**Senses – Chapter 10**

**10.1 Introduction**

1. Distinguish between somatic senses and special senses. (p. 261)

**10.2 Receptors, Sensations, and Perception**

2. Match each sensory receptor to the type of stimulus to which it is likely to respond. (p. 261)

1) Chemoreceptor A. Approaching headlights

2) Pain receptor B. A change in blood pressure

3) Thermoreceptor C. The smell of roses

4) Mechanoreceptor D. An infected tooth

5) Photoreceptor E. A cool breeze

3. Explain the difference between a sensation and a perception. (p. 261)

4. Explain the projection of a sensation. (p. 261)

5. You fi ll up the tub to take a hot bath, but the water is too hot to the touch. You try a second and third time, and within a few seconds it feels fine. Which of the following is the most likely explanation? (p. 261)

a. The water has cooled down unusually quickly.

b. Your ability to sense heat has adapted.

c. Your nervous system is suddenly not functioning properly.

d. Your ability to sense cold has adapted.

**10.3 General Senses**

6. Describe the functions of free nerve endings, tactile corpuscles, and lamellate corpuscles. (p. 262)

7. Explain why pain may be referred, and provide an example. (p. 263)

**10.4 Special Senses**

8. Identify the location of the receptors for smell, taste, hearing, equilibrium, and sight. (p. 265)

**10.5 Sense of Smell**

9. Which two of the following are part of the olfactory organs? (p. 266)

a. Olfactory receptors

b. Columnar epithelial cells in the nasal mucosa

c. The nose

d. The brain

10. Trace a nerve impulse from an olfactory receptor to the interpreting center of the cerebrum. (p.266)

**10.6 Sense of Taste**

11. Salivary glands are important in taste because (p. 267)

a. they provide the fluid in which food molecules dissolve.

b. the taste receptors are located in salivary glands.

c. salivary glands are part of the brain.

d. they lubricate the teeth.

12. Name the five primary taste sensations. (p. 267)

13. Trace the pathway of a nerve impulse from a taste receptor to the interpreting center of the cerebrum. (p. 268)

**10.7 Sense of Hearing**

14. Match the ear area with the associated structure. (p. 269)

1) outer ear A. Cochlea

2) middle ear B. Eardrum

3) inner ear C. Auditory Ossicles

15. Trace the path of sound waves from the external acoustic meatus to the hearing receptors. (p. 269)

16. Describe the functions of the auditory ossicles. (p. 269)

17. The function of the auditory tube is to: (p. 270)

a. equalize air pressure on both sides of the eardrum.

b. transmit sound vibrations to the eardrum.

c. contain the hearing receptors.

18. Distinguish between the osseous and membranous labyrinths. (p. 270)

19. Describe the cochlea and its function. (p. 270)

20. Trace a nerve impulse from the spiral organ to the interpreting centers of the cerebrum. (pp. 270–272)

21. Which of the following best describes hearing receptor “hair cells”? (p. 271)

a. They are neurons.

b. They lack ion channels.

c. They are epithelial, but function like neurons.

d. They are built of the protein keratin.

