The answers are in your book and notes. I will NOT be providing a key.

Chapter 15: Special Senses:

_____ 1) What is the main function of the rods in the eye?
A) depth perception
B) color vision
C) vision in dim light
D) accommodation for near vision

_____ 2) What structure regulates the amount of light passing to the visual receptors of the eye?
A) aqueous humor
B) lens
C) cornea
D) iris

_____ 3) Receptors for hearing are located in the _____.
A) cochlea
B) semicircular canals
C) tympanic membrane
D) vestibule

_____ 4) Which of the follow types of neurons are replaced throughout adult life?
A) olfactory receptor cells
B) retinal bipolar cells
C) retinal ganglion cells
D) auditory outer and inner hair cells

_____ 5) Bitter taste is elicited by _____.
A) hydrogen ions
B) alkaloids
C) acids
D) metal ions

_____ 6) The receptor for static equilibrium is the _____.
A) semicircular canals
B) macula
C) utricle
D) cochlear duct

_____ 7) Farsightedness is more properly called _____.
A) myopia
B) hypopia
C) hyperopia
D) presbyopia

_____ 8) Seventy percent of all sensory receptors are located in the _____.
A) eye
B) ears
C) skin
D) nose

_____ 9) Which of the following structures is *not* part of the external ear?
A) pinna
B) external acoustic meatus
C) tympanic membrane
D) pharyngotympanic tube

_____ 10) Nerve fibers from the medial aspect of each eye _____.
A) go to the superior colliculus only
B) pass posteriorly without crossing over at the chiasma
C) divide at the chiasma, with some crossing and some not crossing
D) cross over to the opposite side at the chiasma

_____ 11) Ordinarily, it is *not* possible to transplant tissues from one person to another, yet corneas can be transplanted without tissue rejection. This is because the cornea _____.
A) is not a living tissue
B) has no nerve supply
C) has no blood supply
D) does not contain connective tissue

_____ 12) The oval window is connected directly to which passageway?
A) scala vestibuli
B) external acoustic meatus
C) pharyngotympanic tube
D) scala tympani

_____ 13) There are three layers of neurons in the retina. The axons of which of these neuron layers form the optic nerves?
A) bipolar cells
B) ganglion cells
C) cone cells
D) rod cells

_____ 14) The next synapse in the visual pathway from the eye, after there has been partial crossover of the fibers in the optic chiasma, is the _____.
A) superior colliculi
B) lateral geniculate body of the thalamus
C) visual cortex
D) temporal lobe

_____ 15) As sound levels increase in the spiral organ (of Corti), _____.
A) outer hair cells stiffen the basilar membrane
B) outer hair cells bend the cilia away from the kinocilium
C) inner hair cells stiffen the basilar membrane
D) inner hair cells bend the cilia away from the kinocilium

_____ 16) Which of the following is true about gustatory receptors?
A) In order for a chemical to be sensed, it must be hydrophobic.
B) The receptors generate an action potential in response to chemical stimuli.
C) Complete adaptation occurs in about one to five minutes.
D) All gustatory receptors have the same threshold for activation.

_____ 17) Taste buds are *not* found _____.
A) in fungiform papillae
B) in filiform papillae
C) in circumvallate papillae
D) lining the buccal cavity

_____ 18) Select the correct statement about olfaction.
A) Olfactory receptors have a high degree of specificity toward a single type of chemical.
B) Some of the sensation of olfaction is actually one of pain.
C) Substances must be volatile and hydrophobic in order to activate olfactory receptors.
D) Olfactory adaptation is only due to fading of receptor cell response.

_____ 19) What prevents the eyelids from sticking together when the eyes close?
A) lacrimal fluid
B) ciliary gland secretions
C) tarsal gland secretions
D) conjunctival fluid

_____ 20) Which of the following taste sensations is incorrectly matched to the chemicals that produce it?
A) sweet—organic substances such as sugar and some lead salts
B) sour—acids
C) salty—metal ions
D) bitter—alkaloids
E) umami—triglycerides and fatty acids

_____ 21) Another name for the primary visual cortex is _____.
A) striate cortex
B) prestriate cortex
C) prefrontal cortex
D) collicular cortex

_____ 22) What is a modiolus?
A) bone in the center of a semicircular canal
B) bone around the cochlea
C) a bone pillar in the center of the cochlea
D) a bony area around the junction of the facial, vestibular, and cochlear nerves

_____ 23) Which statement about malnutrition-induced night blindness is most accurate?
A) The most common cause is vitamin D deficiency.
B) Vitamin supplements can reverse degenerative changes.
C) Visual pigment content is reduced in cones more than rods.
D) The impaired vision is caused by reduced cone function.

_____ 24) Dark adaptation _____.
A) is much faster than light adaptation
B) results in inhibition of rod function
C) primarily involves improvement of acuity and color vision
D) involves accumulation of rhodopsin

_____ 25) Conscious perception of vision probably reflects activity in the _____.
A) thalamus
B) occipital lobe of the cortex
C) chiasma
D) superior colliculus

_____ 26) In the visual pathways to the brain, the optic radiations project to the _____.
A) medial retina
B) lateral geniculate body
C) primary visual cortex
D) optic chiasma

_____ 27) Visual inputs to the _____ serve to synchronize biorhythms with natural light and dark.
A) pretectal nuclei
B) lateral geniculate body
C) superior colliculi
D) suprachiasmatic nucleus

_____ 28) Information from balance receptors goes directly to the _____.
A) motor cortex
B) visual cortex
C) brain stem reflex centers
D) back muscles

_____ 29) Motion sickness seems to _____.
A) respond best to medication taken after salivation and pallor begins
B) respond best to medication that "boosts" vestibular inputs
C) result from activation of nausea centers in the brain stem
D) result from mismatch between visual and vestibular inputs

_____ 30) The only special sense not fully functional at birth is the sense of _____.
A) smell
B) taste
C) vision
D) hearing
E) equilibrium

_____ 31) Most newborns _____.
A) are myopic
B) often use only one eye at a time
C) see in tones of red and green only
D) cry with copious tears

_____ 32) The blind spot of the eye is where _____.
A) more rods than cones are found
B) the macula lutea is located
C) only cones occur
D) the optic nerve leaves the eye

_____ 33) The first vestiges of eyes in the embryo are called _____.
A) mesenchyme
B) optic discs
C) optic vesicles
D) optic cups

_____ 34) Which pairing of terms is incorrectly related?
A) frequency of sound waves: loudness of the sound
B) quality of a sound : frequency of the sound
C) amplitude of a sound: intensity of the sound
D) frequency of sound waves: number of wavelengths

_____ 35) Olfactory cells and taste buds are normally stimulated by _____.
A) substances in solution
B) stretching of the receptor cells
C) the movement of otoliths
D) movement of a cupula

_____ 36) Which of the following could *not* be seen as one looks into the eye with an ophthalmoscope?
A) macula lutea
B) optic chiasma
C) fovea centralis
D) optic disc

_____ 37) The cells of the retina in which action potentials are generated are the _____.
A) rods and cones
B) bipolar cells
C) ganglion cells
D) amacrine cells

_____ 38) During dark adaptation _____.
A) the sensitivity of the retina decreases
B) the rate of rhodopsin breakdown is accelerated
C) rhodopsin accumulates in the rods
D) the cones are activated

_____ 39) Tinnitus, vertigo, and gradual hearing loss typify the disorder called _____.
A) Ménière's syndrome
B) conjunctivitis
C) strabismus
D) motion sickness

_____ 40) Which of the following is *not* a characteristic of olfactory receptor cells?
A) They are ciliated.
B) They are unipolar neurons.
C) They are chemoreceptors.
D) They have a short life span of about 60 days.

_____ 41) An essential part of the maculae involved in static equilibrium is (are) the _____.
A) spiral organ (of Corti)
B) cupula
C) scala media
D) otoliths

_____ 42) Which of the following is true about light and vision?
A) Human photoreceptors respond to light in the 100-300 nm range.
B) When we see the color of an object, all light is being absorbed by that object except for the color being experienced.
C) Light is a form of electromagnetic radiation that slows down as it enters a medium of relatively less density.
D) The greater the incident angle of light striking a refractive surface, the less the amount of light bending.

_____ 43) The tarsal plate of the eyelid _____.
A) is composed of connective tissue surrounding a thin cartilage plate
B) is connected to the superior rectus muscle
C) is connected to the levator palpebrae
D) assists in the act of winking

_____ 44) Which of the following is true about photoreceptors?
A) Rods absorb light throughout the visual spectrum but confer only gray tone vision.
B) In dim light, images are focused directly on the rods in the fovea centralis.
C) Three types of color-sensitive photoreceptors exist: red, green, and yellow.
D) If all cones are stimulated equally, all colors are absorbed by the cones and the color perceived is black.

_____ 45) Select the correct statement about equilibrium.
A) The weight of the endolymph contained within the semicircular canals against the maculae is responsible for static equilibrium.
B) Cristae respond to angular acceleration and deceleration.
C) Hair cells of both types of equilibrium hyper-polarize only, resulting in an increased rate of impulse transmission.
D) Due to dynamic equilibrium, movement can be perceived if rotation of the body continues at a constant rate.

_____ 46) The eye muscle that elevates and turns the eye laterally is the _____.
A) lateral rectus
B) superior oblique
C) inferior oblique
D) medial rectus

_____ 47) The receptor membranes of gustatory cells are _____.
A) basal cells
B) gustatory hairs
C) fungiform papillae
D) taste buds

_____ 48) Light passes through the following structures in which order?
A) vitreous humor, lens, aqueous humor, cornea
B) cornea, aqueous humor, lens, vitreous humor
C) cornea, vitreous humor, lens, aqueous humor
D) aqueous humor, cornea, lens, vitreous humor

_____ 49) Damage to the medial rectus muscles would probably affect _____.
A) refraction
B) accommodation
C) convergence
D) pupil constriction

_____ 50) Which statement about sound localization is *not* true?
A) It requires processing at the cortical level.
B) It requires input from both ears.
C) It uses time differences between sound reaching the two ears.
D) It is difficult to discriminate sound sources in the midline.

_____ 51) Which of the following is *not* a possible cause of conduction deafness?
A) impacted cerumen
B) middle ear infection
C) cochlear nerve degeneration
D) otosclerosis

_____ 52) Visual processing in the thalamus does *not* contribute significantly to _____.
A) depth perception
B) high-acuity vision
C) night vision
D) movement perception

_____ 53) Visible light fits between _____.
A) X rays and UV
B) infrared and microwaves
C) microwaves and radio waves
D) UV and infrared

_____ 54) Ceruminous glands are _____.
A) saliva glands found at the base of the tongue
B) modified apocrine sweat glands
C) glands found in the lateral corners of your eye
D) modified taste buds

Chapter 16: Endocrine System:

_____ 1) Gluconeogenesis occurs in the liver due to the action of _____.
A) aldosterone
B) insulin
C) secretin
D) cortisol

_____ 2) Normal development of the immune response is due in part to hormones produced by the _____.
A) adrenal medulla
B) pancreas
C) thyroid gland
D) thymus gland

_____ 3) Virtually all of the protein or amino acid-based hormones exert their effects through intracellular _____.
A) calcium
B) deactivating ions
C) nucleotides
D) second messengers

_____ 4) Which of the following is *not* a category of endocrine gland stimulus?
A) enzyme
B) humoral
C) neural
D) hormonal

_____ 5) Chemical substances secreted by cells into the extracellular fluids and that regulate the metabolic function of other cells in the body are called _____.
A) enzymes
B) antibodies
C) proteins
D) hormones

_____ 6) The hypothalamic-hypophyseal tract _____.
A) connects the hypophysis to the pituitary gland
B) is partly contained within the infundibulum
C) conducts aldosterone to the hypophysis
D) is the site of prolactin synthesis

_____ 7) Which of the following is not a cardinal sign of diabetes mellitus?
A) polyuria
B) polydipsia
C) polyphagia
D) polycythemia

_____ 8) Which of the choices below is *not* a factor required for target cell activation by hormone receptor interaction?
A) blood levels of hormone
B) type of hormone
C) number of receptors for that hormone
D) strength of the bond between the receptor and hormone

_____ 9) Oxytocin _____.
A) release is an example of a positive feedback control mechanism
B) is an adenohypophyseal secretion
C) exerts its most important effects during menstruation
D) controls milk production

_____ 10) ADH _____.
A) increases urine production
B) promotes dehydration
C) is produced in the adenohypophysis
D) is inhibited by alcohol

_____ 11) Which of the following is *not* a type of hormone interaction?
A) permissiveness
B) synergism
C) antagonism
D) feedback

_____ 12) Which of the following is *not* a change typically produced by a hormonal stimulus?
A) activates or deactivates enzymes
B) stimulates production of an action potential
C) alters plasma membrane permeability
D) induces secretory activity

_____ 13) Which of the following hormones suppresses appetite and increases energy expenditure?
A) gastrin
B) secretin
C) leptin
D) renin

_____ 14) Which of the following is *not* a change that may be caused by hormonal stimulus?
A) a change in membrane potential
B) the stimulation of a genetic event resulting in protein synthesis
C) an increase in enzymatic activity
D) direct control of the nervous system

_____ 15) The ability of a specific tissue or organ to respond to the presence of a hormone is dependent on _____.
A) the location of the tissue or organ with respect to the circulatory path
B) the membrane potential of the cells of the target organ
C) the presence of the appropriate receptors on the cells of the target tissue or organ
D) nothing—all hormones of the human body are able to stimulate any and all cell types because hormones are powerful and nonspecific

_____ 16) Several hormones are synthesized in the hypothalamus and transported to the anterior pituitary gland. The mechanism of transportation from hypothalamus to anterior pituitary gland is through the _____.
A) hepatic portal system
B) general circulatory system
C) hypophyseal portal system
D) feedback loop

_____ 17) The neurohypophysis or posterior lobe of the pituitary gland is not a true endocrine gland because _____.
A) it is strictly a part of the neural system and has little or nothing to do with hormonal release
B) embryonically it was an endocrine tissue, but in the adult human it is no longer functional
C) it is unable to function as an endocrine tissue because it is actually part of the neural system due to its location
D) it is only a hormone storage area that receives hormones from the hypothalamus for release

_____ 18) Steroid hormones exert their action by _____.
A) entering the nucleus of a cell and initiating or altering the expression of a gene
B) binding cell receptors and initiating cAMP activity
C) entering the cell and activating mitochondrial DNA
D) activating the hypothalamic release of regulating hormones

_____ 19) The second-messenger mechanism of hormone action operates by _____.
A) synthesizing more than one hormone at a time
B) increasing the basal metabolic rate in the target organ
C) altering gene expression in the nuclear DNA
D) binding to specific receptors and employing the services of G proteins and cAMP

_____ 20) Hormones often cause a cell to elicit multiple responses; this is because _____.
A) there are thousands of receptors on the cell membrane
B) the receptors bind to several hormones at the same time
C) the protein kinases are rapidly metabolized into functional amino acids
D) during protein kinase activation, enzymes phosphorylate many other enzymes

_____ 21) Cells that respond to peptide hormones usually do so through a sequence of biochemical reactions involving receptor and kinase activation. In order for cells to respond, it is necessary for first and second messengers to communicate. This is possible because _____.
A) peptide hormones are converted by cell membranes enzymes into second messengers
B) hormones alter cellular operations through direct stimulation of a gene
C) G protein acts as the link between first and second messengers
D) the hormone receptor complex moves into the cytoplasm as a unit

_____ 22) Thyroid hormone (a small iodinated amine) enters target cells in a manner similar to _____.
A) insulin, because insulin is a small peptide
B) steroid hormones, because both diffuse easily into target cells
C) growth hormone, because the thyroid works synergistically with thyroid hormone
D) glucagon, because the structure of glucagon is similar to that of thyroid hormone

_____ 23) When it becomes necessary to enlist the fight-or-flight response, a hormone that is released during the alarm phase of the general adaptation syndrome is _____.
A) estrogen
B) epinephrine
C) angiotensinogen
D) renin

