Name's of student……
School Name……

BIOLOGY
PAPER II
P530/2
SENIOR SIX
JULY-AUGUST.

COMPREHENSIVE BIOLOGY TRANSFORMATION INITIATIVE.
UACE
RESOURCEFUL EXAMINATION

S.6 CANDIDATES-2023

PAPER 2

2 HOURS AND 30 MINUTES

INSTRUCTIONS TO THE CANDIDATES:

This paper consists of section A and B.

Answer question one in section A plus 3 questions in section B

Candidates are advised to read questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagram wherever necessary.

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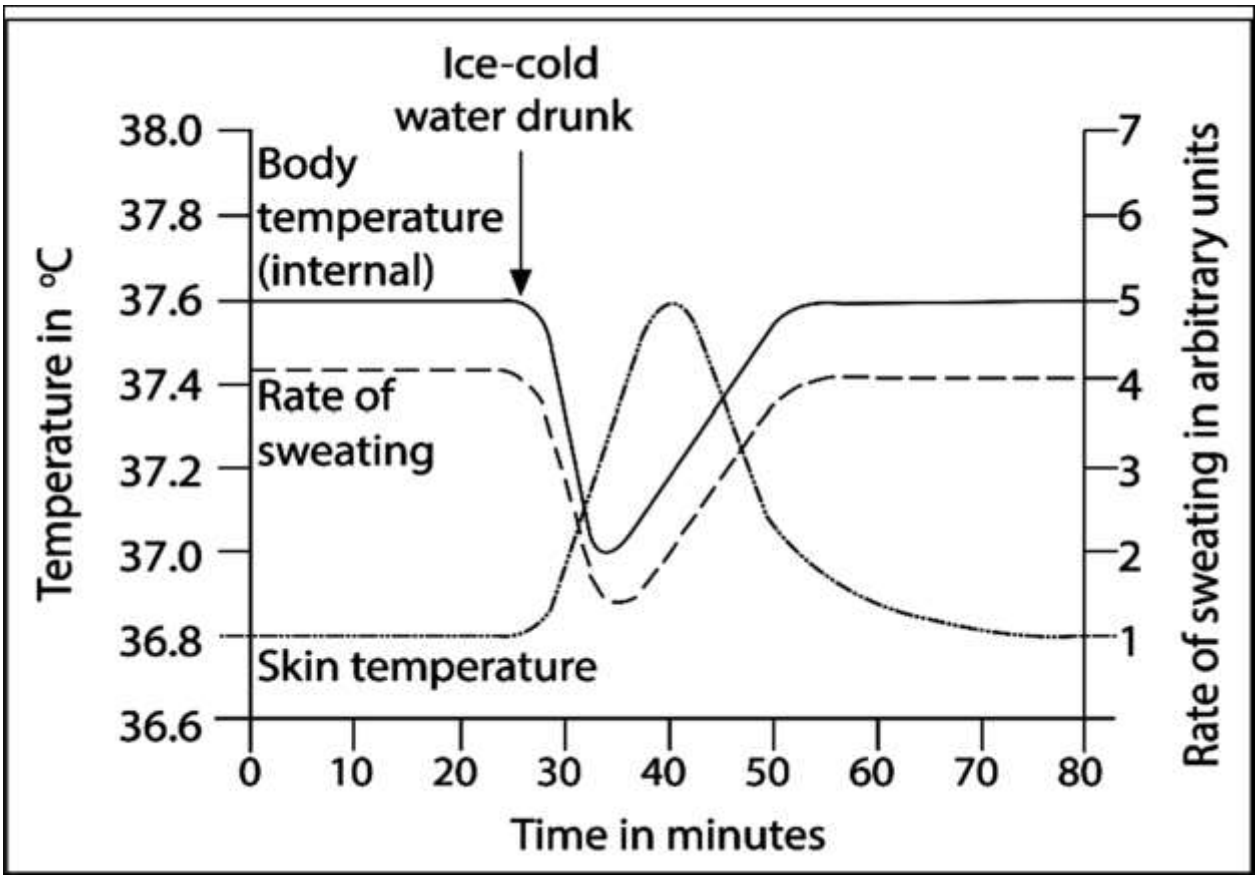
1.0. In an experiment, a person sat inside a large container which was kept at a constant temperature of 25°c. After 23 minutes, a person drunk 500cm³ of ice cold water. The person's internal temperature was measured near the brain by attaching a temperature probe to the ear drum. Measurements of the person's internal temperature, skin temperature and the rate of sweating are shown in the graph. Study it very well and provide appropriate responses.



a) Compare the changes in the skin temperature and internal body temperature after ice-cold water was drunk. (05 marks)

b) Describe the relationship between the internal body temperature and following measurable variables after ice cold water was drunk.

(i) Rate of sweating. (05 marks)

(ii) Skin temperature. (05 marks)

c) Account for the relationships above in b(i) and (ii) (15 marks)

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d) Suggest

(i) **Why the ice-cold water was not given before 23-minutes of the experiment.** **(03 marks)**

(ii) **Conclusions that can be made from the experiment.** **(02 marks)**

(iii) **Why the skin temperature does not give an accurate measurement of the core body temperature.** **(05 marks)**

SECTION B (60 MARKS)

Attempt any 3 questions of your choice from this spread.

1.0a)(i)Why are homeostatic mechanisms often described as detection-correction systems? **(05 marks)**

(ii) Explain how the Positive feedback mechanism in response to cold ambient temperatures occurs in elderly people. **(07 marks)**

b) Describe how the metabolic pathways show homeostasis at molecular level in a cell. **(08 marks)**

2.0a) Describe how the following non-specific immune defensive mechanisms combat pathogens in our bodies.

(i) **Mechanical defence.** **(05 marks)**

(ii) **Biological defence.** **(05 marks)**

(iii) **Chemical defence.** **(05 marks)**

b) Explain the significance of inflammation as a second line of defence in our bodies. **(05 marks)**

3.0a) Explain how the effects of light intensity, nutrient availability and turbulence interact to control aquatic primary productivity. **(12 marks)**

b) Describe the different statutory guidelines put in place to reduce risks from insecticide use in modern times. **(08 marks)**

4a) Describe the factor that affect the rate of water absorption from the soil by plants. (08 marks)

b) Explain the evidences that show photosynthesis is a double stage reaction. (12 marks)

5.0a)(i) Explain why ATP is a better energy source compared to glucose. (08 marks)

(ii) Explain how ATP is synthesized during Oxidative phosphorylation. (12 marks)

6.0a) Explain how Disruptive selection may lead to the following.

(i) Balanced Polymorphism. (05 marks)
(ii) Speciation. (05 marks)

b) Describe the different mechanisms that preserve genetic diversity in the gene pools. (10 marks)

END.

Contributions made by MUGWE MARTIN-KAMPALA.

The trajectory must be similar to the origin of life from a combination of simple molecules into complex ones and their evolution via coecervates into cells (probionts)!

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