BIOLOGY
P530/2
THEORY
2:30 HOURS
AUGUST, 2018

UNNASE Community

UGANDA ADVANCED CERTIFICATE OF EDUCATION EXAMINATIONS

UNNASE MOCK EXAMINATIONS 2018

BIOLOGY THEORY

PAPER P530/2

TIME: 2Hours and 30 minutes

Instructions to candidates

1. This paper consists of **TWO** sections **A** and **B.**
2. Answer question **ONE** in section **A** and any **THREE** questions from section **B** on the answer sheets provided.
3. Present your answers precisely and logically illustrating with diagrams where necessary.

SECTION A (40 MARKS)

Question ONE is compulsory.

1. An investigator placed 500g of maize flour (food) in a rectangular box with a perforated top and introduced equal numbers of the flour beetles *Tribolium confusum* **(K)** and *Tribolium castenum* **(L)** into the same box at the same time. The box was kept under similar environmental conditions in the school laboratory. The beetles were counted at certain intervals and the results tabulated as shown in table 1 below.

Table 1

Number of days after introduction of beetles	**Number of K beetles**	**Number of L beetles**
0	20	20
5	20	20
40	200	300
60	550	800
100	650	1750
135	640	1600
150	645	1500

(a) Reflect the results of table 1 above in a suitable graph using same axes. **(10 Marks)**

(b)i) State the biological principle being represented by the graph(s) in (a) above with a reason. **(3 Marks)**

(ii) Explain the relationship(s) in populations of the two flour beetles **K** and **L** from the graph(s) in (a) above **(10 Marks)**

(c)i) Briefly describe a suitable method you could use to determine the population of the flour beetles used in this investigation. **(8 Marks)**

(ii) Suggest any four precautions taken to ensure accuracy of the results in c (i) above. **(4 Marks)**

(d) Predict with reasons what could happen to the populations of **K** and **L** if the experimental beetles were cultured in separate boxes in an open habitat outside the laboratory. **(5 marks)**

SECTION B (60 MARKS)

Attempt any **THREE** questions from this section.

2a) Distinguish between photoperiodism and vernalisation. **(4 Marks)**

(b) Describe the effects of phytochromes on:

(i) Long day plants **(6marks)**

(ii) Short day plants. **(6marks)**

(c) Explain the significance of photoperiodism to plants. **(4marks)**

3a) Explain how the need for efficient gaseous exchange has been achieved in members of class mammalia. **(10marks)**

(b) What adjustments would a terrestrial mammal undergo if it migrated to a mountain top? **(10marks)**

4a) Distinguish between menstrual cycle and oestrus cycle. **(3 marks)**

(b) Give an account of the physiological changes that occur in a human female from conception to birth? **(14marks)**

(c) Suggest three ways in which the knowledge of the menstrual cycle can be used to improve the quality of human health. **(3marks)**

5a) Account for the success of fungi in their natural habitat. **(8marks)**

(b) Describe the morphological features of pin moulds that necessitated them to be classified outside kingdom plantae.

(6 marks)

(c) Describe the procedure for isolation of fungal cell components and give its significance to human life. **(6marks)**

6a) With named examples explain the meaning of the terms:

(i) Vestigial structures

(ii) Homologous structures

(iii) Analogous structures **(6marks)**

(b) Briefly explain how each of the structures named in 6 (a) above can be used as evidence for evolution. **(14marks)**

END