

**P530/2**  
S.6  
BIOLOGY PAPER 2  
**OCTOBER, 2024**  
2<sup>1</sup>/<sub>2</sub> hours

**UGANDA ADVANCED CERTIFICATE OF EDUCATION**  
**BIOLOGY 2 EXAMINATION**  
**BIOLOGY PAPER 2**  
2 hours 30 minutes.  
**SET 08**

**INSTRUCTIONS TO CANDIDATES:**

Answer question one in section **A** plus three others from section **B**.

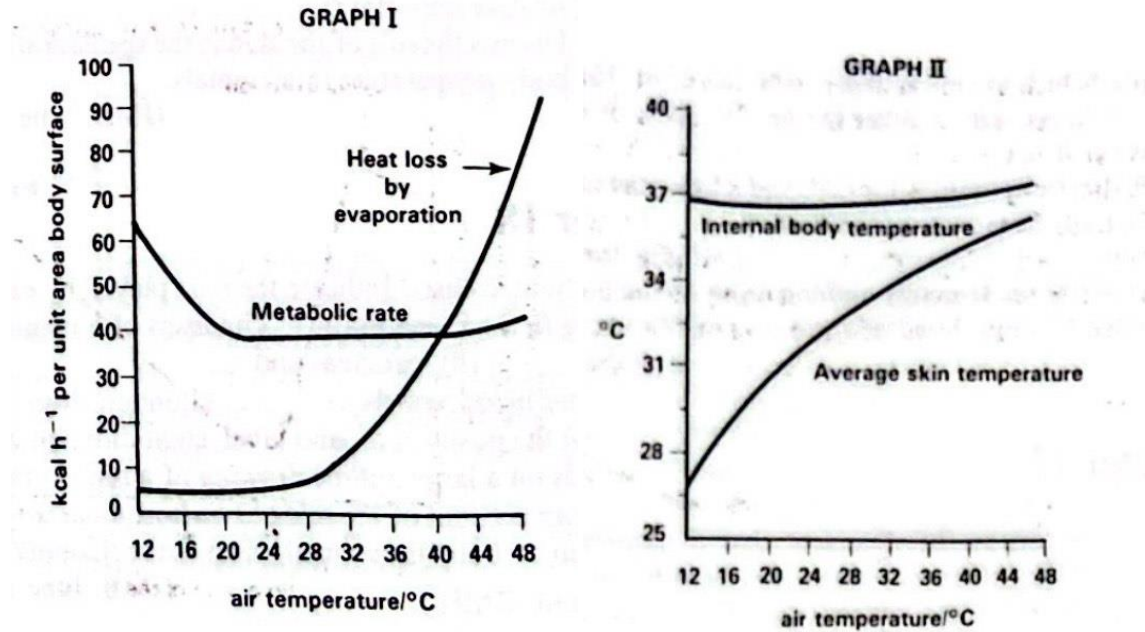
Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagrams where ever necessary.

Write on the answer sheet, your name, index number and the questions attempted in their order as shown in the table.

Question	Marks
Total	

*Question one is compulsory*

1. The graphs below show how the human body responds to increase in the air temperature. The measurements were made on unclothed, resting male subjects in still air. The relative humidity of the air was low.



- a) Compare the changes in metabolic rate and heat loss by evaporation. (07 marks)
- b) Account for the changes in the
- i) Metabolic rate (10 marks)
  - ii) Heat loss by evaporation. (05 marks)
- c) Explain the differences in **graph II** between the changes in the average skin temperature and internal body temperature. (06 marks)
- d) Suggest what would happen to
- i) metabolic rate and heat loss by evaporation in **graph I** if female subjects of same size, age and health were used. (05 marks)
  - ii) the changes in the internal temperature in **graph II** if a lizard was used instead of humans. (05 marks)
- e) State two ways, other than evaporation of sweat, by which heat is lost via the skin. (02 marks)

## SECTION B

Attempt any **three** questions

2. a) Compare competitive and non-competitive enzyme inhibition. (06 marks)  
b) Explain the mechanism of enzyme action in relation to lock and key hypothesis. (08 marks)  
c) Explain the effect of PH changes on enzyme activity. (06 marks)
3. a) What is meant by the term *Malnutrition*? (02 marks)  
b) Explain the utilisation of food in an individual subjected to starvation over a long period of time. (08 marks)  
c) Describe the role played by the liver in food digestion and metabolism of absorbed food. (10 marks)
4. a) Distinguish between Natural selection and artificial selection. (04 marks)  
b) Explain the role of territorial behaviour in evolution of a species. (07marks)  
c) Fur colour in mice is determined by two genes. The allele **A** codes for agouti. **A** is dominant to the recessive allele **a** which code for black fur. Mice that are **bb** for another gene have white fur regardless of the genotype for **Aa** gene.  
i) Identify the gene interaction and suggest an explanation for this interaction. (03 marks)  
ii) Calculate the offspring phenotypic ratio for a cross between parents that are heterozygous for the two genes. (06 marks)
5. a) Describe the process of development of pollen grains. (07 marks)  
b) Explain the advantages of reproduction by seed. (09 marks)  
c) How are angiosperms reproductively better adapted than gymnosperms. (04 marks)
6. a) How is fish adapted for locomotion in water? (06 marks)  
b) Describe the process of locomotion in fish. (08 marks)  
c) How is instability during locomotion prevented in fish. (06 marks)

END

*consistency transforms average into excellence*

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