_____ 24) One of the least complicated of the endocrine control systems directly responds to changing blood levels of ions and nutrients. Which of the following describes this mechanism?
A) carbohydrate oxidation
B) catabolic inhibition
C) protein synthesis
D) humoral stimulation

_____ 25) The major targets of growth hormone are _____.
A) the blood vessels
B) the adrenal glands
C) the liver
D) bones and skeletal muscles

_____ 26) Which of the following is not a parathyroid gland mechanism to maintain adequate levels of blood calcium?
A) activation of osteoclasts
B) increase calcium ion reabsorption by the kidneys
C) increase in intestinal absorption of calcium ions
D) inhibition of calcitonin synthesis

_____ 27) Which organ is responsible for synthesizing ANP?
A) the heart
B) the kidney
C) the skin
D) the spleen

_____ 28) Mineralocorticoid is to aldosterone as glucocorticoid is to _____.
A) testosterone
B) estrogen
C) cortisol
D) epinephrine

_____ 29) Leptin is secreted by _____.
A) lymphocytes
B) adipocytes
C) goblet cells
D) fibroblasts

_____ 30) The most important mineralocorticoid regulator of electrolyte concentrations in extracellular fluids is _____.
A) insulin
B) aldosterone
C) glucagon
D) cortisol

_____ 31) Which of the following is *not* a steroid-based hormone?
A) estrogen
B) aldosterone
C) epinephrine
D) cortisone

_____ 32) The single most important regulator of calcium levels in the blood is _____.
A) calcitonin
B) parathyroid hormone
C) thyroid hormone
D) gonadotropic hormones

_____ 33) Cellular responses to hormones that initiate second-messenger systems include _____.
A) possible activation of several different second-messenger systems
B) cyclic AMP phosphodiesterase formation of an active second messenger
C) formation of a specific protein kinase that acts on a series of extracellular intermediates
D) hormone binding to intracellular receptors

_____ 34) Regulating hormones from the hypothalamus _____.
A) enter venous circulation and travel to the heart, which pumps the hormone-containing blood to the pituitary
B) enter the hepatic portal system, which feeds the pituitary
C) travel by arteries to the pituitary
D) first enter into the hypophyseal portal system

_____ 35) ACTH _____.
A) is secreted by the posterior pituitary
B) secretion is regulated by a hypothalamic regulatory hormone
C) causes the release of hormones from the adrenal medulla
D) is not a tropic hormone

_____ 36) Aldosterone _____.
A) is secreted by the neurohypophysis
B) functions to increase sodium reabsorption
C) presence increases potassium concentration in the blood
D) production is greatly influenced by ACTH

_____ 37) Which organ does *not* produce hormones?
A) heart
B) kidney
C) spleen
D) skin

_____ 38) In circumstances where the body requires prolonged or increased levels of a hormone, the DNA of target cells will specify the synthesis of more receptors on the surface of the cells of the target organ. This is known as _____.
A) sensitivity increase
B) cellular affinity
C) up-regulation
D) a stressor reaction

_____ 39) Eicosanoids do not include _____.
A) paracrines
B) leukotrienes
C) hydrocortisones
D) prostaglandins

_____ 40) A man has been told that he is *not* synthesizing enough follicle-stimulating hormone (FSH), and for this reason he may be unable to father a child. Choose the correct statement to explain this problem.
A) FSH stimulates estrogen secretion by ovarian cells; therefore it is not synthesized by males.
B) A hormone made in the adenohypophysis cannot influence fertility.
C) FSH stimulates sperm production in the testes.
D) The man must be producing progesterone, which inhibits the synthesis of FSH.

_____ 41) Thyroxine is a peptide hormone, but its mechanism is different from other peptide hormones. Which of the following statements is true concerning this difference?
A) It causes positive feedback.
B) It does not require a second messenger to effect a response.
C) It is very specific in the cell type it targets.
D) It is a stimulant of cellular metabolism and targets all cells.

_____ 42) How do glucocorticoids enable the body to deal appropriately with stress?
A) by increasing blood glucose, fatty acid, and amino acid levels and enhancing blood pressure
B) by decreasing the heart rate, thus decreasing blood pressure
C) by stimulating the pancreas to release insulin
D) by releasing the neurotransmitters that prepare the body for the stress response

_____ 43) What ion is sometimes used as a second messenger of amino acid—based hormones?
A) iron
B) calcium
C) sodium
D) chlorine

Chapter 17: Blood:

_____ 1) Which of the following is *not* a functional characteristic of WBCs?
A) granulosis
B) diapedesis
C) ameboid motion
D) positive chemotaxis

_____ 2) What is the average normal pH range of blood?
A) 8.35-8.45
B) 7.75-7.85
C) 7.35-7.45
D) 4.65-4.75

_____ 3) The special type of hemoglobin present in fetal red blood cells is _____.
A) hemoglobin A
B) hemoglobin B
C) hemoglobin F
D) hemoglobin S

_____ 4) Which of the choices below is the parent cell for all formed elements of blood?
A) megakaryocyte
B) normoblast
C) hemocytoblast
D) polymorphonuclear cell

_____ 5) Which blood type is generally called the universal donor?
A) A
B) B
C) AB
D) O

_____ 6) Which of the following is not a distribution function of blood?
A) delivery of oxygen to body cells
B) transport of metabolic wastes from cells
C) transport of hormones to their target organs
D) transport of salts to maintain blood volume

_____ 7) Which of the following is a protective function of blood?
A) prevention of blood loss
B) maintenance of adequate fluid volume
C) maintenance of normal pH in body tissue
D) maintenance of body temperature

_____ 8) Which of the statements below is an incorrect or false statement?
A) Transfusion of incompatible blood can be fatal.
B) Unique to the ABO blood group is the presence in the plasma of preformed antibodies.
C) Blood typing for the Kell, Lewis, and Duffy factors is always done before a blood transfusion.
D) When a transfusion reaction occurs, the oxygen-carrying capacity of the transfused blood cells is disrupted and the clumping of RBCs in small vessels hinders blood flow to tissues beyond those points.

_____ 9) Which of the following might trigger erythropoiesis?
A) hypoxia of EPO-producing cells
B) decreased tissue demand for oxygen
C) an increased number of RBCs
D) moving to a lower altitude

_____ 10) Blood reticulocyte counts provide information regarding _____.
A) rate of erythrocyte formation
B) rate of platelet formation
C) clotting ability of the blood
D) WBC ability to defend the body against disease

_____ 11) An individual who is blood type AB negative can _____.
A) receive any blood type in moderate amounts except that with the Rh antigen
B) donate to all blood types in moderate amounts
C) receive types A, B, and AB, but not type O
D) donate to types A, B, and AB, but not to type O

_____ 12) Which of the following statements does not describe blood?
A) Blood is denser and more viscous than water.
B) Blood varies from bright red to a dark red color.
C) Blood pH is normally between 7.34 — 7.45.
D) Blood carriers body cells to injured areas for repair

_____ 13) When neither anti-A serum nor anti-B serum clot on a blood plate with donor blood, the blood is type _____.
A) A
B) B
C) AB
D) O

_____ 14) Select the incorrect statement regarding blood cell formation.
A) Erythrocytes are formed from normoblasts
B) Eosinophils are formed from myeloblasts
C) Lymphocytes are formed from lymphoblasts.
D) Platelets are formed from myeloblasts

_____ 15) Blood volume restorers include all of the following *except* _____.
A) dextran
B) albumin
C) packed cells
D) saline solutions

_____ 16) James has a hemoglobin measurement of 16 g/100 ml blood. This is _____.
A) above normal
B) normal only if James is an infant
C) abnormally low
D) within the normal range

_____ 17) The plasma protein that is the major contributor to osmotic pressure is _____.
A) fibrinogen
B) albumin
C) alpha globulin
D) gamma globulin

_____ 18) All of the following can be expected with polycythemia *except* _____.
A) high hematocrit
B) low blood viscosity
C) increased blood volume
D) high blood pressure

_____ 19) No visible cytoplasmic granules are present in _____.
A) monocytes
B) basophils
C) eosinophils
D) neutrophils

_____ 20) Which of the following is *not* a phase of hemostasis?
A) vascular spasm
B) fibrinolysis
C) platelet plug formation
D) coagulation

_____ 21) Which of the following is *not* a structural characteristic that contributes to erythrocyte gas transport functions?
A) biconcave shape
B) hemoglobin containing-sack
C) produces energy anaerobically
D) mitotically active

_____ 22) A lack of intrinsic factor, leading to a deficiency of vitamin B_{12} and causing an appearance of large pale cells called macrocytes, is characteristic of _____.
A) aplastic anemia
B) polycythemia
C) pernicious anemia
D) sickle-cell anemia

_____ 23) The slowest step in the clotting process is _____.
A) formation of prothrombin activator
B) production of fibrin strands
C) binding fibrin strands
D) release of PF_3

_____ 24) Thromboembolic disorders _____.
A) result in uncontrolled bleeding
B) include thrombus formation, a clot in a broken blood vessel
C) include embolus formation, a clot moving within the circulatory system
D) are caused by vitamin K deficiency

_____ 25) Which of the following is *not* a cause of bleeding disorders?
A) thrombocytopenia, a condition of decreased circulating platelets
B) excess secretion of platelet-derived growth factor (PDGF)
C) a defect in the clotting cascade
D) vitamin K deficiency

_____ 26) Which of the following is characteristic of all leukocytes?
A) They are nucleated.
B) They have cytoplasmic granules.
C) They are phagocytic.
D) They are the most numerous of the formed elements in blood.

_____ 27) Which of the following is true about blood plasma?
A) It is the same as serum but without the clotting proteins.
B) The main protein component is hemoglobin.
C) It is about 90% water.
D) It contains about 20 dissolved components.

_____ 28) Platelets _____.
A) stick to the damaged area of a blood vessel and help seal the break
B) have a life span of about 120 days
C) are the precursors of leukocytes
D) have multiple nuclei

_____ 29) Which sequence is correct for the following events?
A) formation of thromboplastin, prothrombin → thrombin, fibrinogen → fibrin, clot retraction
B) fibrinogen → fibrin, clot retraction, formation of thromboplastin, prothrombin → thrombin
C) prothrombin → thrombin, formation of thromboplastin, fibrinogen → fibrin, clot retraction
D) formation of thromboplastin, clot retraction, fibrinogen → fibrin, prothrombin → thrombin

_____ 30) Fred's blood was determined to be AB positive. What does this mean?
A) There are no antibodies to A, to B, or to Rh antigens in the plasma.
B) Antibodies to A and B are present in the red cells.
C) His blood lacks Rh factor.
D) He can only receive blood from a donor who is AB positive.

_____ 31) Which of the following would not be a possible cause of sickling of red blood cells in someone with sickle-cell anemia?
A) travel at high altitude
B) vigorous exercise
C) malaria and travel at high altitude
D) sleeping in a well-ventilated room

_____ 32) All of the following conditions impair coagulation *except* _____.
A) vascular spasm
B) vitamin K deficiency
C) severe hypocalcemia
D) liver disease

_____ 33) When can erythroblastosis fetalis *not* possibly happen in the child of an Rh negative mother?
A) if the child is type O positive
B) if the child is Rh^+
C) if the father is Rh^+
D) if the father is Rh^-

_____ 34) Blood is a _____.
A) colloid
B) homogeneous compound
C) heterogeneous compound
D) suspension

_____ 35) What organ in the body regulates erythrocyte production?
A) kidney
B) brain
C) liver
D) pancreas

Chapter 18: Heart:

_____ 1) Normal heart sounds are caused by which of the following events?
A) excitation of the SA node
B) closure of the heart valves
C) friction of blood against the chamber walls
D) opening and closing of the heart valves

_____ 2) Which of the events below does *not* occur when the semilunar valves are open?
A) Ventricles are in diastole.
B) Blood enters pulmonary arteries and the aorta.
C) AV valves are closed.
D) Ventricles are in systole.

_____ 3) Hemorrhage with a large loss of blood causes _____.
A) a lowering of blood pressure due to change in cardiac output
B) a rise in blood pressure due to change in cardiac output
C) no change in blood pressure but a slower heart rate
D) no change in blood pressure but a change in respiration

_____ 4) The left ventricular wall of the heart is thicker than the right wall in order to _____.
A) accommodate a greater volume of blood
B) expand the thoracic cage during diastole
C) pump blood with greater pressure
D) pump blood through a smaller valve

_____ 5) Damage to the _____ is referred to as heart block.
A) SA node
B) AV valves
C) AV bundle
D) AV node

_____ 6) The P wave of a normal electrocardiogram indicates _____.
A) ventricular repolarization
B) ventricular depolarization
C) atrial repolarization
D) atrial depolarization

_____ 7) Blood within the pulmonary veins returns to the _____.
A) right atrium
B) left atrium
C) right ventricle
D) left ventricle

_____ 8) The condition where fluid compresses the heart and limits its ability to contract is called _____.
A) pericarditis
B) cardiac tamponade
C) myocardial infarction
D) angina pectoris

_____ 9) The term for pain associated with deficient blood delivery to the heart that may be caused by the transient spasm of coronary arteries is _____.
A) ischemia
B) pericarditis
C) myocardial infarct
D) angina pectoris

_____ 10) To auscultate the aortic semilunar valve, you would place your stethoscope in the _____.
A) second intercostal space to the right of the sternum
B) second intercostal space to the left of the sternum
C) fifth intercostal space inferior to the left nipple
D) fifth right intercostal space

_____ 11) The source of blood carried to capillaries in the myocardium would be the _____.
A) coronary sinus
B) fossa ovalis
C) coronary arteries
D) coronary veins

_____ 12) The fact that the left ventricle of the heart is thicker than the right ventricle reveals that it _____.
A) pumps a greater volume of blood
B) pumps blood against a greater resistance
C) expands the thoracic cage
D) sends blood through a smaller valve

_____ 13) Which of the following factors does *not* influence heart rate?
A) skin color
B) age
C) gender
D) body temperature

_____ 14) Which of the following is *not* an age-related change affecting the heart?
A) atherosclerosis
B) decline in cardiac reserve
C) fibrosis of cardiac muscle
D) thinning of the valve flaps

_____ 15) If cardiac muscle is deprived of its normal blood supply, damage would primarily result from _____.
A) decreased delivery of oxygen
B) a decrease in the number of available mitochondria for energy production
C) a lack of nutrients to feed into metabolic pathways
D) an inadequate supply of lactic acid

_____ 16) If the length of the absolute refractory period in cardiac muscle cells was the same as it is for skeletal muscle cells, _____.
A) it would be much longer before cardiac cells could respond to a second stimulation
B) contractions would last as long as the refractory period
C) tetanic contractions might occur, which would stop the heart's pumping action
D) it would be less than 1—2 m

_____ 17) Norepinephrine acts on the heart by _____.
A) decreasing heart contractility
B) causing a decrease in stroke volume
C) blocking the action of calcium
D) causing threshold to be reached more quickly

_____ 18) If the vagal nerves to the heart were cut, the result would be that _____.
A) the heart would stop, since the vagal nerves trigger the heart to contract
B) the heart rate would increase by about 25 beats per minute
C) the AV node would become the pacemaker of the heart
D) parasympathetic stimulation would increase, causing a decrease in heart rate

_____ 19) A foramen ovale _____.
A) connects the two atria in the fetal heart
B) is a condition in which the heart valves do not completely close
C) is a shallow depression in the interventricular septum
D) is a connection between the pulmonary trunk and the aorta in the fetus

_____ 20) Which vessel(s) of the heart receive(s) blood during right ventricular systole?
A) venae cavae
B) pulmonary trunk
C) aorta
D) pulmonary veins

_____ 21) Which of these vessels receives blood during ventricular systole?
A) aorta only
B) pulmonary arteries only
C) pulmonary veins only
D) both the aorta and pulmonary trunk

_____ 22) Which of the following is *not* part of the conduction system of the heart?
A) AV node
B) bundle of His
C) AV valve
D) SA node

_____ 23) The tricuspid valve is closed _____.
A) while the ventricle is in diastole
B) when the ventricle is in systole
C) while the atrium is contracting
D) by the movement of blood from atrium to ventricle

_____ 24) When viewing a dissected heart, it is easy to visually discern the right and left ventricles by _____.
A) tracing out where the auricles connect
B) noticing the thickness of the ventricle walls
C) locating the apex
D) finding the papillary muscles

_____ 25) Select the correct statement about the heart valves.
A) The mitral valve separates the right atrium from the right ventricle.
B) The tricuspid valve divides the left atrium from the left ventricle.
C) Aortic and pulmonary valves control the flow of blood into the heart.
D) The AV valves are supported by chordae tendineae so that regurgitation of blood into the atria during ventricular contraction does not occur.

