P530/2
Biology
Paper 2
Nov/Dec 2020
2½ Hours

S6.UACE BIOLOGY HIGH MOCK EXAMINATION 2020
BIOLOGY PAPER 2
(Theory)
2 Hours 30 Minutes

Instructions to candidates:

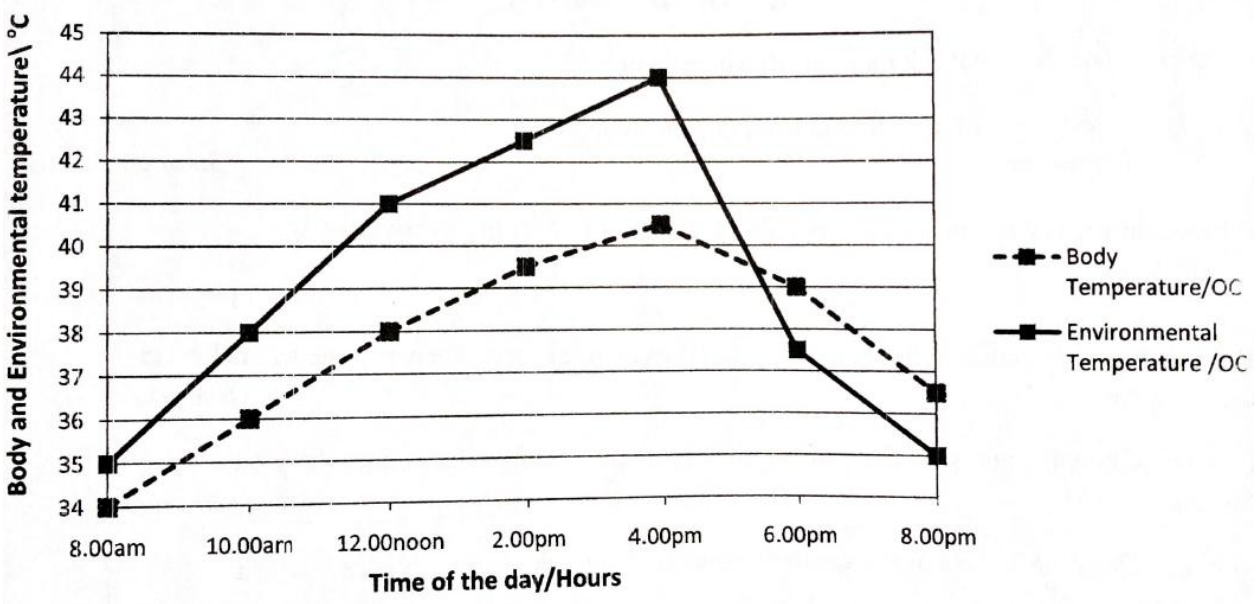
This paper consists of Sections **A** and **B**

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 labeled diagrams wherever necessary.

Section A (40 Marks)

1. The graph below shows variation of body temperature of the camel with external environmental temperature. Study the data and answer the questions.



a) Compare variation of the body temperature with environmental temperature. **(08 marks)**

b) Explain variation of body temperature with environmental temperature from;

i) 8:00am to 2:00pm,

ii) 4:00pm to 8:00pm **(08marks)**

c) What is the significance of pyrogens? **(02marks)**

d) Explain the significance of variation of;

(i) Body size,

(ii) Body extremities, between the temperate and desert mammals **(10marks)**

e) **Table 2** below, indicates changes in the temperature of the skin, hypothalamus and the rate of energy loss by evaporation from the human body after ingesting a piece of ice. Study the data and answer the questions that follow:

Time /min	0	4	8	12	16	20
Skin Temperature / ^{o}C	37.0	37.1	37.2	37.3	37.4	37.5
Hypothalamus Temperature / ^{o}C	37	36.9	36.7	36.6	36.5	36.4
Rate of energy loss by evaporation /JS^{-1}	200	175	150	125	100	75

i) Show the relationship between ingestion of ice, skin temperature, hypothalamus temperature and the rate of evaporation. **(03marks)**

ii) Explain the relationship shown in f (i), above **(9marks)**

Section B (60 Marks)

2. a) Describe positive feedback mechanism with reference to;

i) Propagation of an action potential by the neuron,

ii) Parturition **(15marks)**

b) Outline three advantages and two disadvantages of viviparity over oviparity. **(05marks)**

3. a) Explain how variation in light intensity affects exchange of gases between the leaf cells and the atmosphere **(10marks)**

b) Describe how non specificity of photosynthetic enzymes affects productivity. **(10marks)**

4.a) Explain how Tilapia overcome osmoregulatory challenges in Lake Victoria **(10marks)**

b) Describe elimination of nitrogenous wastes from the insect's body. **(10marks)**

5.a) Outline the adaptations of transfer cells. **(05marks)**

b) Describe the mechanism of stomatal closure basing on proton ion changes **(10marks)**

c) Mention **three** weaknesses and **two** evidences of photosynthetic theory of stomatal movements. **(05marks)**

6. a) Explain how the gene for sickle cell anaemia arises in the human population **(14marks)**

b) Explain how the structural arrangement of retinal cells at fovea increases the efficiency of the mammalian eye. **(6marks)**

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