Unit 5: Ch 12 & Ch 13

BIOL 2117 Worksheet

Due Date: _____ **Name:** _____

12 Somatic and Special Senses

1. The senses of touch, pressure, temperature, and pain are called _____ senses.
2. The senses of vision, taste, smell, hearing, and equilibrium are called _____ senses.
3. Sensory receptors are sensitive to stimulation by
   a. changes in concentration of chemicals.
   b. temperature changes.
   c. tissue damage.
   d. mechanical forces.
   e. changes in intensity of light.
4. Sensory receptors for all of the following adapt to repeated stimulation by sending fewer and fewer impulses, except those for
   a. heat.
   b. light.
   c. pain.
   d. touch.
5. Match the sense in the first column with the appropriate receptor from the second column.

   _____ 1. touch and pressure
   _____ 2. light touch and texture
   _____ 3. heat
   _____ 4. cold
   _____ 5. deep pressure
   _____ 6. tension of muscle

   a. Golgi tendon organs
   b. free nerve endings
   c. Pacinian corpuscles
   d. Meissner's corpuscles

6. Pain receptors are most sensitive to
   a. chemicals such as histamine, kinins, hydrogen ions, and others.
   b. electrical stimulation.
   c. extremes of pressure.
   d. temperature over 45° C.
7. Heat relieves some kinds of pain by
   a. increasing the metabolism in injured cells.
   b. increasing blood flow to painful tissue.
   c. decreasing the membrane permeability of sensory nerve fibers.
   d. overriding pain sensation with heat sensation.
8. Which of the following is/are *not* a source of the pain associated with headache?
   a. brain tissue
   b. the meninges
   c. muscles of the forehead and scalp
   d. blood vessels of the brain
9. Which of the following events will elicit pain from visceral organs?
   a. spasm of smooth muscle
   b. cutting into the viscera
   c. stretching of a visceral organ
   d. burning, as in electrocautery
10. Pain from the heart is likely to be experienced in the left shoulder. This is an example of _____ pain.
11. The impulses that create a pain sensation that seems sharp and localized to a specific area, and that seems to originate in the skin and to disappear when the stimulus is removed, are likely to be transmitted on (acute/chronic) pain fibers.
12. With the exception of impulses arising from tissues of the head, pain impulses are carried on _____ nerves.
13. A group of neuropeptides that have pain-suppressing activity and are released by the pituitary gland and the hypothalamus are _____.

14. The severity of pain experienced by an individual is least likely to be due to
    a. the intensity of stimulation of pain receptors.
    b. previous experience with pain.
    c. cultural background.
    d. the circumstances in which the painful stimulus is encountered.

15. The receptors for taste and smell are examples of
    a. mechanical receptors.
    b. chemoreceptors.
    c. thermoreceptors.

16. Olfactory receptors are located in
    a. the nasopharynx.
    b. the inferior nasal conchae.
    c. the superior nasal conchae.
    d. the lateral wall of the nostril.

17. Impulses that stimulate the olfactory receptors are transmitted along the _____ _____.

18. The sensitive part of a taste bud is the taste
    a. cell.
    b. pore.
    c. hair.

19. Saliva enhances the taste of food by
    a. increasing the motility of taste receptors.
    b. dissolving the chemicals that cause taste.
    c. releasing taste factors by partially digesting food.

20. The four primary taste sensations are _____, _____, _____, and _____.

21. Sense of taste is strongly related to which of the other special senses? _____

22. In addition to the sense of hearing, the ear also functions in the sense of _____.

23. The waxy substance secreted by glands in the external ear is _____.

24. The functions of the small bones of the middle ear are to
    a. provide a framework for the tympanic membrane.
    b. protect the structures of the inner ear.
    c. transmit vibrations from the external ear to the inner ear.
    d. increase the force of vibrations transmitted to the inner ear.

25. The skeletal muscles in the middle ear function to
    a. maintain tension in the ear drum.
    b. move the external ear.
    c. equalize the pressure on both sides of the ear drum.
    d. protect the inner ear from damage from loud noise.

26. The function of the eustachian tube is to
    a. prevent infection.
    b. intensify sound.
    c. equalize pressure.
    d. modify pitch.

27. The inner ear consists of two complex structures called the _____ _____ and the _____ _____.

28. Sound is transmitted in the inner ear via a fluid called _____.

29. Hearing receptors are located in the
    a. organ of Corti.
    b. scala vestibuli.
    c. scala tympani.
    d. round window.

30. Impulses from hearing receptors are transmitted via the
    a. abducens nerve.
    b. facial nerve.
    c. cochlear branch of the vestibulocochlear nerve.
    d. trigeminal nerve.