_____ 26) Select the correct statement about the function of myocardial cells.
A) The entire heart contracts as a unit or it does not contract at all.
B) Cardiac muscle cells are innervated by sympathetic, parasympathetic, and somatic nerve fibers so that the nervous system can increase heart rate.
C) The refractory period in skeletal muscle is much longer than that in cardiac muscle.
D) The influx of potassium ions from extracellular sources is the initiating event in cardiac muscle contraction.

_____ 27) Select the correct statement about the structure of the heart wall.
A) The fibrous skeleton forms the bulk of the heart.
B) Connective tissue in the heart wall aids in the conduction of the action potential.
C) The heart chambers are lined by the endomysium.
D) The myocardium is the layer of the heart that actually contracts.

_____ 28) Compared to skeletal muscle, cardiac muscle _____.
A) has gap junctions that allow it to act as a functional syncytium
B) lacks striations
C) has more nuclei per cell
D) cells are larger than skeletal muscle cells

_____ 29) During the period of ventricular filling _____.
A) pressure in the heart is at its peak
B) blood flows mostly passively through the atria and the open AV valves into the ventricles
C) the atria remain in diastole
D) it is represented by the P wave on the ECG

_____ 30) The second heart sound is heard during which phase of the cardiac cycle?
A) isovolumetric relaxation
B) isovolumetric contraction
C) ventricular ejection
D) ventricular filling

_____ 31) If we were able to artificially alter the membrane permeability of pacemaker cells so that sodium influx is more rapid, _____.
A) threshold is reached more quickly and heart rate would increase
B) potassium channels compensate and no change in heart rate would occur
C) heart rate would decrease, but blood pressure would rise due to the excess sodium present
D) tetanic contraction would occur due to the short absolute refractory period of cardiac muscle

_____ 32) Select the correct statement about cardiac output.
A) A slow heart rate increases end diastolic volume, stroke volume, and force of contraction.
B) Decreased venous return will result in increased end diastolic volume.
C) If a semilunar valve were partially obstructed, the end systolic volume in the affected ventricle would be decreased.
D) Stroke volume increases if end diastolic volume decreases.

_____ 33) During contraction of heart muscle cells _____.
A) the action potential is initiated by voltage-gated slow calcium channels
B) some calcium enters the cell from the extracellular space and triggers the release of larger amounts of calcium from intracellular stores
C) the action potential is prevented from spreading from cell to cell by gap junctions
D) calcium is prevented from entering cardiac fibers that have been stimulated

_____ 34) Isovolumetric contraction _____.
A) refers to the short period during ventricular systole when the ventricles are completely closed chambers
B) occurs while the AV valves are open
C) occurs immediately after the aortic and pulmonary valves close
D) occurs only in people with heart valve defects

_____ 35) Commotio cordis is heart failure due to a _____.
A) mild electrical shock to the heart itself
B) severe electrical shock to the body
C) relatively mild blow to the chest that occurs during a vulnerable interval (2 ms) when the heart is repolarizing
D) loss of blood from an artery

Chapter 19: Vessels:

_____ 1) Which of the following is *not* one of the three main factors influencing blood pressure?
A) cardiac output
B) peripheral resistance
C) emotional state
D) blood volume

_____ 2) Which of the following chemicals does *not* help regulate blood pressure?
A) ADH
B) atrial natriuretic peptide
C) angiotensin II
D) nitric acid

_____ 3) Which statement best describes arteries?
A) All carry oxygenated blood to the heart.
B) All carry blood away from the heart.
C) All contain valves to prevent the back-flow of blood.
D) Only large arteries are lined with endothelium.

_____ 4) The most common type of blood capillary is the _____.
A) sinusoidal capillary
B) continuous capillary
C) fenestrated capillary
D) distributing capillary

_____ 5) Permitting the exchange of nutrients and gases between the blood and tissue cells is the primary function of _____.
A) arterioles
B) arteries
C) veins
D) capillaries

_____ 6) Which of the following statements regarding the hepatic portal system is false?
A) It carries nutrients, toxins, and microorganisms to the liver for processing.
B) Its major vessels are the superior mesenteric, inferior mesenteric, and splenic veins.
C) It consists of a vein connecting two capillary beds together.
D) It branches off of the inferior vena cava.

_____ 7) The arteries that are also called distributing arteries are the _____.
A) elastic arteries
B) muscular arteries
C) arterioles
D) capillaries

_____ 8) Aldosterone will _____.
A) promote an increase in blood pressure
B) promote a decrease in blood volume
C) result in a larger output of urine
D) decrease sodium reabsorption

_____ 9) The pulse pressure is _____.
A) systolic pressure plus diastolic pressure
B) systolic pressure minus diastolic pressure
C) systolic pressure divided by diastolic pressure
D) diastolic pressure plus 1/3 (systolic pressure plus diastolic pressure)

_____ 10) Which of the following signs of hypovolemic shock is a relatively late sign?
A) cold, clammy skin
B) increased heart rate
C) rapid, thready pulse
D) rapidly falling blood pressure

_____ 11) Which of the following is likely during vigorous exercise?
A) Blood will be diverted to the digestive organs.
B) The skin will be cold and clammy.
C) Capillaries of the active muscles will be engorged with blood.
D) Blood flow to the kidneys increases.

_____ 12) Which of the choices below explains why the arterioles are known as resistance vessels?
A) Their prime function is the exchange of nutrients and wastes between the blood and tissue cells.
B) The contraction and relaxation of the smooth muscle in their walls can change their diameter.
C) They distribute blood to various parts of the body.
D) They contain a large quantity of elastic tissue.

_____ 13) Which of the following is true about veins?
A) Venous valves are formed from the tunica media.
B) Up to 35% of total body blood is in venous circulation at any given time.
C) Veins have a small lumen in relation to the thickness of the vessel wall.
D) Veins are called capacitance vessels or blood reservoirs.

_____ 14) Which of the following processes provides a long-term response to changes in blood pressure?
A) neural controls
B) baroreceptor-initiated reflexes
C) chemoreceptor-initiated reflexes
D) renal regulation

_____ 15) Peripheral resistance _____.
A) decreases with increasing length of the blood vessel
B) increases as blood vessel diameter increases
C) increases as blood viscosity increases
D) is not a major factor in blood pressure in healthy individuals

_____ 16) Brain blood flow autoregulation _____.
A) is less sensitive to pH than to a decreased oxygen level
B) causes constriction of cerebral blood vessels in response to a drop in systemic blood pressure
C) is abolished when abnormally high CO_2 levels persist
D) is controlled by cardiac centers in the pons

_____ 17) Blood flow to the skin _____.
A) is controlled mainly by decreasing pH
B) increases when environmental temperature rises
C) increases when body temperature drops so that the skin does not freeze
D) is not an important source of nutrients and oxygen for skin cells

_____ 18) Which of the choices below reflects the balance (or imbalance) between the direction and amount of fluid that flows across the capillary walls?
A) hydrostatic and osmotic pressure
B) hydrostatic pressure only
C) blood volume and viscosity
D) plasma and formed element concentration

_____ 19) Which of the following is a type of circulatory shock?
A) hypovolemic, caused by increased blood volume
B) cardiogenic, which results from any defect in blood vessels
C) vascular, due to extreme vasodilation as a result of loss of vasomotor tone
D) circulatory, where blood volume is normal and constant

_____ 20) Which tunic of an artery is most responsible for maintaining blood pressure and continuous blood circulation?
A) tunica intima
B) tunica media
C) tunica externa
D) tunica adventitia

_____ 21) The influence of blood vessel diameter on peripheral resistance is _____.
A) the only factor that influences resistance
B) significant because resistance is inversely proportional to the fourth power of the vessel radius
C) significant because resistance is directly proportional to the blood vessel diameter
D) insignificant because vessel diameter does not vary

_____ 22) The form of circulatory shock known as hypovolemic shock is _____.
A) the form of shock caused by anaphylaxis
B) any condition in which blood vessels are inadequately filled and blood *cannot* circulate normally
C) shock that results from large-scale loss of blood volume, or after severe vomiting or diarrhea
D) always fatal

_____ 23) In the dynamics of blood flow through capillaries, hydrostatic pressure _____.
A) and osmotic pressure are the same
B) is the same as capillary blood pressure
C) generally forces fluid from the interstitial space into the capillaries
D) is completely canceled out by osmotic pressure

_____ 24) Which of the following is the most significant source of blood flow resistance?
A) blood viscosity
B) total blood vessel length
C) blood vessel diameter
D) blood vessels type

_____ 25) The term *ductus venosus* refers to _____.
A) a fetal shunt that bypasses the lungs
B) damage to the valves in the veins, leading to varicose veins
C) a condition of the aged in which the arteries lose elasticity
D) a special fetal vessel that allows umbilical blood to bypass the liver

_____ 26) Which of the choices below does *not* explain why low capillary pressures are desirable?
A) Capillaries are fragile and high pressures would rupture them.
B) Most capillaries are extremely permeable and thus even low pressures force solute-containing fluid out of the bloodstream.
C) Low blood pressure is associated with longer life span than high blood pressure.
D) Low capillary pressure reduces the load of drainage the lymphatic drainage must handle

_____ 27) Which of the choices below does *not* involve tissue perfusion?
A) delivery of oxygen and nutrients to, and removal of wastes from, tissue cells
B) gas exchange in the lungs
C) absorption of nutrients from the digestive tract
D) blood clotting

_____ 28) Which of the following do *not* influence arterial pulse rate?
A) activity
B) postural changes
C) emotions
D) the vessel selected to palpate

_____ 29) Which of the following are involved directly in pulmonary circulation?
A) superior vena cava, right atrium, and left ventricle
B) right ventricle, pulmonary artery, and left atrium
C) left ventricle, aorta, and inferior vena cava
D) right atrium, aorta, and left ventricle

_____ 30) Histologically, the _____ is squamous epithelium supported by a sparse connective tissue layer.
A) tunica intima
B) tunica media
C) tunica externa
D) tunica adventitia

_____ 31) The arteries that directly feed into the capillary beds are called _____.
A) muscular arteries
B) elastic arteries
C) arterioles
D) venules

_____ 32) Which of the following is *not* true regarding fenestrated capillaries?
A) Fenestrated capillaries in the small intestine receive nutrients from digested food.
B) Fenestrated capillaries in endocrine organs allow hormones rapid entry into the blood.
C) Fenestrated capillaries are essential for filtration of blood plasma in the kidney.
D) Fenestrated capillaries form the blood-brain barrier.

_____ 33) Modified capillaries that are lined with phagocytes are called _____.
A) fenestrations
B) sinusoids
C) thoroughfare channels
D) anastomoses

_____ 34) Factors that aid venous return include all *except* _____.
A) activity of skeletal muscles
B) pressure changes in the thorax
C) venous valves
D) urinary output

_____ 35) Which of the following blood pressure readings would be indicative of hypertension?
A) 120/80 in a 30-year-old man
B) 140/90 in a 70-year-old woman
C) 170/96 in a 50-year-old man
D) 110/60 in a 20-year-old woman

_____ 36) Select the correct statement about factors that influence blood pressure.
A) An increase in cardiac output corresponds to a decrease in blood pressure, due to the increased delivery.
B) Systemic vasodilation would increase blood pressure, due to diversion of blood to essential areas.
C) Excess protein production would decrease blood pressure.
D) Excess red cell production would cause a blood pressure increase.

_____ 37) Mechanisms that do *not* help regulate blood pressure include _____.
A) nervous control that operates via reflex arcs involving baroreceptors, chemoreceptors, and higher brain centers
B) the dural sinus reflex
C) renal regulation via the renin-angiotensin system of vasoconstriction
D) chemical controls such as atrial natriuretic peptide

_____ 38) The velocity of blood flow is _____.
A) in direct proportion to the total cross-sectional area of the blood vessels
B) slower in the arteries than in capillaries because arteries possess a relatively large diameter
C) slower in the veins than in the capillaries because veins have a large diameter
D) slowest in the capillaries because the total cross-sectional area is the greatest

_____ 39) Select the correct statement about blood flow.
A) It is relatively constant through all body organs.
B) It is measured in mm Hg.
C) It is greatest where resistance is highest.
D) Blood flow through the entire vascular system is equivalent to cardiac output.

_____ 40) A thrombus (blood clot) in the first branch of the arch of the aorta would affect the flow of blood to the _____.
A) left side of the head and neck
B) myocardium of the heart
C) left upper arm
D) right side of the head and neck and right upper arm

_____ 41) Cerebral blood flow is regulated by _____.
A) skin temperature
B) ADH
C) intrinsic autoregulatory mechanisms
D) the hypothalamic "thermostat"

_____ 42) A patient with essential hypertension might have pressures of 200/120 mm Hg. This hypertensive state could result in all of the following changes *except* _____.
A) increased work of the left ventricle
B) increased incidence of coronary artery disease
C) increased damage to blood vessel endothelium
D) decreased size of the heart muscle

_____ 43) The short-term controls of blood pressure, mediated by the nervous system and blood-borne chemicals, primarily operate via all but which of the following?
A) reflex arcs involving baroreceptors
B) altering blood volume
C) reflex arcs associated with vasomotor fibers
D) chemoreceptors

_____ 44) Secondary hypertension can be caused by _____.
A) obesity
B) stress
C) arteriosclerosis
D) smoking

_____ 45) Where in the body would you find low oxygen levels causing vasoconstriction and high levels causing vasodilation?
A) kidney
B) lungs
C) liver
D) heart

_____ 46) Normal average blood pressure for a newborn baby is _____.
A) 120/80
B) 90/55
C) 150/90
D) 130/80

_____ 47) If blood pressure is almost normal in a person who has lost blood, does that mean the tissues are receiving adequate blood flow?
A) yes
B) no
C) not necessarily

_____ 48) What do the ductus arteriosus and the foramen ovale become at birth?
A) ligamentum teres; fossa ovalis
B) fossa ovalis; ligamentum arteriosum
C) ligamentum arteriosum; ligamentum teres
D) ligamentum arteriosum; fossa ovalis

_____ 49) Which of the following would *not* result in the dilation of the feeder arterioles and opening of the pre-capillary sphincters in systemic capillary beds?
A) a decrease in local tissue oxygen content
B) an increase in local tissue carbon dioxide
C) a local increase in histamine
D) a local increase in pH

_____ 50) Arteriolar blood pressure increases in response to all but which of the following?
A) increasing stroke volume
B) increasing heart rate
C) rising blood volume
D) falling blood volume
E) all of these

_____ 51) The baroreceptors in the carotid sinus and aortic arch are sensitive to which of the following?
A) a decrease in carbon dioxide
B) changes in arterial pressure
C) a decrease in oxygen levels
D) an increase in oxygen levels

Chapter 20: Lymphatic System:

_____ 1) Small organs associated with lymphatic vessels are termed _____.
A) lymph follicles
B) lymph nodes
C) lacteals
D) lymphatics

_____ 2) Which of the following would *not* be classified as a lymphatic structure?
A) pancreas
B) spleen
C) tonsils
D) Peyer's patches of the intestine

_____ 3) Which of the following statements regarding the thymus is not true?
A) It functions strictly in T lymphocyte maturation.
B) It does not fight antigens.
C) Its medulla has corpuscles.
D) It has follicles similar to those in the spleen.

