ALBERTA SCIENCE 30 · UNIT A · 25 QUESTIONS

Living Systems Respond to Their Environment — Practice Test

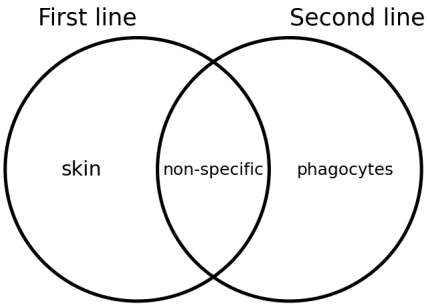
This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **The part of a neuron that carries a nerve impulse away from the cell body toward a synapse is the**

- A dendrite
- B axon
- C cell body
- D myelin sheath

Understand It with Pulse | Flag a mistake

2 **The diagram compares the first and second lines of defence. A feature shared by both lines is that they**



A act against only one type of pathogen

B are non-specific and act against many pathogens

C produce antibodies against a pathogen

D produce memory cells after an infection

Understand It with Pulse | Flag a mistake

3 **The hormone that lowers blood glucose levels by promoting glucose uptake and glycogen formation is**

A glucagon

B epinephrine

C insulin

D thyroxine

Understand It with Pulse | Flag a mistake

4 **Antibiotics are effective treatments for infections caused by**

A viruses

B cancer cells

C allergens

D bacteria

Understand It with Pulse | Flag a mistake

5 **In a resting neuron, the inside of the cell membrane is**

A positively charged compared with the outside

B negatively charged compared with the outside

C identical in charge to the outside

D rapidly alternating in charge

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6 **The main function of the myelin sheath is to**

A insulate the axon and increase the speed of impulse transmission

B produce neurotransmitters

C detect stimuli from the environment

D join one neuron directly to the next

Understand It with Pulse | Flag a mistake

7 **Which of the following is an example of a negative feedback loop?**

- **A** Blood clotting chemicals trigger the release of more clotting chemicals
- **B** Contractions during childbirth cause the release of oxytocin, which increases contractions
- **C** A rise in blood glucose triggers insulin release, which lowers blood glucose back toward normal
- **D** A small increase in body temperature causes changes that raise temperature further

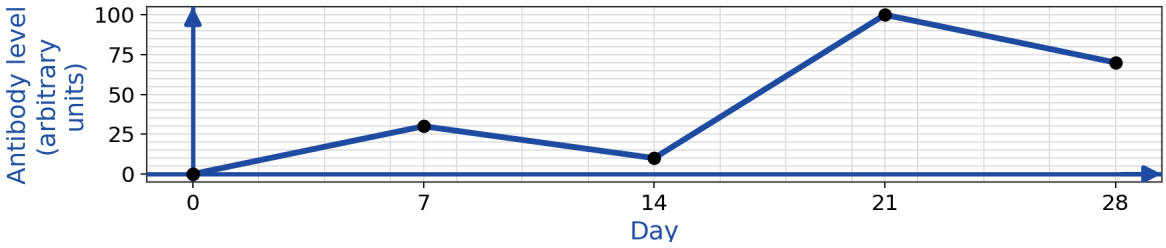
Understand It with Pulse | Flag a mistake

8 **Some events that occur during a reflex arc are listed below. 1 Sensory neuron carries the impulse to the spinal cord 2 Receptor in the skin detects a stimulus 3 Motor neuron carries the impulse to a muscle 4 Interneuron in the spinal cord relays the impulse The order in which the events occur, from first to last, is _____ Record your answer as a four-digit number.**

ANSWER _____

Understand It with Pulse | Flag a mistake

9 **The graph below shows antibody level in the blood after a first exposure on day 0 and a second exposure on day 14. The day on which the antibody level is highest is**



A day 7

B day 14

C day 21

D day 28

Understand It with Pulse | Flag a mistake

10 **Stimulation of the sympathetic nervous system results in**

- **A** a decrease in heart rate
- **B** an increase in heart rate and dilation of the pupils
- **C** an increase in digestive activity
- **D** a narrowing of the airways in the lungs

Understand It with Pulse | Flag a mistake

11 **When a nerve impulse reaches the end of an axon, it is carried across the synapse when**

- **A** the impulse jumps across the cleft as an electrical spark
- **B** neurotransmitter travels along the axon of the next neuron
- **C** vesicles release neurotransmitter into the cleft, and it binds to receptors on the next neuron
- **D** the membranes of the two neurons fuse together

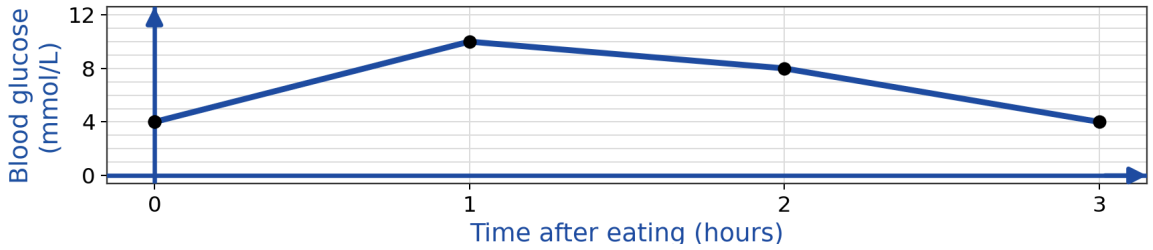
Understand It with Pulse | Flag a mistake

