

## WRITE FROM HOME TEST

Month .....

**DUE DATE OF SUBMISSION IS MONDAY  
HOMEOSTASIS**

### TOPIC TEST

Examiner : .....

- **Be faithful and don't copy**
- **Read and after write it**
- **Write neatly**

#### Question 1

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A to D) next to the question number.

1.1 Which ONE of the following will occur in the human body on a cold day?

- A Vasodilation in the skin
- B Increase in the activity of sweat glands
- C Decrease in evaporation of sweat from the surface of the skin
- D Increase in blood flow to the surface of the skin

1.2 During an investigation a man was placed in an airtight room. Sensors were used to monitor his breathing and heart rate. The investigators were able to change the environmental conditions in the room.

After 30 minutes the man's breathing and heart rate had increased.

The investigators changed the environmental conditions in the room by ...

- A decreasing the light intensity.

- B increasing the amount of carbon dioxide in the air.
- C decreasing the humidity.
- D increasing the amount of oxygen in the air.

1.3 Negative feedback control involves the following four stages:

- (i) Effectors bring about corrective responses.
- (ii) A receptor detects a change in the internal environment.
- (iii) Factor brought back to normal levels.
- (iv) Nervous or hormonal messages are sent to effectors.

**The order in which these stages occur is:**

- A (ii), (iv), (iii), (i)
- B (iv), (ii), (iii), (i)
- C (ii), (iv), (i), (iii)
- D (iv), (ii), (i), (iii) **(3x2) = (6)**

**Question 2**

Provide the correct biological term for each of the following descriptions. Write only the term next to the question number (2.1 – 2.4)

Question number	Description
2.1	When there is an increase from normal, a corrective mechanism causes a decrease and vice versa to maintain a balanced system
2.2	The widening of the blood vessels in the skin that increases the amount of blood flowing to the skin in humans when the environmental temperature is high
2.3	It is the process of maintaining a constant internal environment within narrow limits, despite changes that take place internally and externally.
2.4	The narrowing of the blood vessels in the skin that decreases the amount of blood flowing to the skin in humans when the environmental temperature is low

**(4)**

**Question 3**

An investigation was carried out to determine the influence of alcohol on the volume of urine produced.

12 healthy, 23-year-old males of similar height and mass participated in the investigation.

The investigation was conducted as follows:

- The men were divided into two groups of six each, Group A and Group B.
- The two groups ate the same food and did the same exercise for the 24-hour-period before testing.
- Each group was given the following to drink after the 24-hour-period:
  - Group A: 1 litre of alcohol-free beer (beer that does not contain alcohol)
  - Group B: 1 litre of alcoholic beer
- Urine was collected from each man every hour.

Assume that the volume of urine collected is equal to the volume of urine produced.

The results of the investigation are shown in the table below

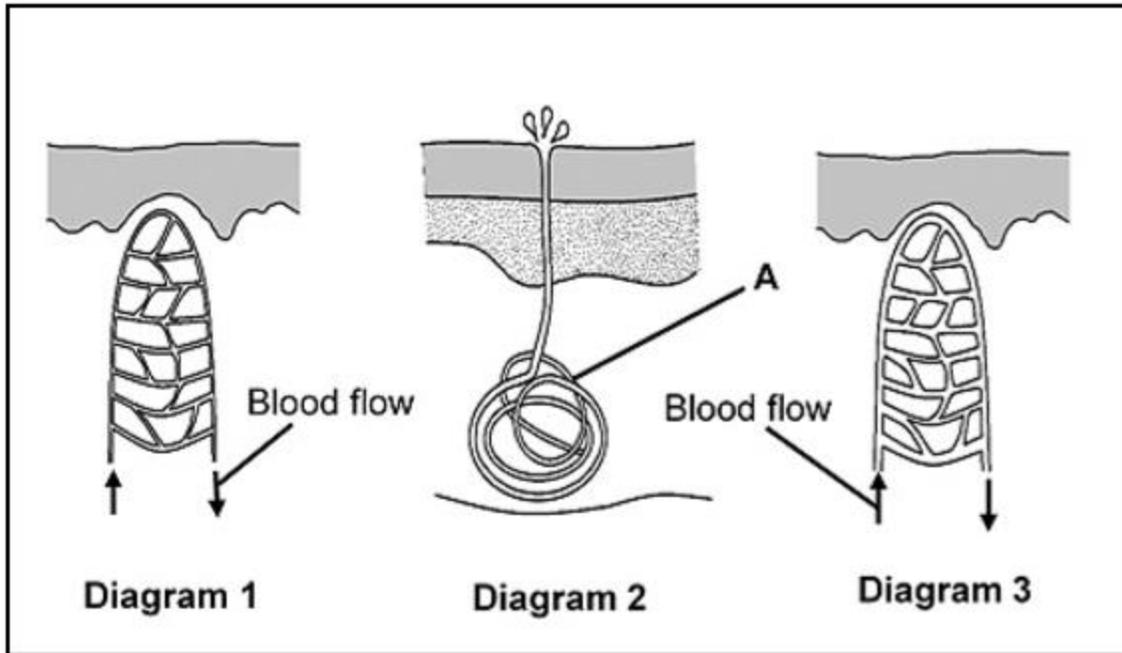
TIME OF COLLECTION	AVERAGE VOLUME OF URINE COLLECTED (mℓ)	
	GROUP A	GROUP B
After 1 hour	599	643
After 2 hours	413	504
After 3 hours	112	132