_____ 4) Lymph transport involves all but which of the following?
A) milking action of active muscle fibers
B) thorax pressure changes during breathing
C) smooth muscle contraction in the lymph capillary walls
D) lymph capillary mini-valve action

_____ 5) The thymus is most active during _____.
A) fetal development
B) childhood
C) middle age
D) old age

_____ 6) Which lymphatic structure drains lymph from the right upper limb and the right side of the head and thorax?
A) lumbar trunk
B) thoracic duct
C) right lymphatic duct
D) cisterna chyli

_____ 7) Which of the following is not a part of the lymphatic system?
A) lymphatic vessels
B) lymph nodes
C) lymph
D) erythrocytes

_____ 8) The lymphatic capillaries are _____.
A) more permeable than blood capillaries
B) less permeable than blood capillaries
C) as permeable as blood capillaries
D) completely impermeable

_____ 9) Antibodies that act against a particular foreign substance are released by _____.
A) T lymphocytes
B) plasma cells
C) lymph nodes
D) medullary cords

_____ 10) Lymph leaves a lymph node via _____.
A) efferent lymphatic vessels
B) afferent lymphatic vessels
C) the cortical sinus
D) the subcapsular sinus

_____ 11) Which cells become immunocompetent due to thymic hormones?
A) basophils
B) lymphocytes
C) macrophages
D) monocytes

_____ 12) Functions of the spleen include all of those below *except* _____.
A) removal of old or defective blood cells from the blood
B) forming crypts that trap bacteria
C) storage of blood platelets
D) storage of iron

_____ 13) When the lymphatic structures of a limb are blocked due to tumors, the result is _____.
A) shrinkage of tissues distal in the limb to the blockage due to inadequate delivery of lymph
B) severe localized edema distal to the blockage of that limb
C) increased pressure in the lymphatics proximal in the limb to the blockage
D) abnormally high lymph drainage from the distal region

_____ 14) Select the correct statement about lymph transport.
A) Under normal conditions, lymph vessels are very high-pressure conduits.
B) Lymph transport is faster than that occurring in veins.
C) Lymph transport is only necessary when illness causes tissue swelling.
D) Lymph transport depends on the movement of adjacent tissues, such as skeletal muscles.

_____ 15) Select the correct statement about lymphocytes.
A) The two main types are T cells and macrophages.
B) B cells produce plasma cells, which secrete antibodies into the blood.
C) T cells are the precursors of B cells.
D) T cells are the only form of lymphocyte found in lymphoid tissue.

_____ 16) Select the correct statement about lymphoid tissue.
A) Once a lymphocyte enters the lymphoid tissue, it resides there permanently.
B) Lymphoid macrophages secrete antibodies into the blood.
C) Lymphoid tissue is predominantly reticular connective tissue.
D) T lymphocytes act by ingesting foreign substances.

_____ 17) Lymphoid tissue that appears as a swelling of the mucosa in the oral cavity is called a(n) _____.
A) tonsil
B) thymus
C) Peyer's patch
D) appendix

_____ 18) Which of the following does *not* contain a mucosa-associated lymphatic tissue?
A) tonsil
B) thymus
C) Peyer's patch
D) appendix

_____ 19) Peyer's patches are found in the _____.
A) duodenum of the small intestine
B) ileum of the small intestine
C) large intestine
D) jejunum of the small intestine

_____ 20) Lymph capillaries are absent in all except which of the following?
A) bones and teeth
B) bone marrow
C) CNS
D) digestive organs

_____ 21) What is a bubo?
A) a wall in a lymph node
B) a lobe of the spleen
C) an infected Peyer's patch
D) an infected lymph node

_____ 22) The thymus is the only lymphoid organ that does *not* _____.
A) have lymphocytes
B) produce hormones
C) have a cortex and medulla
D) directly fight antigens

_____ 23) Large clusters of lymph nodes occur in all of the following locations *except* the _____.
A) inguinal region
B) cervical region
C) axillary region
D) lower extremities

_____ 24) Digestive tract-associated lymphatic tissue includes all of the following *except* _____.
A) Peyer's patches
B) palatine tonsils
C) lingual tonsils
D) islets of Langerhans

_____ 25) Which of the following is *not* a method that maintains lymph flow?
A) skeletal muscle contraction
B) breathing
C) valves in lymph vessel walls
D) capillary smooth muscle contraction

_____ 26) The tonsils located at the base of the tongue are the _____.
A) lingual tonsils
B) palatine tonsils
C) pharyngeal tonsils
D) Peyer's tonsils

_____ 27) Which of the following is *not* a normal component of lymph?
A) water
B) plasma proteins
C) red blood cells
D) ions

_____ 28) A sentinel node is _____.
A) a lymph node found in the intestinal lamina propria
B) the first node at the junction of all the lumbar trunks
C) a small node in the spleen
D) the first node to receive lymph from an area suspected to be cancerous

_____ 29) Which of the following are functions of lymphoid tissue?
A) house and provide a proliferation site for lymphocytes
B) house and provide a proliferation site for neutrophils
C) furnish an ideal surveillance vantage point for lymphocytes and macrophages
D) A and C

_____ 30) Which of the following is *not* a function of the lymphatic system?
A) draining excess interstitial fluid
B) carrying out immune responses
C) transporting dietary fats
D) transporting respiratory gases

_____ 31) Which of the following is not a function of lymph nodes?
A) act as lymph filters and activate the immune system
B) produce lymphoid cells and house granular WBCs
C) produce lymph fluid and cerebrospinal fluid
D) serve as antigen surveillance areas

Chapter 21: Immune System:

_____ 1) Which of the following is characteristic of antibodies?
A) carbohydrate structure
B) composed of heavy and light polypeptide chains
C) three binding sites per antibody monomer
D) incapable of being transferred from one person to another

_____ 2) Which of the following is associated with passive immunity?
A) exposure to an antigen
B) infusion of weakened viruses
C) passage of IgG antibodies from a pregnant mother to her fetus
D) booster shot of vaccine

_____ 3) Which of the following is not a type of T cell?
A) cytotoxic
B) antigenic
C) helper
D) regulatory

_____ 4) B lymphocytes develop immunocompetence in the _____.
A) thymus
B) spleen
C) bone marrow
D) lymph nodes

_____ 5) Which of the following is not a function of the inflammatory response?
A) prevents the spread of the injurious agent to nearby tissue
B) replaces injured tissues with connective tissue
C) disposes of cellular debris and pathogens
D) sets the stage for repair processes

_____ 6) The redness and heat of an inflamed area are due to a local hyperemia caused by _____.
A) vasodilation
B) vasoconstriction
C) phagocyte mobilization
D) complement production

_____ 7) The antibody molecule is held together by _____ bonds.
A) disulfide
B) hydrogen
C) amino acid
D) sodium

_____ 8) In clonal selection of B cells, which substance is responsible for determining which cells will eventually become cloned?
A) antigen
B) interferon
C) antibody
D) complement

_____ 9) Which of the following statements regarding NK cells is a false or incorrect statement?
A) NK cells are a type of neutrophil.
B) NK cells are present in the blood, spleen, lymph nodes, and red bone marrow.
C) NK cells attack cells that display abnormal MHC antigens.
D) NK cells attack cancer cells and virus-infected body cells.

_____ 10) The process whereby neutrophils and other white blood cells are attracted to an inflammatory site is called _____.
A) diapedesis
B) chemotaxis
C) margination
D) phagocytosis

_____ 11) Small molecules that bind with self-proteins to produce antigenic substances are called _____.
A) haptens
B) antibodies
C) ions
D) reagins

_____ 12) Which of the following is the correct sequence of events in phagocytosis?
A) adherence, digestion, killing, ingestion, chemotaxis
B) chemotaxis, ingestion, digestion, adherence, killing
C) chemotaxis, adherence, ingestion, digestion, killing
D) ingestion, adherence, chemotaxis, digestion, killing

_____ 13) Which of the following is *not* a role of activated complement?
A) opsonization
B) prevention of immediate hypersensitivity reactions
C) enhancement of inflammation
D) insertion of MAC and cell lysis

_____ 14) Which of the following does *not* respond to cell-mediated immunity?
A) intracellular pathogens that reside within host cells
B) some cancer cells
C) foreign tissue transplants
D) pathogens in the lumen of the stomach

_____ 15) Which of the following cells predominate at the sites of chronic infections?
A) Basophils
B) Eosinophils
C) Macrophages
D) B cells

_____ 16) Interferons _____.
A) are virus-specific, so that an interferon produced against one virus could not protect cells against another virus
B) act by increasing the rate of cell division
C) interfere with viral replication within cells
D) are routinely used in nasal sprays for the common cold

_____ 17) Which of the following determine(s) what specific foreign substances our adaptive immune system will be able to recognize and resist?
A) The type of antigen
B) Memory cell production
C) Enzymes present at the time of the invasion
D) Our genes

_____ 18) Regulatory T cells _____.
A) release cytokines that increase the activity of cytotoxic T cells and activated B cells
B) decrease their activity as antigenic stimulus decreases
C) may function in preventing autoimmune reactions
D) aid B cells in antibody production

_____ 19) Select the correct definition about tissue grafts.
A) Isografts are between identical twins.
B) Allografts are between different species.
C) Xenografts are between individuals of the same species.
D) Autografts are between two genetically identical individuals.

_____ 20) Which of the statements below does *not* describe antigens?
A) Antigens exhibit immunogenicity and reactivity.
B) Antigens only come from microbes.
C) The parts of antigen molecules that initiate immune responses are called epitopes or antigenic determinants.
D) Antigens can include proteins, nucleic acids, lipoproteins, glycoproteins, and certain large polysaccharides.

_____ 21) Activated T cells and macrophages release _____ to mobilize immune cells and attract other leukocytes into the area.
A) Cytokines
B) Perforins
C) Interleukin 1 proteins
D) Interleukin 2 proteins

_____ 22) Which of the following is a part of the second line of defense against microorganisms?
A) keratin
B) cilia
C) gastric juice
D) phagocytes

_____ 23) Which of the following is characteristic of complete antigens?
A) small molecules
B) reactivity with an antibody
C) contain many repeating chemical units
D) inhibit production of antibodies

_____ 24) B cells respond to the initial antigen challenge by _____.
A) reducing its size
B) immediately producing antigen-specific antibodies
C) forming of a large number of cells that are unlike the original B cell
D) producing progeny cells that include plasma cells and memory cells

_____ 25) T-cell activation requires _____.
A) antigen binding and co-stimulation
B) antigen binding and antibody production
C) antibody production and co-stimulation
D) antigen binding, antibody production, and co-stimulation

_____ 26) Cancer cells and virus-infected body cells can be killed before activation of adaptive immunity by _____.
A) natural killer cells
B) T lymphocytes
C) B lymphocytes
D) pinocytosis

_____ 27) Complement proteins and antibodies coat a microorganism and provide binding sites, enabling macrophages and neutrophils to phagocytize the organism. This phenomenon is termed _____.
A) diapedesis
B) agglutination
C) opsonization
D) chemotaxis

_____ 28) Which of the following is *not* characteristic of the adaptive immune system?
A) It is antigen-specific.
B) It is systemic.
C) It has memory.
D) It is specific for a given organ.

_____ 29) Monoclonal antibodies are used for the diagnosis of all of the following *except* _____.
A) juvenile diabetes
B) hepatitis
C) rabies
D) pregnancy

_____ 30) Which of the following would be classified as a delayed hypersensitivity reaction?
A) immune complex hypersensitivity
B) anaphylaxis
C) cytotoxic hypersensitivity
D) allergic contact dermatitis

_____ 31) Innate immune system defenses include _____.
A) B cells
B) T cells
C) plasma cells
D) phagocytosis

_____ 32) Which of the following statements is incorrect or false?
A) Haptens lack immunogenicity unless attached to protein carriers.
B) Class 1 MHC molecules are built into the plasma membranes of all body cells.
C) Class II MHC molecules appear only on the surface of antigen-presenting cells, thymic cells, and T cells that have been activated by exposure to antigens.
D) MHC proteins are the cell's identity markers.

_____ 33) Phagocyte mobilization involves _____.
A) diapedesis, during which cells line up against the capillary wall
B) margination, which is the process of white cell movement through the walls of capillaries into injured tissues
C) mainly neutrophil and macrophage migration into inflamed areas
D) monocytes as the most active phagocyte

_____ 34) Fever _____.
A) is a higher-than-normal body temperature that is always dangerous
B) decreases the metabolic rate of the body to conserve energy
C) production is regulated by chemicals that reset the body's thermostat to a higher setting
D) causes the liver to release large amounts of iron, which seems to inhibit bacterial replication

_____ 35) Immunocompetence _____.
A) occurs in one specific organ of the adaptive immune system
B) is the ability of individual cells to recognize a specific antigen by binding to it
C) prevents intercellular communication so that only specific cell types respond to the invader
D) requires exposure to an antigen

_____ 36) Select the correct statement about the prevention of immune attack on "self."
A) The development of tolerance is specific to B cells only.
B) Neutrophils capable of binding to self-antigens are chemically inactivated.
C) Tolerance to self is due to the action of foreign antigens that inactivate the immune response to one's own tissues.
D) Tolerance is developed during fetal life.

_____ 37) Select the correct statement about active and passive immunity.
A) Immunological memory is established by passive immunization.
B) A vaccination is an example of the introduction of passive immunity into the body.
C) The antibodies utilized in active immunity are acquired from another organism.
D) Active and passive humoral immunity are both mechanisms of adaptive immunity that use antibodies.

_____ 38) Cytotoxic T cells _____.
A) are the only T cells that can directly attack and kill other cells
B) require the double recognition signal of I MHC plus II MHC on the target cell in order to function
C) function mainly to stimulate the proliferation of other T cell populations
D) self-destruct once the antigen has been neutralized

_____ 39) Helper T cells _____.
A) bind tightly to target cells and release a lymphotoxin called perforin
B) often function to decrease the immune response
C) release B7 proteins
D) function in the adaptive immune system activation

_____ 40) Select the correct statement about immunodeficiency.
A) Severe combined immunodeficiency (SCID) disease is an acquired condition.
B) The causative agent in acquired immune deficiency syndrome (AIDS) is a virus that recognizes CD4 proteins.
C) Hodgkin's disease is a hereditary immunodeficiency found in children.
D) The most common form of immunodeficiency is graft-versus-host (GVH) disease.

_____ 41) Which of the following is true of immediate hypersensitivities?
A) They are also called type IV hypersensitivities.
B) They are adaptive immune responses to disease organisms.
C) They include allergic contact dermatitis.
D) They involve IgE antibodies and the release of histamine from mast cells and basophils.

_____ 42) Delayed hypersensitivities _____.
A) are mediated by B cells
B) include allergic contact dermatitis
C) include anaphylactic shock, a systemic vasodilation that results in inadequate blood delivery to all tissues
D) do not involve T cells

_____ 43) Natural killer (NK) cells _____.
A) are also called cytotoxic T cells
B) are a type of phagocyte
C) are cells of the adaptive immune system
D) can kill cancer cells before the immune system is activated

_____ 44) Select the correct statement about antigens.
A) "Self-antigens" is another name for incomplete antigens.
B) The largest type of antigen is called a hapten.
C) Only small antigens exhibit reactivity.
D) One antigen may have many different antigenic determinants and may therefore cause the formation of more than one antibody.

_____ 45) Clonal selection of B cells _____.
A) occurs during fetal development
B) results in the formation of plasma cells
C) cannot occur in the presence of antigens
D) only occurs in the secondary immune response

_____ 46) The primary immune response _____.
A) occurs more rapidly and is stronger than the secondary response
B) occurs when memory cells are stimulated
C) is another name for immunological memory
D) has a lag period while B cells proliferate and differentiate into plasma cells

_____ 47) Select the correct statement about the function of antibodies.
A) Antibodies may directly destroy "invaders."
B) Neutralization is the process by which antibodies cause invading cells to clump together.
C) Complement fixation is the main mechanism by which antibodies provide protection.
D) The most potent agglutinating agent is IgG.