31. Otosclerosis is classified as _____ deafness.

32. Prolonged exposure to noise, tumors, and some antibiotics are causes of _____ deafness.

33. A cochlear implant may be used to treat _____ deafness.

34. The organs concerned with static equilibrium are located within the _____ .

35. The hair cells of the crista ampullaris are stimulated by
    a. bending the head forward or backward.
    b. rapid turns of the head or body.
    c. changes in the position of the body relative to the ground.
    d. changes in the position of skeletal muscles.

36. The muscle that raises the eyelid is the
    a. orbicularis oculi.
    b. superior rectus.
    c. levator palpebrae superioris.
    d. ciliary muscle.

37. The lacrimal gland is located in the _____ of the orbit.
    a. superior lateral wall
    b. superior medial wall
    c. inferior lateral wall
    d. inferior medial wall

38. The conjunctiva covers the anterior surface of the eyeball, except for the _____ .

39. The superior rectus muscle rotates the eye
    a. upward and toward the midline.
    b. toward the midline.
    c. away from the midline.
    d. upward and away from the midline.

40. The orbicularis oculi is innervated by the
    a. oculomotor nerve.
    b. trochlear nerve.
    c. abducens nerve.
    d. facial nerve.

41. The transparency of the cornea is due to
    a. the nature of the cytoplasm in the cells of the cornea.
    b. the small number of cells and the lack of blood vessels.
    c. the lack of nuclei with these cells.
    d. keratinization of cells in the cornea.

42. In the posterior wall of the eyeball, the sclera is pierced by the _____ _____ .

43. Worldwide, the most common cause of blindness is disease of the _____ .

44. The anterior portion of the middle tunic or vascular tunic of the eye contains the
    a. choroid coat.
    b. ciliary body.
    c. iris.
    d. cornea.

45. The shape of the lens changes as the eye focuses on a close object in a process known as
    a. accommodation.
    b. refraction.
    c. reflection.
    d. strabismus.

46. An increasing opacity in the lens of the eye is a(n) _____ .

47. The anterior chamber of the eye extends from the _____ to the iris.

48. The aqueous humor leaves the anterior chamber via the
    a. pupil.
    b. canal of Schlemm.
    c. ciliary body.
    d. lymphatic system.

49. The part of the eye that controls the amount of light entering it is the _____ .

50. The color of the eye is determined by the amount and distribution of _____ in the iris.

51. The inner tunic of the eye contains the receptor cells of sight and is called the _____ .

52. The region associated with the sharpest vision is the
    a. macula lutea.
    b. fovea centralis.
    c. optic disk.
    d. choroid coat.

53. The largest compartment of the eye, which is bounded by the lens, ciliary body, and retina, is filled with _____ _____.

54. The bending of light waves as they pass at an oblique angle from a medium of one optical density to a medium of another optical density is called _____.

55. The lens loses elasticity with aging, causing a condition called _____.

56. There are two types of visual receptors: one has long, thin projections that are called _____; the other has short, blunt projections that are called _____.

57. Match the type of vision in the first column with the proper receptor from the second column.

_____ 1. vision in relatively dim light	a. rods
_____ 2. color vision	b. cones
_____ 3. general outlines	
_____ 4. sharp images	

58. The light-sensitive pigment in rods is _____. In the presence of light, this pigment decomposes to form _____ and _____.