- 3.1 State:
- (a) The dependent variable in this investigation (1)
  - (b) TWO planning steps the investigators had to take before the investigation could start (2)
  - (c) TWO factors that need to remain constant, other than the ones already mentioned (2)
  - (d) TWO steps that the investigators took to ensure the reliability of the investigation (2)
- 3.2 Based on the results, explain how the intake of alcohol influences the secretion of ADH and consequently the volume of urine that is produced by the kidneys (4)

**(11)**

#### Question 4

The diagrams below represent parts of the human skin.



4.1 Identify the part labelled A. (1)

4.2 Give the NUMBERS of the diagrams (1, 2 and 3) that represent the body's response to high environmental temperatures. (2)

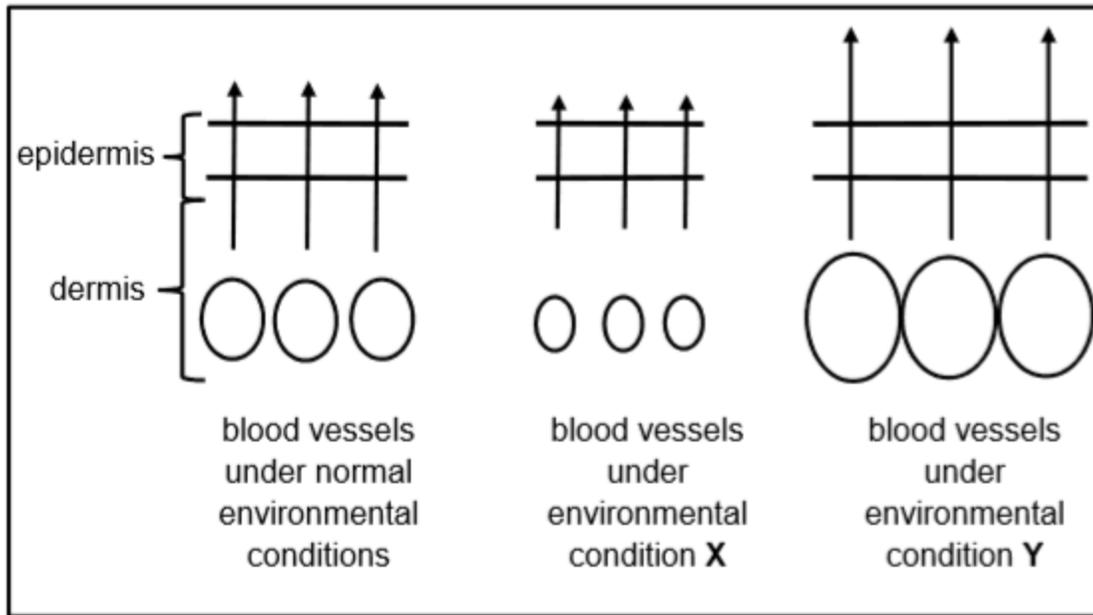
4.3 Would the skin release more heat through radiation in **Diagram 1** or **Diagram 3**? (1)

4.4 Give the NUMBER of the diagram (1, 2 or 3) that represents vasoconstriction. (1)

4.5 Which part of the brain controls thermoregulation in humans? (1)  
(6)

### Question 5

The diagrams below represent the skin showing transverse sections through the blood vessels when a person is exposed to different environmental conditions.



5.1 Describe the environmental condition X. (1)

5.2 What is represented by the arrows?(1)

5.3 Name the process that is represented in the diagrams that maintains a constant body temperature. (1)

(3)  
[30]