_____ 48) Which of the following cells is the most critical cell in immunity?
A) B cell
B) helper T cell
C) cytotoxic T cell
D) APC

_____ 49) Which of the following is not an autoimmune disease?
A) multiple sclerosis
B) type II diabetes
C) systemic lupus erythematosus
D) glomerulonephritis

_____ 50) Which of the following is *not* a mechanism for the development of autoimmune disorders?
A) exposure of previously "hidden" self-antigens to the adaptive immune system
B) a second exposure to an allergen
C) mutation followed by the appearance of membrane proteins not previously present
D) cross-reaction of antibodies formed against foreign antigens with self-antigens

_____ 51) Which of the following is *not* a complement activation pathway?
A) classical pathway
B) alternative pathway
C) lectin pathway
D) lactate pathway

_____ 52) Antibody functions include all of the following *except* _____.
A) binding and inactivating chemical toxins released by bacteria or other microorganisms
B) cross-linking cell-bound antigens on red blood cells when blood types are properly matched
C) linking soluble antigens together so that they fall out of solution
D) targeting foreign cells so that complement proteins can cause cellular lysis

_____ 53) Which statement is true about T cells?
A) They usually directly recognize antigens, which then activates a subpopulation of killer cells.
B) Their proliferation is enhanced by interleukins 1 and 2.
C) Once activated, they cannot secrete cytokines.
D) They will develop into cytotoxic T cells if antigen is complexed with class II MHC proteins.

_____ 54) Which of the following is *not* a method by which antibodies work?
A) neutralizing antigen
B) direct cell lysis
C) enhancing phagocytosis
D) agglutinating and precipitating antigen

_____ 55) What is the role of interferon in defense against disease?
A) protects cells that have not yet been infected by viruses
B) protects cells that have not yet been infected by bacteria
C) activates the complement mechanism
D) activates the inflammatory process

_____ 56) Which of the following statements is a false or incorrect statement?
A) The lymphoid organs where lymphocytes become immunocompetent are called primary lymph organs. All other lymphoid organs are referred to as secondary lymphoid organs.
B) It is our genes, not antigens, that determine what specific foreign substances our immune system will be able to recognize and resist.
C) After becoming immunocompetent, the naive T cells and B cells are exported to the bone marrow where the encounters with antigens occur.
D) T cells and B cells become activated when they bind with recognized antigens.

_____ 57) Which immunoglobulin class is attached to the external surface of B cells and acts as an antigen receptor of the B cell?
A) IgM
B) IgA
C) IgD
D) IgG
E) IgE

Chapter 22: Respiratory System:

_____ 1) The main site of gas exchange is the _____.
A) alveolar sacs
B) alveoli
C) alveolar duct
D) respiratory bronchiole

_____ 2) The loudness of a person's voice depends on the _____.
A) thickness of vestibular folds
B) length of the vocal folds
C) strength of the intrinsic laryngeal muscles
D) force with which air rushes across the vocal folds

_____ 3) The walls of the alveoli are composed of two types of cells, type I and type II. The function of type II is to _____.
A) secrete surfactant
B) trap dust and other debris
C) replace mucus in the alveoli
D) protect the lungs from bacterial invasion

_____ 4) Complete the following statement using the choices below. Air moves out of the lungs when the pressure inside the lungs is __.
A) less than the pressure in the atmosphere
B) greater than the pressure in the atmosphere
C) equal to the pressure in the atmosphere
D) greater than the intra-alveolar pressure

_____ 5) Unlike inspiration, expiration is a passive act because no muscular contractions are involved. Expiration, however, depends on two factors. Which of the choices below lists those two factors?
A) the recoil of elastic fibers that were stretched during inspiration and the inward pull of surface tension due to the film of alveolar fluid
B) the expansion of respiratory muscles that were contracted during inspiration and the lack of surface tension on the alveolar wall
C) the negative feedback of expansion fibers used during inspiration and the outward pull of surface tension due to surfactant
D) combined amount of CO_2 in the blood and air in the alveoli

_____ 6) Which of the following maintains the patency (openness) of the trachea?
A) surface tension of water
B) surfactant production
C) C-shaped cartilage rings
D) pseudostratified ciliated epithelium

_____ 7) Intrapulmonary pressure is the _____.
A) pressure within the pleural cavity
B) pressure within the alveoli of the lungs
C) negative pressure in the intrapleural space
D) difference between atmospheric pressure and respiratory pressure

_____ 8) The relationship between gas pressure and gas volume is described by _____.
A) Boyle's law
B) Henry's law
C) Charles' law
D) Dalton's law

_____ 9) The statement, "in a mixture of gases, the total pressure is the sum of the individual partial pressures of gases in the mixture" paraphrases _____.
A) Henry's law
B) Boyle's law
C) Dalton's law
D) Charles' law

_____ 10) Surfactant helps to prevent the alveoli from collapsing by _____.
A) humidifying the air before it enters
B) warming the air before it enters
C) interfering with the cohesiveness of water molecules, thereby reducing the surface tension of alveolar fluid
D) protecting the surface of alveoli from dehydration and other environmental variations

_____ 11) For gas exchange to be efficient, the respiratory membrane must be _____.
A) at least 3 micrometers thick
B) 0.5 to 1 micrometer thick
C) between 5 and 6 micrometers thick
D) The thickness of the respiratory membrane is not important in the efficiency of gas exchange.

_____ 12) With the Bohr effect, more oxygen is released because a(n) _____.
A) decrease in pH (acidosis) strengthens the hemoglobin-oxygen bond
B) decrease in pH (acidosis) weakens the hemoglobin-oxygen bond
C) increase in pH (alkalosis) strengthens the hemoglobin-oxygen bond
D) increase in pH (alkalosis) weakens the hemoglobin-oxygen bond

_____ 13) The most powerful respiratory stimulus for breathing in a healthy person is _____.
A) loss of oxygen in tissues
B) increase of carbon dioxide
C) acidosis
D) alkalosis

_____ 14) The local matching of blood flow with ventilation is _____.
A) the Bohr effect
B) the Haldane effect
C) chloride shifting
D) ventilation-perfusion coupling

_____ 15) In the plasma, the quantity of oxygen in solution is _____.
A) only about 1.5% of the oxygen carried in blood
B) about equal to the oxygen combined with hemoglobin
C) greater than the oxygen combined with hemoglobin
D) not present except where it is combined with carrier molecules

_____ 16) Which of the following statements is incorrect?
A) During fetal life, lungs are filled with fluid.
B) Respiratory rate is lowest in newborn infants.
C) Descent of the diaphragm results in abdominal breathing.
D) The chest wall becomes more rigid with age.

_____ 17) Which of the choices below describes the forces that act to pull the lungs away from the thorax wall and thus collapse the lungs?
A) the natural tendency for the lungs to recoil and the surface tension of the alveolar fluid
B) compliance and transpulmonary pressures
C) the natural tendency for the lungs to recoil and transpulmonary pressures
D) compliance and the surface tension of the alveolar fluid

_____ 18) Which of the following counteracts the movement of bicarbonate ions from the RBC?
A) the Bohr effect
B) the Haldane effect
C) chloride shifting
D) release of hydrogen ion

_____ 19) Which of the following is not a form of lung cancer?
A) adenocarcinoma
B) Kaposi's sarcoma
C) small cell carcinoma
D) squamous cell carcinoma

_____ 20) Which of the following is not an event necessary to supply the body with O_2 and dispose of CO_2?
A) pulmonary ventilation
B) blood pH adjustment
C) internal respiration
D) external respiration

_____ 21) The major nonelastic source of resistance to air flow in the respiratory passageways is _____.
A) surfactant
B) surface tension
C) friction
D) air pressure

_____ 22) Which of the following determines lung compliance?
A) airway opening
B) flexibility of the thoracic cage
C) muscles of inspiration
D) alveolar surface tension

_____ 23) Tidal volume is air _____.
A) remaining in the lungs after forced expiration
B) exchanged during normal breathing
C) inhaled after normal inspiration
D) forcibly expelled after normal expiration

_____ 24) Which of the choices below determines the direction of respiratory gas movement?
A) solubility in water
B) partial pressure gradient
C) the temperature
D) molecular weight and size of the gas molecule

_____ 25) Possible causes of hypoxia include _____.
A) too little oxygen in the atmosphere
B) obstruction of the esophagus
C) taking several rapid deep breaths
D) getting very cold

_____ 26) The lung volume that represents the total volume of exchangeable air is the _____.
A) tidal volume
B) vital capacity
C) inspiratory capacity
D) expiratory reserve volume

_____ 27) Because the lungs are filled with fluid during fetal life, which of the following statements is true regarding respiratory exchange?
A) Respiratory exchanges are made through the ductus arteriosus.
B) Respiratory exchanges are not necessary.
C) Respiratory exchanges are made through the placenta.
D) Because the lungs develop later in gestation, fetuses do not need a mechanism for respiratory exchange.

_____ 28) Which of the following is *not* a stimulus for breathing?
A) rising carbon dioxide levels
B) rising blood pressure
C) arterial Po_2 below 60 mm Hg
D) acidosis resulting from CO_2 retention

_____ 29) Respiratory control centers are located in the _____.
A) midbrain and medulla
B) medulla and pons
C) pons and midbrain
D) upper spinal cord and medulla

_____ 30) The amount of air that can be inspired above the tidal volume is called _____.
A) reserve air
B) expiratory capacity
C) inspiratory reserve
D) vital capacity

_____ 31) Which statement about CO_2 is incorrect?
A) Its concentration in the blood is decreased by hyperventilation.
B) Its accumulation in the blood is associated with a decrease in pH.
C) More CO_2 dissolves in the blood plasma than is carried in the RBCs.
D) CO_2 concentrations are greater in venous blood than arterial blood.

_____ 32) Oxygen and carbon dioxide are exchanged in the lungs and through all cell membranes by _____.
A) osmosis
B) diffusion
C) filtration
D) active transport

_____ 33) Select the correct statement about the pharynx.
A) The pharyngeal tonsil is located in the laryngopharynx.
B) The auditory tube drains into the nasopharynx.
C) The laryngopharynx blends posteriorly into the nasopharynx.
D) The palatine tonsils are embedded in the lateral walls of the nasopharynx.

_____ 34) The larynx contains _____.
A) the thyroid cartilage
B) a cricoid cartilage also called the Adam's apple
C) an upper pair of avascular mucosal folds called true vocal folds
D) lateral cartilage ridges called false vocal folds

_____ 35) Which respiratory-associated muscles would contract if you were to blow up a balloon?
A) diaphragm would contract, external intercostals would relax
B) internal intercostals and abdominal muscles would contract
C) external intercostals would contract and diaphragm would relax
D) diaphragm contracts, internal intercostals would relax

_____ 36) How is the bulk of carbon dioxide carried in blood?
A) chemically combined with the amino acids of hemoglobin as carbaminohemoglobin in the red blood cells
B) as the bicarbonate ion in the plasma after first entering the red blood cells
C) as carbonic acid in the plasma
D) chemically combined with the heme portion of hemoglobin

_____ 37) Which of the choices below is *not* a role of the pleura?
A) allows the lungs to inflate and deflate without friction
B) helps divide the thoracic cavity into three chambers
C) helps limit the spread of local infections
D) aids in blood flow to and from the heart because the heart sits between the lungs

_____ 38) Which of the following incorrectly describes mechanisms of CO_2 transport?
A) 7-10% of CO_2 is dissolved directly into the plasma
B) 20% of CO_2 is carried in the form of carbaminohemoglobin
C) as bicarbonate ion in plasma
D) attached to the heme part of hemoglobin

_____ 39) Factors that influence the rate and depth of breathing include _____.
A) thalamic control
B) voluntary cortical control
C) stretch receptors in the alveoli
D) temperature of alveolar air

_____ 40) Which of the following provide the greatest surface area for gas exchange?
A) alveolar sacs
B) alveoli
C) respiratory bronchioles
D) alveolar ducts

_____ 41) The respiratory membrane is a combination of _____.
A) respiratory bronchioles and alveolar ducts
B) alveolar and capillary walls and their fused basement membranes
C) atria and alveolar sacs
D) respiratory bronchioles and alveolar sacs

_____ 42) Gas emboli may occur because a _____.
A) person holds his breath too long
B) diver holds his breath upon ascent
C) pilot holds her breath upon descent
D) person breathes pure oxygen in a pressurized chamber

_____ 43) Inspiratory capacity is _____.
A) the total amount of air that can be inspired after a tidal expiration
B) the total amount of exchangeable air
C) functional residual capacity
D) air inspired after a tidal inhalation

_____ 44) Which center is located in the pons?
A) pontine respirator group (PRG)
B) expiratory center
C) inspiratory center
D) pacemaker neuron center

_____ 45) The nose serves all the following functions *except* _____.
A) as a passageway for air movement
B) as the direct initiator of the cough reflex
C) warming and humidifying the air
D) cleansing the air

_____ 46) A premature baby usually has difficulty breathing. However, the respiratory system is developed enough for survival by ___.
A) 17 weeks
B) 24 weeks
C) 28 weeks
D) 36 weeks

_____ 47) Which of the following statements is true regarding the respiratory rate of a newborn?
A) The respiratory rate of a newborn is slow.
B) The respiratory rate of a newborn varies between male and female infants.
C) The respiratory rate of a newborn is approximately 30 respirations per minute.
D) The respiratory rate of a newborn is, at its highest rate, approximately 40-80 respirations per minute.

_____ 48) Select the correct statement about the neural mechanisms of respiratory control.
A) The pons is thought to be instrumental in the smooth transition from inspiration to expiration.
B) The dorsal respiratory group neurons depolarize in a rhythmic way to establish the pattern of breathing.
C) The pontine respirator group (PRG) continuously stimulates the medulla to provide inspiratory drive.
D) The ventral respiratory group is contained within the pons.

_____ 49) Which of the choices below is not a factor that promotes oxygen binding to and dissociation from hemoglobin?
A) partial pressure of oxygen
B) temperature
C) partial pressure of carbon dioxide
D) number of red blood cells

_____ 50) The factors responsible for holding the lungs to the thorax wall are _____.
A) the smooth muscles of the lung
B) the diaphragm and the intercostal muscles alone
C) the visceral pleurae and the changing volume of the lungs
D) surface tension from pleural fluid and negative pressure in the pleural cavity

_____ 51) The erythrocyte count increases after a while when an individual goes from a low to a high altitude because the _____.
A) temperature is lower at higher altitudes
B) basal metabolic rate is higher at high altitudes
C) concentration of oxygen and/or total atmospheric pressure is higher at higher altitudes
D) concentration of oxygen and/or total atmospheric pressure is lower at high altitudes

_____ 52) Most inspired particles such as dust fail to reach the lungs because of the _____.
A) ciliated mucous lining in the nose
B) abundant blood supply to nasal mucosa
C) porous structure of turbinate bones
D) action of the epiglottis

_____ 53) Which of the following is *not* possible?
A) Gas flow equals pressure gradient over resistance.
B) Pressure gradient equals gas flow over resistance.
C) Resistance equals pressure gradient over gas flow.
D) The amount of gas flowing in and out of the alveoli is directly proportional to the difference in pressure or pressure gradient between the external atmosphere and the alveoli.

_____ 54) Select the correct statement about the physical factors influencing pulmonary ventilation.
A) A decrease in compliance causes an increase in ventilation.
B) A lung that is less elastic will require less muscle action to perform adequate ventilation.
C) As alveolar surface tension increases, additional muscle action will be required.
D) Surfactant helps increase alveolar surface tension.

_____ 55) Select the correct statement about oxygen transport in blood.
A) During normal activity, a molecule of hemoglobin returning to the lungs carries one molecule of O_2.
B) During conditions of acidosis, hemoglobin is able to carry oxygen more efficiently.
C) Increased BPG levels in the red blood cells enhance oxygen-carrying capacity.
D) A 50% oxygen saturation level of blood returning to the lungs might indicate an activity level higher than normal.

