same axes, draw graphs to reflect these results
(13 marks)

(b) Explain the inclusion of measurements recorded at time zero (0) in this investigation (1 mark)

(c) Comment briefly on the effect of saline solution on
(i) the rate of urine production
(ii) the concentration of urine produced by the dog during this investigation
(8 marks)

(d) Account fully for the observed changes in (c) above. (10 marks)

(e) Give the main structural and physiological advantages the animals living in arid habitats have for water conservation. (8 marks)

SECTION B: (60 MARKS)

2. (a) Describe how anaerobic breakdown of glucose yields energy in a cell (12 marks)

(b) Discuss how anaerobic respiration of microorganisms is of economic benefit to man
(8 marks)

3. Explain the following observations
   (a) Blood initially oozes from an injury involving a torn blood vessel but it soon stops
   (12 marks).
   (b) A mountaineer rapidly ascending a high mountain suffers great discomfort and fatigue.
   (8 marks)

4. (a) Describe the structure and adaptation to function of the following tissues:
   (i) parenchyma
   (ii) collenchyma
   (iii) sclerenchyma (12 marks)

   (b) Compare the distribution of tissues in dicotyledonous stem and root in relation to the mechanical functions of the stem and root
   (8 marks)

5. What is alternation of generations? Give a detailed account of alternation of generation in a named bryophyte or pteridophyte
   (20 marks)

6. (a) How are the following organisms adopted to their modes of life?

   (i) tick
   (ii) witch weed (*Striga asiatica*)

   (b) How do they affect the organisms which they interact with?
   (10 marks)

END