59. The pigments found in cones are _____, _____, and _____.

BIOL 217 Worksheet

13 Endocrine System

Due Date: _____ Name: _____

1. Glands that release their secretions into ducts that lead to the outside of the body are _____ glands.
2. Glands that control the rate of chemical reactions, help transport substances through cell membranes, and help regulate fluid and electrolyte balance are _____ glands.
3. Hormones belong to which of the following chemical families?
   a. amines
   b. polysaccharides
   c. proteins
   d. steroids
4. Steroid hormones influence cells by
   a. altering the cell's metabolic processes.
   b. influencing the rate of cell reproduction.
   c. changing the nature of cellular protein.
   d. causing special proteins to be synthesized.
5. Nonsteroid hormones act by combining with receptor sites located in the _____ _____.
6. Prostaglandins have hormonelike effects and are thought to act by regulating
   a. the rate of mitosis.
   b. the production of cyclic AMP.
   c. cellular oxidation.
   d. the utilization of glucose.
7. The characteristics of the negative feedback system that regulates hormone secretion include
   a. activation by imbalance.
   b. exertion of an inhibitory effect on the gland.
   c. exertion of a stimulating effect on the gland.
   d. a tendency for levels of hormone to fluctuate.
8. The part of the brain most closely related to endocrine function is the _____.
9. The hormones secreted by the anterior lobe of the pituitary gland include
   a. thyroid-stimulating hormones.
   b. luteinizing hormone.
   c. antidiuretic hormone.
   d. oxytocin.
10. Nerve impulses from the hypothalamus stimulate the _____ lobe of the pituitary gland.
11. The _____ lobe of the pituitary gland is stimulated by releasing factors secreted by the hypothalamus.
12. Which of the following are actions of pituitary growth hormone?
    a. enhance the movement of amino acids through the cell membrane
    b. increase the utilization of glucose by cells
    c. increase the utilization of fats by cells
    d. enhance the movement of potassium across the cell membrane
13. Which of the following conditions are likely to occur when the secretion of growth hormone is low during childhood?
    a. mental retardation
    b. short stature; well proportioned appearance
    c. small, short body; large head
    d. failure to develop secondary sex characteristics
14. An adult who suffers from oversecretion of growth hormone is said to have _____.
15. The pituitary hormone that stimulates and maintains milk production following childbirth is _____.
16. Thyrotropin secretion is regulated by
    a. circulating thyroid hormones.
    b. blood sugar levels.
    c. the osmolarity of blood.
    d. TRH secreted by the hypothalamus.
17. Which of the following effects does follicle-stimulating hormone produce?
    a. growth of egg follicles
    b. production of estrogen
    c. production of progesterone
    d. production of sperm cells
18. Which of the following pituitary hormones help maintain fluid balance?
    a. oxytocin
    b. ACTH
    c. antidiuretic hormone
    d. vasopressin
19. The thyroid hormones that affect the metabolic rate are _____ and _____.
20. Which of the following are functions of thyroid hormones?
    a. control sodium levels
    b. decrease rate of energy release from carbohydrates
    c. increase protein synthesis
    d. accelerate growth in children

(5)

21. The element necessary for normal function of the thyroid gland is _____.

22. The thyroid hormone that tends to keep calcium in the bone is _____.

23. A test that uses I^{131} to estimate levels of thyroid activity in the blood is the _____ test.
    a. basal metabolic rate
    b. protein-bound iodine
    c. radioactive iodine uptake

24. Congenital hypothyroidism is called _____.

25. A thyroid dysfunction characterized by exophthalmos, weight loss, excessive perspiration, and emotional instability is
    a. simple goiter.
    b. myxedema.
    c. hyperthyroidism.
    d. thyroiditis.

26. Which of the following statements about parathormone is/are true?
    a. Parathormone enhances absorption of phosphorus and calcium from the intestine.
    b. Parathormone stimulates the bone to release ionized calcium.
    c. Parathormone stimulates the kidney to conserve calcium.
    d. Parathormone secretion is stimulated by the hypothalamus.

27. Injury to or removal of parathyroid glands is likely to result in
    a. reduced osteoclastic activity.
    b. Cushing's disease.
    c. kidney stones.
    d. hypocalcemia.

28. The hormones of the adrenal medulla are _____ and _____.

29. The adrenal hormone aldosterone belongs to a category of cortical hormones called
    a. mineralocorticoids.
    b. glucocorticoids.
    c. sex hormones.

30. The most important action(s) of cortisol in helping the body overcome stress is/are
    a. inhibition of protein synthesis to increase the levels of circulating amino acids.
    b. increasing the release of fatty acids and decreasing the use of glucose.
    c. stimulation of gluconeogenesis.
    d. conservation of water.

31. Adrenal sex hormones are primarily (male/female).

32. Masculinization of women, elevated blood glucose, decreases in tissue protein, and sodium retention are associated with
    a. Addison's disease.
    b. hypersecretion of adrenal cortical hormone.
    c. Cushing's disease.
    d. hyposecretion of adrenal cortical hormone.

33. The endocrine portion of the pancreas is made up of cells called _____

    _____ _____.

34. The hormone that responds to a low blood sugar by stimulating the liver to convert glycogen to glucose is

    _____.

35. The actions of insulin include
    a. enhancing glucose absorption from the small intestine.
    b. facilitating the transport of glucose across the cell membrane.
    c. promoting the transport of amino acids out of the cell.
    d. increasing the synthesis of fats.

36. Hypoinsulinism results in a disease called _____ _____.

37. The endocrine gland(s) that seems to influence circadian rhythms is/are the
    a. thymus.
    b. pineal gland.
    c. gonads.

38. Stressors stimulate which of the following endocrine glands?
    a. islets of Langerhans
    b. parathyroid glands
    c. adrenal cortex
    d. adrenal medulla

39. A person experiencing emotional stress is (more/less) likely to develop an infection than an individual with a lower stress level.