_____ 56) Which of the disorders below is characterized by destruction of the walls of the alveoli producing abnormally large air spaces that remain filled with air during exhalation?
A) pneumonia
B) tuberculosis
C) emphysema
D) coryza

_____ 57) Which of the following does *not* influence hemoglobin saturation?
A) temperature
B) BPG
C) carbon dioxide
D) nitric oxide

Chapter 23: Gastrointestinal System:

_____ 1) The mechanical and chemical receptors that control digestive activity are located _____.
A) in the glandular tissue that lines the organ lumen
B) in the walls of the tract organs
C) in the pons and medulla
D) in the oral cavity

_____ 2) The function of the hepatic portal circulation is to _____.
A) carry toxins to the venous system for disposal through the urinary tract
B) collect absorbed nutrients for metabolic processing or storage
C) distribute hormones throughout the body
D) return glucose to the general circulation when blood sugar is low

_____ 3) The chemical and mechanical processes of food breakdown are called _____.
A) digestion
B) absorption
C) ingestion
D) secretion

_____ 4) When we ingest large molecules such as lipids, carbohydrates, and proteins, they must undergo catabolic reactions whereby enzymes split these molecules. This series of reactions is called _____.
A) absorption
B) secretion
C) chemical digestion
D) mechanical digestion

_____ 5) The sheets of peritoneal membrane that hold the digestive tract in place are called _____.
A) mesenteries
B) lamina propria
C) serosal lining
D) mucosal lining

_____ 6) From the esophagus to the anal canal, the walls of every organ of the alimentary canal are made up of the same four basic layers. Arrange them in order from the lumen.
A) muscularis externa, serosa, mucosa, and submucosa
B) serosa, mucosa, submucosa, and muscularis externa
C) submucosa, serosa, muscularis externa, and mucosa
D) mucosa, submucosa, muscularis externa, and serosa

_____ 7) Which of the following is not a factor that helps create the stomach mucosal barrier?
A) thick coating of bicarbonate-rich mucus
B) tight junctions of epithelial mucosa cells
C) replacing of damaged epithelial mucosa cells
D) production of intrinsic factor

_____ 8) What part of the tooth bears the force of chewing?
A) crown
B) enamel
C) pulp
D) cementum

_____ 9) The capillaries that nourish the epithelium and absorb digested nutrients lie in the _____.
A) submucosa
B) serosa
C) adventitia
D) lamina propria

_____ 10) Which hormone causes an increased output of enzyme-rich pancreatic juice and stimulates gallbladder contraction to release bile?
A) gastrin
B) secretin
C) cholecystokinin
D) gastric inhibitor peptide

_____ 11) Choose the incorrect statement regarding bile.
A) Bile is both an excretory product and a digestive secretion.
B) Bile functions to emulsify fats.
C) Bile functions to carry bilirubin formed from breakdown of worn-out RBCs.
D) Bile contains enzymes for digestion.

_____ 12) The absorptive effectiveness of the small intestine is enhanced by increasing the surface area of the mucosal lining. Which of the following accomplish this task?
A) plicae circulares, villi, and microvilli
B) the vast array of digestive enzymes
C) Brunner's glands and Peyer Patches
D) the rugae and haustra

_____ 13) Select the statement that is true concerning primary teeth.
A) There are 27 primary teeth, and the molars are permanent.
B) There are 24 primary teeth, and no new primary teeth appear after 13 months.
C) There are 20 primary teeth, and by 24 months of age most children have all 20.
D) There are 32 primary teeth, and by 36 months of age, most children have all 32.

_____ 14) Which of the following is true concerning the number and type of permanent teeth?
A) There are 32 permanent teeth, and the wisdom teeth are the last to emerge.
B) There are 27 permanent teeth, and the first molars are usually the last to emerge.
C) The number of permanent teeth is always equal to the number of primary teeth.
D) The number of upper permanent teeth is not equal to the number of lower permanent teeth.

_____ 15) Which of the following is not true of saliva?
A) cleanses the mouth
B) contains enzymes that begin the breakdown of proteins
C) moistens food and aids in compacting of the bolus
D) dissolves food chemicals so they can be tasted

_____ 16) The salivary glands are composed of which two types of secretory cells?
A) goblet cells and squamous epithelial cells
B) parietal cells and glial cells
C) serous cells and mucous cells
D) cuboidal epithelium and ciliated columnar cells

_____ 17) The solutes contained in saliva include _____.
A) only salts and minerals
B) only proteases and amylase
C) mucin, lysozyme, electrolytes, salts, and minerals
D) electrolytes, digestive enzyme, mucin, lysozyme, wastes, and IgA

_____ 18) In addition to storage and mechanical breakdown of food, the stomach _____.
A) initiates protein digestion and denatures proteins
B) is the first site where absorption takes place
C) is the only place where fats are completely digested
D) is the first site where chemical digestion of starch takes place

_____ 19) Chyme is created in the _____.
A) mouth
B) stomach
C) esophagus
D) small intestine

_____ 20) Hydrochloric acid is secreted by which of the secretory cells of the stomach?
A) chief cells
B) parietal cells
C) serous cells
D) mucous neck cells

_____ 21) Gastrin, histamine, endorphins, serotonin, cholecystokinin, and somatostatin are hormones or paracrines that are released directly into the lamina propria. Which of the following cell types synthesize and secrete these products?
A) enteroendocrine cells
B) parietal cells
C) zymogenic cells
D) mucous neck cells

_____ 22) There are three phases of gastric secretion. The cephalic phase occurs _____.
A) before food enters the stomach and is triggered by aroma, sight, or thought
B) immediately after food enters the stomach, preparing the small intestine for the influx of a variety of nutrients
C) at the end of a large meal, and the juices secreted are powerful and remain in the GI tract for a long period of time
D) when the meal is excessively high in acids and neutralization is required

_____ 23) Peristaltic waves are _____.
A) segmental regions of the gastrointestinal tract
B) churning movements of the gastrointestinal tract
C) pendular movements of the gastrointestinal tract
D) waves of muscular contractions that propel contents from one point to another

_____ 24) Gastrin is a digestive hormone that is responsible for the stimulation of acid secretions in the stomach. These secretions are stimulated by the presence of _____.
A) starches and complex carbohydrates
B) protein and peptide fragments
C) simple carbohydrates and alcohols
D) fatty acids

_____ 25) Pepsinogen, a digestive enzyme, is secreted by the _____.
A) chief cells of the stomach
B) parietal cells of the duodenum
C) Brunner's glands
D) goblet cells of the small intestine

_____ 26) You have just eaten a meal high in complex carbohydrates. Which of the following enzymes will help to digest the meal?
A) gastrin
B) amylase
C) cholecystokinin
D) trypsin

_____ 27) The ducts that deliver bile and pancreatic juice from the liver and pancreas, respectively, unite to form the _____.
A) portal vein
B) pancreatic acini
C) bile canaliculus
D) hepatopancreatic ampulla

_____ 28) The enzymatic breakdown of any type of food molecule is called _____.
A) diffusion
B) active transport
C) hydrolysis
D) denatured

_____ 29) Short-chain triglycerides found in foods such as butterfat molecules in milk are split by a specific enzyme in preparation for absorption. Which of the following enzymes is responsible?
A) rennin
B) pepsin
C) lipase
D) cholecystokinin

_____ 30) Parietal cells of the stomach produce _____.
A) mucin
B) pepsinogen
C) hydrochloric acid
D) rennin

_____ 31) Hepatocytes do not _____.
A) produce digestive enzymes
B) process nutrients
C) store fat-soluble vitamins
D) detoxify toxic chemicals

_____ 32) Which of the following is *not* a phase of gastric secretion?
A) cephalic
B) gastric
C) intestinal
D) enterogastric

_____ 33) Which vitamin requires intrinsic factor in order to be absorbed?
A) B_{12}
B) K
C) A
D) C

_____ 34) Chief cells _____.
A) produce gastrin
B) produce HCl
C) produce pepsinogen
D) produce mucin

_____ 35) Chemical digestion reduces large complex molecules to simpler compounds by the process of _____.
A) mastication
B) catabolism
C) anabolism
D) fermentation

_____ 36) The _____ contains lobules with sinusoids (lined with macrophages) that lead to a central venous structure.
A) liver
B) spleen
C) pancreas
D) stomach

_____ 37) If an incision has to be made in the small intestine to remove an obstruction, the first layer of tissue to be cut is the _____.
A) serosa
B) mucosa
C) muscularis externa
D) submucosa

_____ 38) Digestion of which of the following would be affected the most if the liver were severely damaged?
A) lipids
B) carbohydrates
C) proteins
D) starches

_____ 39) The dental formula for an adult is 2-1-2-3. What does the 1 stand for?
A) incisor tooth
B) molar tooth
C) premolar tooth
D) canine tooth

_____ 40) The lamina propria is composed of _____.
A) loose connective tissue
B) dense irregular connective tissue
C) dense regular connective tissue
D) reticular connective tissue

_____ 41) Which of the following is (are) *not* important as a stimulus in the gastric phase of gastric secretion?
A) distention
B) carbohydrates
C) peptides
D) low acidity

_____ 42) The function of goblet cells is to _____.
A) absorb nutrients from digested food and store them for future use
B) produce mucus that protects parts of the digestive organs from the effects of powerful enzymes needed for food digestion
C) secrete buffers in order to keep the pH of the digestive tract close to neutral
D) provide protection against invading bacteria and other disease-causing organisms that enter the digestive tract in food

_____ 43) Which of the following is an essential role played by large intestine bacteria?
A) produce gas
B) absorb bilirubin
C) synthesize vitamin K and B-complex vitamins
D) synthesize vitamins C and D

_____ 44) Nervous control of gastric secretion is provided by _____.
A) somatic neurons in the spinal cord
B) the vagus nerve and enteric plexus
C) the rubrospinal tracts
D) the reticulospinal and vestibulospinal tracts

_____ 45) Which of the following are types of papillae on the tongue that contain taste buds?
A) fungiform and circumvallate
B) palatine and circumvallate
C) circumvallate and filiform
D) fungiform, circumvallate, and filiform

_____ 46) Which of the following produce intrinsic factor?
A) parietal cells
B) zymogenic cells
C) mucous neck cells
D) enteroendocrine cells

_____ 47) Which of the following enzymes is specific for proteins?
A) dextrinase
B) amylase
C) trypsin
D) lipase

_____ 48) Surgical cutting of the lingual frenulum would occur in which part of the body?
A) oral cavity
B) esophagus
C) nasal cavity
D) salivary glands

_____ 49) A fluid secreted into the small intestine during digestion that contains cholesterol, emulsification agents, and phospholipids is __.
A) bile
B) pancreatic juice
C) intestinal juice
D) gastric juice

_____ 50) The layer of the digestive tube that contains blood vessels, lymphatic nodes, and a rich supply of elastic fibers is the _____.
A) mucosa
B) submucosa
C) muscularis externa
D) serosa

_____ 51) Which of the following is *not* characteristic of the large intestine? It _____.
A) does not contain villi
B) exhibits external muscular bands called teniae coli
C) is longer than the small intestine
D) has pocket-like sacs called haustra

_____ 52) What stomach secretion is necessary for normal hemoglobin production in RBCs?
A) HCl
B) pepsinogen
C) intrinsic factor
D) gastric lipase

_____ 53) How are most nutrients absorbed through the mucosa of the intestinal villa?
A) simple diffusion
B) facilitated diffusion
C) active transport
D) bulk flow

_____ 54) Select the correct statement about the regulation of gastric secretion.
A) Vagus stimulation of the stomach results in decreased secretion of gastric juice.
B) The presence of food in the stomach prevents hormonal control of gastric secretion.
C) Gastric secretion can be stimulated before food has entered the mouth.
D) Gastric secretion is enhanced by very low pH (below a pH of 2).

_____ 55) Paneth cells _____.
A) secrete digestive enzymes
B) secrete hormones
C) secrete enzymes that kill bacteria
D) secrete bicarbonate ions

_____ 56) Select the correct statement about digestive processes.
A) Enterogastrone is a hormone that helps increase gastric motility.
B) Pepsin is an enzyme produced by the stomach for the purpose of starch digestion.
C) Chyme entering the duodenum can decrease gastric motility via the enterogastric reflex.
D) All commonly ingested substances are significantly absorbed by the mucosa of the stomach.

_____ 57) Chemical digestion in the small intestine involves _____.
A) a significant amount of enzyme secretion by the intestinal mucosa
B) cholecystokinin (CCK), an intestinal hormone responsible for gallbladder contraction
C) secretions from the spleen that contain all enzymes necessary for complete digestion
D) bile salts that help emulsify carbohydrates so that they can be easily digested by enzymatic action

_____ 58) Select the correct statement about absorption.
A) Eighty percent of ingested materials have been absorbed by the end of the large intestine.
B) Carbohydrates diffuse across the villus epithelium and are then actively transported into blood capillaries.
C) If intact proteins are transported across the villus epithelium, an immune response may be generated.
D) Amino acid transport is linked to chloride transport.

_____ 59) Select the correct statement about electrolyte absorption.
A) Chlorine ion absorption is coupled to glucose and amino acid transport.
B) Potassium moves across the epithelium by active transport.
C) If vitamin B is not present, calcium is not absorbed.
D) Iron and calcium are absorbed mostly by the duodenum.

_____ 60) The ingestion of a meal high in fat content would cause which of the following to occur?
A) Severe indigestion would occur, caused by the lack of sufficient digestive enzymes.
B) This type of food would cause secretion of gastrin to cease, causing digestive upset.
C) Bile would be released from the gallbladder to emulsify the fat in the duodenum.
D) The acid secretions from the stomach would be sufficient to digest this food.

_____ 61) A baby is admitted to the hospital with a history of projectile vomiting after each feeding. On examination, it is found that the sphincter controlling food passage from the stomach to the duodenum is thickened and does not open readily. Because of the baby's loss of gastric juice, his blood probably indicates _____.
A) acidosis
B) ketosis
C) alkalosis
D) dysphagia

_____ 62) Hormones or paracrines that inhibit gastric secretion include _____.
A) Acetylcholine
B) secretin
C) gastrin
D) histamine

_____ 63) Which of these is *not* part of the splanchnic circulation?
A) hepatic portal vein
B) inferior vena cava
C) superior mesenteric artery
D) celiac artery

_____ 64) Which of these is *not* a component of saliva?
A) lysozyme
B) a cyanide derivative
C) defensins
D) nitric oxide

Chapter 24: Nutrition, Metabolism, and Body Temperature Regulation:

_____ 1) The molecule that serves as the major source of readily available fuel for neurons and blood cells is _____.
A) fat
B) glucose
C) acetyl CoA
D) protein

_____ 2) Which of the choices below is *not* a fate of carbohydrate taken into the body?
A) ATP production
B) lipogenesis
C) amino acid synthesis
D) direct conversion to a nucleic acid
E) glycogenesis

_____ 3) Which of the following is the major role of leptin in the body?
A) promote weight loss with activity
B) protect against weight loss during nutritional deprivation
C) shrink fat stores
D) decrease appetite and food intake

_____ 4) Cholesterol, though it is *not* an energy molecule, has importance in the body because it _____.
A) is a stabilizing component of the plasma membranes and is the parent molecule of steroid hormones
B) helps provide essential nutrients to the brain and lungs
C) helps mobilize fats during periods of starvation
D) enters the glycolytic pathway without being altered

_____ 5) Which of the following statements best describes *complete protein*?
A) derived from meat and fish only
B) meets all the minimum daily requirements for a healthy diet
C) derived only from legumes and other plant material
D) must contain all the body's amino acid requirements for maintenance and growth

_____ 6) The term *metabolism* is best defined as _____.
A) the length of time it takes to digest and absorb fats
B) a measure of carbohydrate utilization, typically involving measurement of calories
C) the number of calories it takes to keep from shivering on a cold day
D) the sum of biochemical reactions involved in building breaking down molecules

_____ 7) The term *basal metabolic rate* reflects the _____.
A) energy the body needs to perform only its most essential activities
B) loss of organic molecules in urine
C) energy needed to make all organic molecules
D) loss of energy to perspiration

_____ 8) When proteins undergo deamination, the waste substance found in the urine is mostly _____.
A) urea
B) ammonia
C) acetyl CoA
D) ketone bodies

_____ 9) It is important to ensure that your diet is adequately rich in vitamins because _____.
A) vitamins provide protection against the common cold
B) very few foods contain vitamins
C) most vitamins are coenzymes needed to help the body utilize essential nutrients
D) all vitamins are water soluble and pass out of the body too quickly to ensure utilization

_____ 10) Minerals required by the body in moderate amounts include all but which of the following?
A) calcium and phosphorus
B) sulfur and potassium
C) sodium and chlorine
D) iron and selenium

