

TOPIC: HOMEOSTASIS

Multiple Choice Questions:

1. What is meant by negative feedback? [Nov 2008, Q21]

- A A change away from a set point causes a change back towards the set point
- B A change away from a set point causes further change away from the set point
- C A change towards a set point causes a change away from a set point
- D Changes away from a set point are prevented

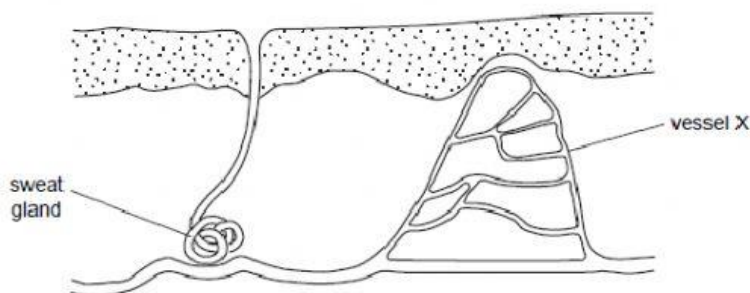
2. When a person moves from a cold room into a hot room, the following responses occur. [Nov 2009, Q21]

- 1 The brain co-ordinates the response.
- 2 The skin begins to secrete sweat.
- 3 Sweat evaporates from the skin surface.
- 4 Temperature receptors are stimulated in the skin.

What is the correct sequence of events?

- A 3 → 4 → 1 → 2
- B 2 → 3 → 4 → 1
- C 4 → 1 → 2 → 3
- D 1 → 4 → 2 → 3

3. The diagram shows a section through skin. [Nov 2010, Q17]



What happens if the body temperature starts to fall below normal?

	Sweat glands	Blood flow in vessel X
A	Secrete sweat	Decreases
B	Secrete sweat	Increases
C	Stop secreting sweat	Decreases
D	Stop sweating sweat	Increases

4. What helps heat retention in the human body?

[Nov 2011, Q19]

- A Actively secreting sweat glands
- B Dilated skin blood vessels
- C Fat in and under the skin
- D Relaxed hair erector muscles

5. Which process is **not** a result of negative feedback?

[Nov 2012, Q20]

- A A decrease in the surrounding temperature leads to a decrease in respiration rate
- B A decrease in the surrounding temperature leads to a decrease in sweating
- C A decrease in the surrounding temperature leads to a decrease in blood flow through the skin surface
- D A decrease in the surrounding temperature leads to shivering

6. Which parts of the skin are involved in the control of body temperature?

[Nov 2013, Q19]

	Sweat glands	Temperature receptors	Blood vessels
A	✓	✓	✓
B	✓	✓	x
C	✓	x	✓
D	x	✓	✓

7. Which process is responsible for maintaining a person's body temperature when they are too cold?

[Nov 2014, Q20]

- A Excretion
- B Homeostasis
- C Sweating
- D Vasodilation

8. When a person is cold, nerve impulses from the hypothalamus cause the skin to reduce the rate of heat loss.

What is the effect of these nerve impulses on the hair erector muscles and on the arterioles near the skin surface?

[June 2008, Q21]

	Hair erector muscles	Arterioles near skin surface
A	Contract	Contract
B	Contract	Relax
C	Relax	Contract
D	Relax	Relax

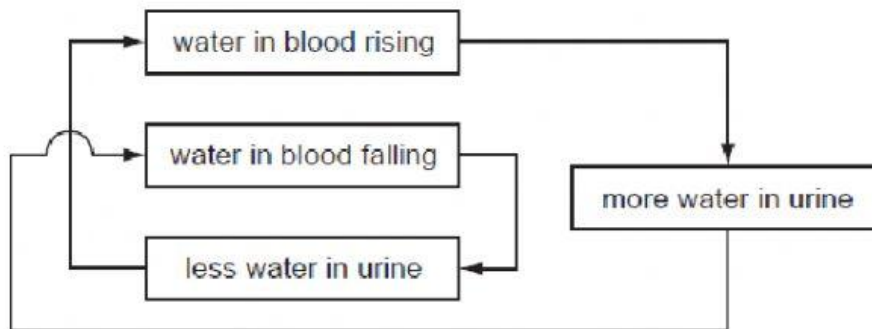
9. Which structures are **all** involved in controlling human body temperature?

[June 2010, Q18]

- A Blood vessels near the skin surface, the cerebellum and sweat glands
- B Blood vessels near the skin surface, the hypothalamus and skeletal muscles
- C Kidneys, the cerebellum and sweat glands
- D Kidneys, the hypothalamus and skeletal muscles

10. The diagram refers to the control of water concentration in the blood.

[June 2011, Q19]



Why is this a negative feedback system?

- A It decreases the amount of water in the blood
- B It increases any change in the amount of water in the blood
- C It increases the amount of water in the blood
- D It reverses any change in the amount of water in the blood

Structured Questions:

1. Fig. 4.1 shows some structures in a section through human skin.

[June 2010, Q4]

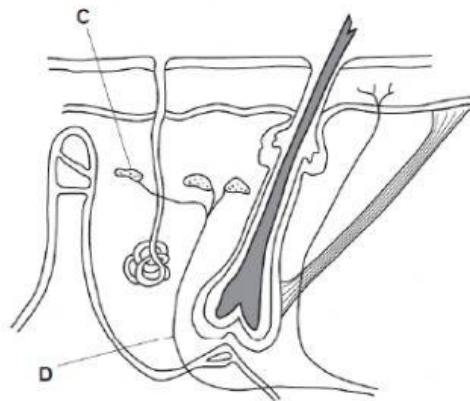


Fig. 4.1

(a) The body is able to maintain its internal environment within narrow limits. State the term for this process.

_____ [1]

(b) Structures **C** and **D**, in Fig. 4.1, are involved in the process of temperature regulation. Identify structures C and D and state the part they play in the process.

C _____

part played _____

D _____

part played _____

(c) The consumption of alcohol causes the muscles in artery walls to relax.

Taking this into consideration, suggest why people who work in environmental temperatures below 5°C might be advised not to drink alcohol before or during work.

[2]

[Total: 8]