12 **Graves disease is a disorder in which**

- **A** the immune system stimulates the thyroid gland to release excess thyroxine
- **B** the immune system destroys the insulin-producing cells of the pancreas
- **C** the immune system attacks the myelin sheaths of neurons
- **D** the thyroid gland produces too little thyroxine because of iodine deficiency

Understand It with Pulse | Flag a mistake

13 **The graph below shows blood glucose level after a meal. The blood glucose level is highest**



- **A** immediately after eating
- **B** 1 hour after eating
- **C** 2 hours after eating
- **D** 3 hours after eating

Understand It with Pulse | Flag a mistake

14 **A vaccine protects a person against a disease because the vaccine**

A injects ready-made antibodies that last for life

B destroys all pathogens in the body immediately

C causes the body to produce extra antigens

D stimulates the body to produce its own antibodies and memory cells

Understand It with Pulse | Flag a mistake

15 **The hormone released by the adrenal medulla during a stressful experience, which increases heart rate and prepares the body for action, is**

A cortisol

B epinephrine

C insulin

D glucagon

Understand It with Pulse | Flag a mistake

16 **Some events in a specific (third line) immune response are listed below. 1 A phagocyte engulfs a pathogen and displays its antigens 2 A pathogen enters the body 3 A helper T cell activates B cells 4 B cells produce antibodies against the pathogen The order in which the events occur, from first to last, is _____ Record your answer as a four-digit number.**

ANSWER _____

Understand It with Pulse | Flag a mistake

17 **Multiple sclerosis is a disorder in which**

A the immune system destroys the myelin sheaths of neurons in the central nervous system, slowing nerve impulses

B the pancreas stops producing insulin

C the thyroid gland produces too little thyroxine

D neurons produce too much neurotransmitter at synapses

Understand It with Pulse | Flag a mistake

18 **The part of the brain that coordinates voluntary movements and helps maintain balance is the**

A cerebrum

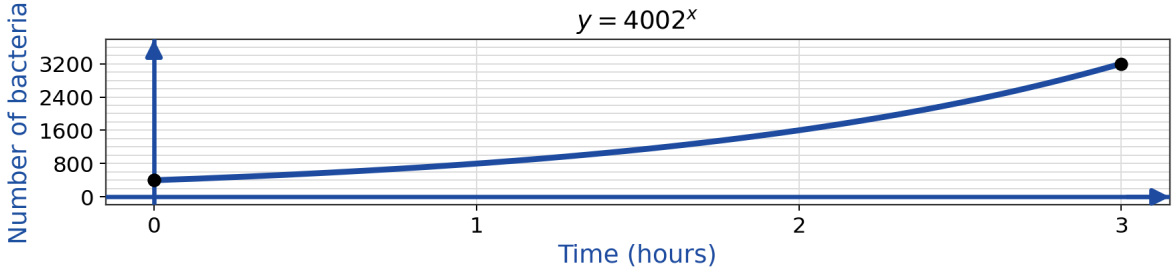
B medulla oblongata

C cerebellum

D hypothalamus

Understand It with Pulse | Flag a mistake

19 **The graph below shows the number of bacteria in a culture over time. By what factor does the population increase between hour 0 and hour 3?**



A 2

B 4

C 8

D 16

Understand It with Pulse | Flag a mistake

20 **Type 2 diabetes develops when**

A the immune system destroys the insulin-producing cells of the pancreas

B the pancreas is destroyed by a viral infection in childhood

C the body stops producing the hormone glucagon

D body cells become resistant to insulin, so glucose is not taken up properly

Understand It with Pulse | Flag a mistake

21 **When the level of thyroxine in the blood rises above normal, the pituitary gland responds by**

A releasing more TSH to stimulate the thyroid further

B releasing less TSH, which reduces stimulation of the thyroid

C releasing thyroxine into the blood itself

D permanently shutting down the thyroid gland

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22 **Some events that occur when a nerve impulse travels along an axon are listed below. 1 Potassium ions move out of the axon, restoring the charge difference 2 Sodium ions rush into the axon, reversing the charge across the membrane 3 A stimulus causes the membrane potential to reach threshold 4 The sodium-potassium pump restores the resting ion distribution The order in which the events occur, from first to last, is _____ Record your answer as a four-digit number.**

ANSWER _____

Understand It with Pulse | Flag a mistake

23 **An example of passive immunity is**

A antibodies passed from a mother to her baby, giving immediate but temporary protection

B recovering from chickenpox and never getting it again

C receiving a weakened form of a virus in a vaccine

D producing memory cells after a first infection

Understand It with Pulse | Flag a mistake

24 **An allergic reaction occurs when the immune system**

- **A** fails to recognize a dangerous pathogen
- **B** is weakened by a course of antibiotics
- **C** overreacts to a normally harmless substance and releases histamine
- **D** produces too few white blood cells

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25 **An antibiotic kills 75 percent of a bacterial population every hour. A sample starts with 1 600 000 bacteria. After 2 hours of treatment, the number of bacteria remaining is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. B
2. B
3. C
4. D
5. B
6. A
7. C
8. 2143
9. C
10. B
11. C
12. A
13. B
14. D
15. B
16. 2134
17. A
18. C
19. C
20. D
21. B
22. 3214
23. A
24. C
25. 100000

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