_____ 11) Which of the choices below describes the pathway of cellular respiration (the complete oxidation of glucose)?
A) glycolysis, Krebs cycle, electron transport chain, oxidative phosphorylation
B) gluconeogenesis, Krebs cycle, lipolysis
C) lipolysis, glycogenolysis, beta oxidation
D) glycogenesis, lipogenesis, electron transport chain

_____ 12) Anabolism includes reactions in which _____.
A) carbohydrate utilization increases
B) larger molecules or structures are built from smaller ones
C) structural proteins are used as a potential energy source
D) ketone bodies are formed

_____ 13) Catabolism would be best described as a process that _____.
A) causes a decline in circulating ketone bodies
B) builds up triglycerides during the postabsorptive state
C) breaks down complex structures to simpler ones
D) elevates glucagon levels

_____ 14) The primary function of cellular respiration is to _____.
A) determine the amount of heat needed by the human body
B) provide the body with adequate amounts of vitamins and minerals
C) efficiently monitor the energy needs of the body
D) break down food molecules and generate ATP

_____ 15) The process of breaking triglycerides down into glycerol and fatty acids is known as _____.
A) gluconeogenesis
B) fat utilization
C) lipogenesis
D) lipolysis

_____ 16) Which of the following mechanisms produces the most ATP during cellular respiration?
A) oxidative phosphorylation
B) substrate-level phosphorylation
C) lactic acid production
D) oxidation reactions

_____ 17) Lipogenesis occurs when _____.
A) there is a shortage of fatty acids
B) glucose levels drop slightly
C) excess proteins are transported through the cell membrane
D) cellular ATP and glucose levels are high

_____ 18) Oxidative deamination takes place in the _____.
A) liver
B) muscles
C) brain
D) blood

_____ 19) Transamination is the process whereby the amine group of an amino acid is _____.
A) transferred to acetyl CoA
B) converted to urea
C) transferred to a keto acid
D) converted to ammonia

_____ 20) Glycogen is formed in the liver during the _____.
A) postabsorptive state
B) absorptive state
C) starvation period
D) period when the metabolic rate is lowest

_____ 21) Which of the following is a normal consequence of the activation of the heat-promoting center?
A) release of epinephrine
B) sympathetic sweat gland activation
C) increase in ADH production
D) vasodilation of cutaneous blood vessels

_____ 22) Gluconeogenesis is the process in which _____.
A) glycogen is broken down to release glucose
B) glucose is formed from noncarbohydrate precursors
C) glycogen is formed
D) glucose is converted into carbon dioxide and water

_____ 23) Glycolysis is best defined as a catabolic reaction based upon the _____.
A) conversion of glucose into carbon dioxide and water
B) conversion of glucose into two molecules of pyruvic acid
C) conversion of pyruvic acid into carbon dioxide and water
D) formation of sugar

_____ 24) What is the outcome of ketosis?
A) water retention and edema
B) metabolic acidosis
C) metabolic alkalosis
D) glycogen buildup
E) glucogenesis

_____ 25) Which of the choices below happens during the absorptive state?
A) Anabolic processes exceed catabolic ones.
B) Catabolic processes exceed anabolic ones.
C) No metabolism occurs.
D) Only glucose metabolism occurs.

_____ 26) In the case of a person who consumes a normal, balanced diet, proteins are essential to the body for all of the following *except* _.
A) production of energy
B) production of some hormones
C) production of enzymes, clotting factors, and antibodies
D) formation of functional molecules like hemoglobin and cytochromes

_____ 27) The most abundant dietary lipids are _____.
A) cholesterol
B) phospholipids
C) fatty acids
D) triglycerides

_____ 28) The ingestion of which nutrient type results in the greatest food-induced thermogenesis?
A) lipids
B) carbohydrates
C) proteins
D) vitamins

_____ 29) Which hormone directs essentially all the events of the absorptive state?
A) growth hormone
B) thyroid hormone
C) epinephrine
D) insulin

_____ 30) Prostaglandins play a role in _____.
A) skeletal muscle contraction
B) control of blood volume
C) noninflammatory responses
D) control of blood pressure

_____ 31) Which of the following is not an important function of the liver?
A) carbohydrate and lipid metabolism
B) synthesis of bile salts
C) synthesis of vitamin K
D) protein metabolism

_____ 32) As the body progresses from the absorptive to the postabsorptive state, only the _____ continues to burn glucose while every other organ in the body mostly switches to fatty acids.
A) liver
B) brain
C) pancreas
D) spleen

_____ 33) In gluconeogenesis, during the postabsorptive state, amino acids and _____ are converted to glucose.
A) glycerol
B) glycogen
C) acetyl Co A
D) glucagon

_____ 34) In the liver, the amine group of glutamic acid is removed as _____ in the oxidative state.
A) glyceraldehyde
B) pyruvic acid
C) ammonia
D) oxaloacetic acid

_____ 35) Which of the choices below is not a mechanism of heat production?
A) vasoconstriction of cutaneous blood vessels
B) shivering
C) sweating
D) enhanced thyroxine release

_____ 36) Heat-loss mechanisms do not include _____.
A) reducing activity
B) the evaporation of sweat
C) behavior measures such as wearing light, loose clothing
D) vasoconstriction of peripheral blood vessels

_____ 37) The amount of _____ produced is probably the most important hormonal factor in determining BMR.
A) norepinephrine
B) thyroxine
C) prolactin
D) ADH

_____ 38) When ketone bodies are present in the blood and urine in large amounts, it usually indicates increased metabolism of _____.
A) amino acids
B) fatty acids
C) glycogen
D) lactic acid

_____ 39) Many factors influence BMR. What is the most critical factor?
A) the way an individual metabolizes fat
B) the way skeletal muscles break down glycogen
C) the ratio of surface area to volume (weight) of the body
D) an individual's body weight

_____ 40) The primary reason elderly people should decrease their caloric intake is that _____.
A) muscle mass and metabolism decline with age
B) their appetite begins to diminish
C) they have a higher metabolic rate and do not need large amounts of food
D) they spend most of the day at rest, and their food will quickly turn to fat

_____ 41) Which of the choices below is *not* a major route of heat exchange?
A) radiation
B) conduction/convection
C) evaporation
D) shivering

_____ 42) Which of the following statements is a false or incorrect statement?
A) The amino acid pool is the body's total supply of amino acids in the body's proteins.
B) Fats and carbohydrates are oxidized directly to produce cellular energy.
C) Amino acids can be used to supply energy only after being converted to a carbohydrate intermediate.
D) Excess carbohydrate and fat can be stored as such, whereas excess amino acids are oxidized for energy or converted to fat or glycogen for storage.

_____ 43) Which food type is considered to be the most important for athletes to eat to improve performance?
A) simple sugars
B) complex carbohydrates
C) plant proteins
D) animal proteins

_____ 44) Which of the following nutrients yield the highest amount of energy per gram when metabolized?
A) fats
B) vitamins and minerals
C) foods and beverages high in caffeine
D) proteins

_____ 45) Which of the following does *not* occur in the mitochondria?
A) electron transport
B) glycolysis
C) Krebs cycle
D) formation of malic acid from fumaric acid

_____ 46) Which of the following is *not* true of beta oxidation?
A) It occurs in the mitochondrion.
B) Every second carbon is reduced.
C) It involves the anabolism of fats.
D) Fatty acids are broken into acetic acid fragments.

_____ 47) Select the correct statement about proteins.
A) Strict vegetarians need not worry about adequate protein intake, as most vegetables are almost perfect sources of amino acids.
B) Proteins can be synthesized in the body if most of the amino acids are present.
C) Proteins will be used by most cells for ATP synthesis if insufficient carbohydrates are ingested.
D) Catabolic steroids (hormones) accelerate the rate of protein synthesis.

_____ 48) Oxidation reduction reactions _____.
A) utilize hydrogenases
B) may involve the loss of hydrogen and electrons
C) are rarely coupled together
D) occur via the gain of hydrogen or the loss of oxygen

_____ 49) What process primes a molecule to change in a way that increases its activity, produces motion, or does work?
A) phosphorylation
B) beta oxidation
C) cellular respiration
D) glycolysis

_____ 50) Which of the choices below is *not* a source of glucose during the postabsorptive state?
A) glycogenolysis in the liver
B) lipolysis in adipose tissues and the liver
C) absorption of glucose from the GI tract
D) catabolism of cellular protein

_____ 51) Which of the following is correct?
A) Most of the ATP are produced by substrate-level phosphorylation.
B) Each $FADH_2$ yields about 1 1/2 ATP via oxidative phosphorylation.
C) Glycolysis relies on substrate-level oxidation for the four ATP produced in this pathway.
D) Most ATP from cellular respiration are produced directly in the Krebs cycle.

_____ 52) Which of the following food groups are considered good sources of complete proteins?
A) corn, cottonseed oil, soy oil, and wheat germ
B) lima beans, kidney beans, nuts, and cereals
C) egg yolk, fish roe, and grains
D) eggs, milk, yogurt, meat, and fish

_____ 53) Conditions that promote the oxidative deamination and energy use of amino acids include _____.
A) adequate essential amino acids
B) adequate fat calories to provide adequate ATP formation
C) excessive amounts of protein in the diet
D) ammonia combining with oxygen to form urea

_____ 54) When a person's hypothalamic thermostat is set to a higher level and the actual body temperature is below that level, the person may _____.
A) pant
B) exhibit vasodilation of skin vessels
C) perspire heavily
D) shiver

_____ 55) Glucose can be obtained from _____.
A) glycogenolysis
B) triglyceride anabolism
C) protein anabolism
D) lipogenesis

_____ 56) Which of the following is *not* a function of LDLs?
A) transport cholesterol from the peripheral tissues to the liver
B) regulate cholesterol synthesis in tissue cells
C) make cholesterol available to tissue cells for membrane or hormone synthesis
D) assist in the storage of cholesterol when supply exceeds demand

_____ 57) Which of the following best defines *negative nitrogen balance*?
A) Protein breakdown exceeds protein synthesis.
B) It is a condition usually caused by having a diet low in fish and meat.
C) A negative nitrogen balance is normal and is a way of maintaining homeostasis.
D) It occurs when amino acids are broken down by liver enzymes and carried to the bloodstream.

Chapter 25: Urinary System:

_____ 1) The mechanism that establishes the medullary osmotic gradient depends most on the permeability properties of the _____.
A) nephron loop
B) glomerular filtration membrane
C) collecting duct
D) distal convoluted tubule

_____ 2) Which of the following is *not* associated with the renal corpuscle?
A) a podocyte
B) a vasa recta
C) a fenestrated capillary
D) an efferent arteriole

_____ 3) An increase in the permeability of the cells of the collecting tubule to water is due to a(n) _____.
A) decrease in the production of ADH
B) increase in the production of ADH
C) increase in the production of aldosterone
D) decrease in the concentration of the blood plasma

_____ 4) The urinary bladder is composed of _____ epithelium.
A) transitional
B) simple squamous
C) stratified squamous
D) pseudostratified columnar

_____ 5) The kidneys are stimulated to produce renin _____.
A) when the peritubular capillaries are dilated
B) when the pH of the urine decreases
C) by a decrease in the blood pressure
D) when the specific gravity of urine rises above 1.10

_____ 6) Which of the choices below is *not* a function of the urinary system?
A) helps maintain homeostasis by controlling the composition, volume, and pressure of blood
B) regulates blood glucose levels and produces hormones
C) maintains blood osmolarity
D) eliminates solid, undigested wastes and excretes carbon dioxide, water, salts, and heat

_____ 7) The _____ artery lies on the boundary between the cortex and medulla of the kidney.
A) lobar
B) arcuate
C) interlobar
D) cortical radiate

_____ 8) The glomerulus differs from other capillaries in the body in that it _____.
A) has a basement membrane
B) is impermeable to most substances
C) is drained by an efferent arteriole
D) has a blood pressure much lower than other organ systems

_____ 9) The descending limb of the nephron loop _____.
A) is not permeable to water
B) is freely permeable to sodium and urea
C) pulls water by osmosis into the lumen of the tubule
D) contains fluid that becomes more concentrated as it moves down into the medulla

_____ 10) Select the correct statement about the ureters.
A) Ureters contain sphincters at the entrance to the bladder to prevent the back-flow of urine.
B) The epithelium is stratified squamous like the skin, which allows a great deal of stretch.
C) The ureters are capable of peristalsis like that of the gastrointestinal tract.
D) The ureter is innervated by parasympathetic nerve endings only.

_____ 11) The fatty tissue surrounding the kidneys is important because it _____.
A) ensures adequate energy for the adrenal glands to operate efficiently
B) stabilizes the position of the kidneys by holding them in their normal position
C) is necessary as a barrier between the adrenal glands and kidneys
D) produces vitamin D and other chemicals needed by the kidney

_____ 12) The renal corpuscle is made up of _____.
A) Bowman's capsule and glomerulus
B) the descending nephron loop
C) the renal pyramid
D) the renal papilla

_____ 13) The functional and structural unit of the kidneys is the _____.
A) nephron
B) nephron loop
C) glomerular capsule
D) capsular space

_____ 14) Which of the following does not describe the juxtaglomerular complex?
A) It regulates the rate of filtrate formation.
B) It helps control systemic blood pressure.
C) Its granular cells produce rennin.
D) Its macula densa cells produce aldosterone.

_____ 15) The chief force pushing water and solutes out of the blood across the filtration membrane is _____.
A) the ionic electrochemical gradient
B) protein-regulated diffusion
C) glomerular hydrostatic pressure (glomerular blood pressure)
D) the size of the pores in the basement membrane of the capillaries

_____ 16) Which of the following acts as the trigger for the initiation of micturition (voiding)?
A) the stretching of the bladder wall
B) motor neurons
C) the pressure of the fluid in the bladder
D) the sympathetic efferents

_____ 17) The filtration membrane includes all *except* _____.
A) glomerular endothelium
B) podocytes
C) renal fascia
D) basement membrane

_____ 18) The mechanism of water reabsorption by the renal tubules is _____.
A) active transport
B) osmosis
C) filtration
D) cotransport with sodium ions

_____ 19) Most electrolyte reabsorption by the renal tubules is _____.
A) not limited by a transport maximum
B) in the distal convoluted tubule
C) hormonally controlled in distal tubule segments
D) accomplished after the nephron loop is reached

_____ 20) The macula densa cells respond to _____.
A) aldosterone
B) antidiuretic hormone
C) changes in pressure in the tubule
D) changes in solute content of the filtrate

_____ 21) Which of the following is *not* reabsorbed by the proximal convoluted tubule?
A) Na^+
B) K^+
C) glucose
D) creatinine

_____ 22) The fluid in the glomerular (Bowman's) capsule is similar to plasma *except* that it does *not* contain a significant amount of ___.
A) glucose
B) hormones
C) electrolytes
D) plasma protein

_____ 23) Alcohol acts as a diuretic because it _____.
A) is not reabsorbed by the tubule cells
B) increases the rate of glomerular filtration
C) increases secretion of ADH
D) inhibits the release of ADH

_____ 24) The function of angiotensin II is to _____.
A) constrict arterioles and increase blood pressure
B) decrease the production of aldosterone
C) decrease arterial blood pressure
D) decrease water absorption

_____ 25) A disease caused by inadequate secretion of antidiuretic hormone (ADH) by the pituitary gland with symptoms of polyuria is ___.
A) diabetes mellitus
B) diabetes insipidus
C) diabetic acidosis
D) coma

_____ 26) An important characteristic of urine is its specific gravity or density, which is _____.
A) the same as water
B) slightly higher than water
C) much higher than water
D) less than water

_____ 27) Place the following in correct sequence from the formation of a drop of urine to its elimination from the body.
A) Nephron, Major Calyx, Minor Calyx, Collecting Duct, Ureter, Bladder, Urethra.
B) Collecting Duct, Nephron, Minor Calyx, Major Calyx, Ureter, Bladder, Urethra.
C) Minor Calyx, Major Calyx, Nephron, Collecting Duct, Urethra, Bladder, Ureter.
D) Nephron, Collecting Duct, Minor Calyx, Major Calyx, Ureter, Bladder, Urethra

_____ 28) Select the correct statement about the nephrons.
A) The parietal layer of the glomerular capsule is simple squamous epithelium.
B) The glomerulus is correctly described as the proximal end of the proximal convoluted tubule.
C) Podocytes are the branching epithelial cells that line the tubules of the nephron.
D) Filtration slits are the pores that give fenestrated capillaries their name.

