2016 Homeostasis Test

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| Test part | Possible mark | Your mark |
| Multiple choice | 14 |  |
| Short answer | 24 |  |
| Total | 38 |  |

**Use a ball point pen to shade** the letter that represents the best answer from the choice of answers. Marks are not deducted for wrong answers.

|  |  |  |  |
| --- | --- | --- | --- |
| Question | Answer | Question | Answer |
| 1 | A B C D | 8 | A B C D |
| 2 | A B C D | 9 | A B C D |
| 3 | A B C D | 10 | A B C D |
| 4 | A B C D | 11 | A B C D |
| 5 | A B C D | 12 | A B C D |
| 6 | A B C D | 13 | A B C D |
| 7 | A B C D | 14 | A B C D |

Multiple Choice

1. Vasodilation of blood vessels near the skin will occur when:

a) the core body temperature is too high.

b) the core body temperature is too low.

c) the atmospheric temperature is too low.

d) the blood glucose level is too high.

2. A sudden change in core body temperature:

a) will disrupt metabolic activity as it alters enzyme activity.

b) will increase carbon dioxide solubility in blood plasma.

c) will always decrease sweating.

d) will increase metabolic rate in order to cool the body.

3. Dynamic equilibrium is best described as:

1. Unchanging and ideal conditions.
2. Maintenance of conditions within an acceptable range of limits. Some fluctuation occurs, but conditions remain within the limits.

c) Maintenance of conditions beyond an acceptable range of limits. Some fluctuation occurs, but conditions remain within the limits.

d) Maintenance of conditions within an acceptable range of limits. No fluctuation of conditions occurs.

1. Homeostasis is maintained by:
2. The endocrine system.
3. Behaviour.
4. The nervous system.
5. All of the above.

5. Homeostasis is the

a) lowering of body temperature by sweating.

b) secretion of hormones from endocrine glands.

c) excretion of nitrogenous wastes in urine.

d) maintenance of a constant internal environment.

6. Vasoconstriction aids in the body when the core body temperature is too cold. Which response below DOES NOT aid in raising core body temperature.

a) Thyroxine released by the thyroid gland.

b) Vasodilation of blood vessels in the core of the body.

c) Behavioural response of putting on a jumper.

d) Rhythmic muscle contractions.

7. How is the control of cardiac muscle unique?

a) It is not affected by the action of hormones.

b) It can initiate its own contractions.

c) It only involves nervous control.

d) It is controlled by adrenalin.

8. The functional unit of the kidney is the:

a) neuron.

b) nephron.

c) neutron.

d) axon

9. Thermorecptors are located in the

a) abdominal organs

b) hypothalamus.

c) skin.

d) all of the above

10. The modulator for cardiac and respiratory function is the:

(a) bladder.

(b) pre-frontal cortex.

(c) medulla oblongata.

(d) hypothalamus.

11. Carbon dioxide concentration in the blood:

(a) will increase with an increase in physical activity and cause a drop in plasma pH.

(b) will decrease with an increase in physical activity and cause a drop in plasma pH.

(c) will increase with an increase in physical activity and cause increasing plasma pH.

(d) Carbon dioxide is not transported by the circulatory system.

12. Increasing amounts of ADH released by the pituitary gland:

(a) Will decrease water reabsorption.

(b) Will initiate the thirst reflex.

(c) Will increase water reabsorption.

(d) Will force more water into the collecting duct of the kidney.

13. Which of the following is a correct statement?

(a) The pancreas secretes glucagon to reduce blood glucose levels.

(b) Parathyroid gland secretes glucagon to control glucose levels in the blood.

(c) The Islets of Langerhans are located in the hypothalamus.

(d) The term baroreceptors refers to receptors that measure blood pressure.

14. The receptors for the detecting the water levels of the plasma are:

a) osmoreceptors in the posterior pituitary gland.

b) plasmoreceptors in the kidney.

c) plasmoreceptors in the posterior pituitary gland.

d) osmoreceptors in the hypothalamus.

**SHORT ANSWER**

1. A. Ratchet is riding her bike on a hot day. During the bike ride her core body temperature does not rise above 37 oC. Identify the homeostatic mechanisms that enable Nancy to keep this constant core temperature?

(8 marks)

B. Ratchet rides her bike the same distance at the same speed on two separate

days. On both days the air temperature is 30 oC. On the first day the humidity (air moisture content) is 90%. On the second day there is a humidity of 40%.

On which day will Ratchet have the most difficulty keeping core body temperature constant? Give a reason for your answer.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. marks)

2 The Tour de France is a long and difficult road race in which the cyclists ride for many hours a day. They are in danger of overheating and are constantly provided with water along the route.

Explain why it is necessary for water replenishment during a cycling race such as the Tour de France and describe the two homeostatic mechanisms that lead to the cyclists drinking the water.

(13 marks)