

Nervous and Endocrine System Test Review

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2. B 3. A 4. D 5. A 6. C 7. B 8. D 9. B

12. Unless cells of the body are kept at a temperature within a certain range, supplied with energy, bathed in fluid, and cleansed of waste – in short, unless homeostasis is maintained – permanent injury or death can occur.

13. The largest part of a typical neuron is the **cell body**, which contains the cell nucleus and the cytoplasm. The cell body is where much of the cell's metabolic activity occurs. Short, branched extensions called **dendrites** carry impulses from the environment or other neurons toward the cell body. The long fibre that carries impulses away from the cell body is the **axon**, which ends in small swellings called **axon terminals**.

14. During a **resting potential**, potassium ions diffuse across a neuron's cell membrane more easily than do sodium ions, resulting in a negative charge inside the cell. During an **action potential**, the cell membrane becomes more permeable to sodium ions, resulting in a reversal of charges.

15. According to the all-or-none principle, any stimulus that is stronger than the threshold will produce an impulse and any stimulus below the threshold will not produce an impulse. Basically, there is a nerve impulse, or there is not – no partial impulses.

16. The **cerebrum** consists of two hemispheres, each divided into regions called lobes. A band of tissue known as the corpus callosum connects the two hemispheres. The cerebrum is responsible for the voluntary, or conscious, activities of the body. It is the site of intelligence, learning, and judgment.

17. A **reflex** allows an organism to respond to danger quickly, which is an advantage for survival.

18. The **autonomic nervous system** is divided into the sympathetic and parasympathetic nervous systems. The sympathetic and parasympathetic nervous systems have opposite effects on the same organ.

19. Light enters the eye through the **cornea** and passes through the anterior chamber, which is filled with **aqueous humor**. The light then goes through the **pupil**, which is an opening in the **iris**, and through the **lens** into a large chamber filled with **vitreous humor**. The lens focuses the light on the **retina**, where photoreceptors convert light into impulses that are sent via the **optic nerve** to the brain.

20. **Rods**, which are very sensitive to light, and **cones**, which are sensitive to color, but not as sensitive to light, are photoreceptors in the retina. Their function is to convert light into impulses that are carried through the optic nerve to the central nervous system.

21. Sound waves, which are vibrating air molecules, enter the **auditory canal** and cause the **tympanum** to vibrate. Three tiny bones, the hammer, anvil and stirrup, pick up the vibrations, and the stirrup transmits them to the **oval window**. The oval window vibrates and creates pressure waves in the fluid-filled **cochlea**. The pressure waves push back and forth against tiny hair cells, which respond by producing nerve impulses that are sent to the brain through the cochlear nerve.

26. The advantage relates to the thermoregulatory function of the tongue in some mammals. Mammals lose excess body heat by evaporation of water (sweating) and for many mammals, including the domestic dog, the primary organ for heat loss is the tongue.

27. If an axon is disconnected from a nerve cell body, the pathway of an outgoing nerve impulse will be disrupted.

29. The slope of the graph starts to change rapidly at the age of 40 as the distance at which the person can focus clearly on nearby objects increases. It may be inferred that the shape of the cornea or elasticity of the lens changes with age, affecting the focus of light entering the eyes.

30. With less myelin, nerve impulses in people with MS will travel more slowly. This will result in loss of control over motor functions, leading to paralysis, poor coordination, slurred speech, blurred vision and tremor.

31. Constant exposure to loud noises would damage the delicate structure of the inner ear, the cochlea and the membrane covering the oval window. Hearing loss caused by damage to these structures is irreversible.