22. Explain how a hearing receptor stimulates a sensory neuron. (p. 271)

**10.8 Sense of Equilibrium**

23. Contrast static equilibrium and dynamic equilibrium. (p. 273)

24. Describe the organs of static and dynamic equilibrium and their functions. (p. 273)

**10.9 Sense of Sight**

25. Match the visual accessory organ with its function: (p. 276)

1) Eyelid A. move the eyes

2) Conjunctiva B. covers the eye

3) Lacrimal gland C. lines the eyelids

4) Extrinsic muscles D. produces tears

26. Name the three layers of the eye wall and describe the functions of each layer. (p. 278)

27. Explain why looking at a close object causes fatigue, in terms of how accommodation is accomplished. (p. 279)

28. Explain the mechanisms of pupil constriction and pupil dilation. (p. 280)

29. All of the following are compartments within the eye. In which one is vitreous humor found? (p.281)

a. Anterior chamber

b. Posterior chamber

c. Anterior cavity

d. Posterior cavity

30. Distinguish between the fovea centralis and the optic disc. (p. 281)

31. Explain how light is focused on the retina. (p. 282)

32. Distinguish between rods and cones. (p. 282)

33. Explain why cone vision is generally more acute than rod vision. (p. 283)

34. Describe the function of rhodopsin (p. 283)

35. Explain why rod vision may be more important under dim light conditions. (p. 284)

36. Describe the relationship between light wavelength and color vision. (p. 284)

37. Trace a nerve impulse from the retina to the visual cortex. (p. 284)

**Endocrine – Chapter 11**

**11.1 Introduction**

1. Contrast endocrine glands and exocrine glands. (p. 290)

2. Define hormone and target cell. (p. 290)

**11.2 General Characteristics of the Endocrine System**

3. Compare and contrast the nervous and endocrine systems. (p. 290)

4. Explain the specificity of a hormone for its target cell. (p. 291)

5. Functions of hormones include which of the following? (p. 291)

a. Control rates of certain chemical reactions

b. Transport substances across cell membranes

c. Help regulate water and electrolyte balances

d. Play a role in reproduction

e. All of the above

**11.3 Hormone Action**

6. List the steps of steroid hormone action. (p. 292)

7. List the steps in the action of most nonsteroidal hormones. (p. 292)

8. Explain how prostaglandins are similar to hormones and how they are different. (p. 294)

**11.4 Control of Hormonal Secretions**

9. Draw diagrams of the three mechanisms by which hormone secretion is controlled, including negative feedback. (p. 294)

**11.5 Pituitary Gland**

10. Describe the location and structure of the pituitary gland. (p. 295)

11. Explain the two ways in which the brain controls pituitary gland activity. (p. 295)

12. Releasing hormones come from which one of the following? (p. 295)

a. thyroid gland

b. anterior pituitary gland

c. posterior pituitary gland

d. hypothalamus

13. List the hormones secreted by the anterior pituitary. (p. 295)

14. Match the following hormones with their actions. More than one hormone can correspond to the same function. (pp. 296–298)

1) Growth hormone A. milk production

2) Thyroid- stimulating hormone B. cell division

3) Prolactin C. metabolic rate

4) Adrenocorticotropic hormone D. Exerts action on gonads

5) Follicle – stimulating hormone E. controls secretion of adrenal cortex hormone

6) Luteinizing hormone

15. Describe the control of growth hormone secretion. (p. 296)

16. Prolactin does which of the following? (p. 296)

a. Stimulates breast milk secretion

b. Stimulates breast milk production

c. Inhibits breast milk secretion

d. Inhibits breast milk production

17. Diagram the control of thyroid hormone secretion. (p. 296)

18. Describe the anatomical differences between the anterior and posterior lobes of the pituitary gland. (p. 298)

19. Describe the functions of the posterior pituitary hormones. (p. 298)

20. Under which of the following conditions would you expect an increase in antidiuretic hormone secretion? (p. 298)

a. An individual ingests excess water.

b. The posterior pituitary is removed from an individual because of a tumor.

c. An individual is rescued after three days in the desert without food or water.

**11.6 Thyroid Gland**

21. Describe the location and structure of the thyroid gland. (p. 299)

22. Match the hormones from the thyroid gland with their descriptions. (p. 299)

1) Thyroxine A) Most potent at controlling metabolism

2) Triiodothyronine B) Regulates blood calcium

3) Calcitonin C) has four iodine atoms

**11.7 Parathyroid Gland**

24. Describe the location and structure of the parathyroid glands. (p. 301)

25. Explain the general function of parathyroid hormone. (p. 301)

26. Draw a diagram that shows how the secretion of parathyroid hormone is regulated. (p. 301)

**11.8 Adrenal Glands**

27. Distinguish between the adrenal medulla and the adrenal cortex. (p. 302)

28. Match the adrenal hormones with their source and actions. (pp. 302–304)

1) Cortisol A) cortex; sodium retention

2) Aldosterone B) Cortex; fatty acid release

3) Epinephrine C) Medulla; fight or flight

29. Draw a diagram illustrating the regulation of cortisol secretion. (p. 304)

**11.9 Pancreas**

30. Describe the location and structure of the pancreas. (p. 305)

31. List the hormones secreted by the pancreatic islets, the type of cell that secretes each, and the actions of these hormones. (p. 306)

32. Draw a diagram that shows how the secretion of pancreatic hormones is regulated. (p. 306)

**11.10 Other Endocrine Glands**

33. Describe the location and general function of the pineal gland. (p. 307)

34. Describe the location and general function of the thymus. (p. 307)

35. Name five additional hormone-secreting organs. (p. 308)

**11.11 Stress and Health**

36. Define stress. (p. 309)

37. List the similarities and differences between the short-term alarm stage of stress and the long-term resistance stage. (p. 309)