_____ 29) What would happen if the capsular hydrostatic pressure were increased above normal?
A) Net filtration would increase above normal.
B) Net filtration would decrease.
C) Filtration would increase in proportion to the increase in capsular pressure.
D) Capsular osmotic pressure would compensate so that filtration would not change.

_____ 30) Which of the following is *not* a part of the juxtaglomerular complex?
A) granular cells
B) macula densa
C) podocyte cells
D) mesangial cells

_____ 31) Which of the following is *not* true regarding tubular reabsorption?
A) It occurs via transcellular or paracellular routes.
B) It is a reclamation process.
C) It involves hormonal signals in the collecting ducts.
D) It is a purely passive transport process.

_____ 32) Which of the following is the least important influence on reabsorption of a substance in the nephron?
A) number of carriers.
B) lipid solubility.
C) molecule size relative to fenestrations.
D) molecular complexity

_____ 33) Reabsorption of high levels of glucose and amino acids in the filtrate is accomplished by _____.
A) facilitated diffusion
B) passive transport
C) counter-transport
D) secondary active transport

_____ 34) Which of the choices below is a function of the nephron loop?
A) form a large volume of very concentrated urine or a small volume of very dilute urine
B) form a large volume of very dilute urine or a small volume of very concentrated urine
C) absorb electrolytes actively and water by osmosis in the same segments
D) absorb water and electrolytes into the tubular network

_____ 35) Which of the following is the correct sequence of kidney development from embryo to fetus?
A) pronephros, mesonephros, metanephros
B) mesonephros, pronephros, metanephros
C) pronephros, metanephros, mesonephros
D) mesonephros, metanephros, pronephros

_____ 36) Which of the following best describes kidney function in older adults (70 years or older)?
A) Kidney function remains the same throughout life, regardless of age.
B) Only about 3% of older adults have any loss of kidney function.
C) Only obese and diabetic older adults have any kidney dysfunction.
D) Kidney function decreases due to kidney atrophy.

_____ 37) The factor favoring filtrate formation at the glomerulus is the _____.
A) colloid osmotic pressure of the blood
B) glomerular hydrostatic pressure
C) capsular hydrostatic pressure
D) myogenic mechanism

_____ 38) If the T_m for a particular amino acid is 120 mg/100 ml and the concentration of that amino acid in the blood is 230 mg/100 ml, the amino acid will _____.
A) be actively secreted into the filtrate
B) be completely reabsorbed by the tubule cells
C) appear in the urine
D) be completely reabsorbed by secondary active transport

_____ 39) If one says that the clearance value of glucose is zero, what does this mean?
A) The glucose molecule is too large to be filtered out of the blood.
B) Most of the glucose is filtered out of the blood and is not reabsorbed in the convoluted tubules.
C) Normally all the glucose is reabsorbed.
D) The clearance value of glucose is relatively high in a healthy adult.

_____ 40) Excretion of dilute urine requires _____.
A) relative permeability of the distal tubule to water
B) impermeability of the collecting tubule to water
C) transport of sodium and chloride ions out of the descending nephron loop
D) the presence of ADH

_____ 41) Which of the choices below is *not* a method by which the cells of the renal tubules can raise blood pH?
A) by secreting hydrogen ions into the filtrate
B) by reabsorbing filtered bicarbonate ions
C) by producing new bicarbonate ions
D) by secreting sodium ions

_____ 42) In the ascending limb of the nephron loop the _____.
A) thin segment is freely permeable to water
B) thick segment is permeable to water
C) thin segment is not permeable to sodium and chloride
D) thick segment moves ions out into interstitial spaces for reabsorption

_____ 43) Select the correct statement about urinary system development.
A) Kidneys develop from urogenital ridges.
B) The metanephric ducts will become the urethras.
C) The pronephros (first tubule system) develops during the tenth week of gestation.
D) The mesonephros will develop into the kidneys.

_____ 44) Which of the choices below is the least important role of tubular secretion?
A) disposing of substances not already in the filtrate, such as certain drugs
B) eliminating undesirable substances such as urea and uric acid that have been reabsorbed by passive processes
C) ridding the body of bicarbonate ions
D) ridding the body of excessive potassium ions

_____ 45) What is the most direct function of the juxtaglomerular apparatus?
A) help regulate blood pressure and the rate of blood filtration by the kidneys
B) help regulate blood pressure and the rate of excretion by the kidneys
C) help regulate urea absorption by the kidneys
D) help regulate water and electrolyte excretion by the kidneys

_____ 46) Which of the choices below is the salt level-monitoring part of the nephron?
A) macula densa
B) principal cell
C) vasa recta
D) nephron loop

_____ 47) Which of the hormones below is responsible for facultative water reabsorption?
A) ADH
B) thyroxine
C) aldosterone
D) atrial natriuretic peptide

_____ 48) Which of the choices below is *not* a glomerular filtration rate control method?
A) renal autoregulation
B) neural regulation
C) electrolyte levels
D) hormonal regulation

_____ 49) Which of the choices below are the most important hormone regulators of electrolyte reabsorption and secretion?
A) angiotensin II and ADH
B) angiotensin II and aldosterone
C) angiotensin I and epinephrine
D) angiotensin I and atrial natriuretic peptide

_____ 50) Which cells of the kidney are chemoreceptors that respond to changes in solute content of the filtrate?
A) juxtaglomerular cells
B) mesangial cells
C) macula densa cells
D) podocytes

Chapter 26: Fluid, Electrolyte, and Acid-Base Balance:

_____ 1) The body's water volume is closely tied to the level of which of the following ions?
A) calcium ions
B) potassium ions
C) hydrogen ions
D) sodium ions

_____ 2) The term *hypotonic hydration* refers to _____.
A) the feeling one might have after profuse sweating with exertion
B) the unpleasant feeling people have after drinking too much liquor
C) a condition that may result from renal insufficiency or drinking extraordinary amounts of water
D) a condition that is caused by high levels of sodium in the extracellular fluid compartment

_____ 3) Hypoproteinemia is a condition of unusually low levels of plasma proteins. This problem is often characterized by _____.
A) tissue edema
B) extreme weight loss
C) confusion
D) nerve damage

_____ 4) Which of the following hormones is important in the regulation of sodium ion concentrations in the extracellular fluid?
A) antidiuretic hormone
B) erythropoietin
C) aldosterone
D) renin

_____ 5) Atrial natriuretic peptide is a hormone that is made in the atria of the heart. The influence of this hormone is to _____.
A) enhance atrial contractions
B) activate the renin-angiotensin mechanism
C) prevent pH changes caused by organic acids
D) reduce blood pressure and blood volume by inhibiting sodium and water retention

_____ 6) Respiratory acidosis can occur when _____.
A) a person consumes excessive amounts of antacids
B) a person's breathing is shallow due to obstruction
C) a runner has completed a very long marathon
D) the kidneys secrete hydrogen ions

_____ 7) Total body water is not a function of which of the following?
A) age
B) body mass
C) amount of body fat
D) amount of water ingested

_____ 8) Which of the choices below is *not* an essential role of salts in the body?
A) neuromuscular activity
B) membrane permeability
C) secretory activity
D) anabolism of lipids

_____ 9) Which of the choices below exerts primary control over sodium levels in the body?
A) ADH
B) aldosterone
C) water levels
D) glucocorticoids

_____ 10) The fluid link between the external and internal environment is _____.
A) plasma
B) intracellular fluid
C) interstitial fluid
D) cerebrospinal fluid

_____ 11) Newborn infants have a relatively higher _____ content in their ECF than do adults.
A) iron
B) sodium
C) magnesium
D) bicarbonate

_____ 12) Whereas sodium is found mainly in the extracellular fluid, most _____ is found in the intracellular fluid.
A) iron
B) chloride
C) potassium
D) bicarbonate

_____ 13) Which of the following describes the distribution of sodium and potassium between cells and body fluids?
A) K^+ mainly in the cells, Na^+ in the body fluids
B) Na^+ mainly in the cells, K^+ in the body fluids
C) equal amounts of each ion in the cells and body fluids
D) little of either in the cells, but large amounts of each in the body fluids

_____ 14) Problems with fluid, electrolyte, and acid-base balance are particularly common in infants because of their _____.
A) inefficient kidneys
B) comparatively low metabolic rates
C) low rate of insensible water loss
D) low daily rate of fluid exchange

_____ 15) The single most important factor influencing potassium ion secretion is _____.
A) the potassium ion content in the renal tubule cells
B) the pH of the ICF
C) intracellular sodium levels
D) potassium ion concentration in blood plasma

_____ 16) The term *alkaline reserve* is used to describe the _____ buffer system.
A) phosphate
B) hemoglobin
C) bicarbonate
D) protein

_____ 17) A falling blood pH and a rising partial pressure of carbon dioxide due to pneumonia or emphysema indicates _____.
A) respiratory acidosis
B) respiratory alkalosis
C) metabolic acidosis
D) metabolic alkalosis

_____ 18) The movement of fluids between cellular compartments _____.
A) requires active transport
B) is regulated by osmotic and hydrostatic forces
C) requires ATP for the transport to take place
D) involves filtration

_____ 19) What hormone reduces blood pressure and blood volume by inhibiting nearly all events that promote vasoconstriction and sodium ion and water retention?
A) ADH
B) aldosterone
C) atrial natriuretic peptide
D) thyroxine

_____ 20) Which of the following is *not* a method for regulating the hydrogen ion concentration in blood?
A) chemical buffer systems
B) diet
C) respiratory changes
D) renal mechanism

_____ 21) Which of the following is *not* a chemical buffer system?
A) bicarbonate
B) phosphate
C) nucleic acid
D) protein

_____ 22) Which of the following is *not* a trigger for juxtaglomerular granular cells to release renin?
A) sympathetic stimulation
B) decreased filtrate NaCl concentration
C) decreased stretch due to decreased blood pressure
D) increased extracellular fluid water levels

_____ 23) Which of the following statements is true regarding fluid shifts?
A) Non-electrolytes are the controlling factor in directing fluid shifts.
B) Electrolytes are not as important as proteins in regulating fluid shifts in the body.
C) Electrolytes have greater osmotic power than non-electrolytes and therefore have the greatest ability to cause fluid shifts.
D) There are always more positive electrolytes than negative in a solution; it is therefore impossible to follow fluid shifts.

_____ 24) Which of the following hormones is important in stimulating water conservation in the kidneys?
A) aldosterone
B) progesterone
C) antidiuretic hormone
D) atrial natriuretic peptide

_____ 25) The maintenance of the proper pH of the body fluids may be the result of _____.
A) the control of respiratory ventilation
B) the operation of the various buffer systems in the stomach
C) the active secretion of OH^- into the filtrate by the kidney tubule cells
D) control of the acids produced in the stomach

_____ 26) Which of the following is *not* a disorder of water balance?
A) excessive hydration due to excess ANP secretion
B) hypotonic hydration, in which sodium content is normal but water content is high
C) edema or tissue swelling, which is usually due to an increased capillary hydrostatic pressure
D) excess water in interstitial spaces due to a low level of plasma proteins

_____ 27) The regulation of sodium _____.
A) is due to specific sodium receptors in the hypothalamus
B) is linked to blood pressure
C) involves aldosterone, a hormone that increases sodium excretion in the kidneys
D) involves hypothalamic osmoreceptor detection of ion concentration

_____ 28) Blood analysis indicates a low pH, and the patient is breathing rapidly. Given your knowledge of acid-base balance, which of the following is most likely?
A) respiratory acidosis
B) metabolic acidosis
C) metabolic alkalosis
D) respiratory alkalosis

_____ 29) A patient is breathing slowly and blood pH analysis indicates an abnormally high value. What is the likely diagnosis?
A) respiratory acidosis
B) metabolic acidosis
C) metabolic alkalosis
D) respiratory alkalosis

_____ 30) One of the major physiological factors that triggers thirst is _____.
A) a drop in plasma osmolality
B) becoming overly agitated
C) low urine output
D) a rise in plasma osmolality

_____ 31) Annie has just eaten a large order of heavily salted French fries, some pickled eggs, and some cheese. How will consuming this much salt affect her physiology?
A) It will cause a permanent increase in the osmolality of the blood.
B) There will be a temporary increase in blood volume.
C) She will experience hypotension.
D) It will cause a permanent drop in the osmolality of the blood.

_____ 32) The most important force causing net water flow across capillary walls is _____.
A) osmotic pressure of plasma proteins
B) hydrostatic pressure of capillary blood
C) hydrostatic pressure of interstitial fluid
D) intracellular hydrostatic pressure

_____ 33) Which of the following does *not* depend on the presence of electrolytes?
A) membrane polarity
B) neuromuscular excitability
C) maintenance of osmotic relations between cells and ECF
D) amount of body fat

_____ 34) The regulation of potassium balance _____.
A) is not linked to sodium balance
B) includes renal secretion, but never absorption
C) is accomplished mainly by hepatic mechanisms
D) involves aldosterone-induced secretion of potassium

Chapter 27: Reproductive System:

_____ 1) The dartos and cremaster muscles are important to the integrity of the male reproductive system. Which of the following is true about the role they play?
A) They contract to push sperm along the ductus deferens.
B) They regulate the temperature of the testes.
C) They are responsible for penile erection.
D) They contract to allow ejaculation.

_____ 2) The ability of sperm cells to move along the ductus deferens is due to _____.
A) gravity
B) peristaltic contractions
C) enzymatic activity
D) hormonal action

_____ 3) The ability of a male to ejaculate is due to the action of _____.
A) parasympathetic nerves
B) the dartos muscle
C) luteinizing hormone
D) the bulbospongiosus muscles

_____ 4) The most important risk for testicular cancer in young males is _____.
A) smoking
B) a diet high in fat
C) undescended testes
D) sexually transmitted infections

_____ 5) Which of the following glands are responsible for 70% of the synthesis of semen?
A) the seminal vesicles
B) the bulbourethral glands
C) the prostate
D) the pituitary

_____ 6) Which of the following hormones controls the release of anterior pituitary gonadotropins?
A) LH
B) FSH
C) GnRH
D) testosterone

_____ 7) The "master switch" for male reproductive development is _____.
A) presence of testosterone
B) inhibition of estrogen
C) the SRY gene
D) lack of an X chromosome

_____ 8) The primary function of the uterus is to _____.
A) protect the ovaries
B) synthesize female hormones
C) regulate the ovarian and menstrual cycles
D) receive, retain, and nourish a fertilized ovum

_____ 9) Why is the blood-testis barrier important?
A) because spermatozoa and developing cells produce surface antigens that are recognized as foreign by the immune system
B) because some blood contents are toxic to the spermatozoa
C) because immature sperm cells lose their motility when they encounter any blood component
D) because the barrier traps sex hormones, keeping them at a higher level than the blood

_____ 10) The structures that receive the ovulated oocyte, providing a site for fertilization, are called the _____.
A) Graafian follicles
B) fallopian tubes
C) infundibula
D) fimbriae

_____ 11) If gametes were diploid like somatic cells, how many chromosomes would the zygote contain?
A) twice the diploid number, and with every succeeding generation, the chromosome number would continue to double and normal development could not occur
B) triple the diploid number, and with every succeeding generation, the chromosome number would continue to triple and normal development would not occur
C) half the diploid number with no change in development
D) There is no relationship between gametes and somatic cells.

_____ 12) Human egg and sperm are similar in that _____.
A) about the same number of each is produced per month
B) they have the same degree of motility
C) they have the same number of chromosomes
D) they are about the same size

_____ 13) The constancy of the chromosome number from one cell generation to the next is maintained through _____.
A) mitosis
B) meiosis
C) cytokinesis
D) DNA synthesis

_____ 14) Fertilization generally occurs in the _____.
A) ovary
B) uterus
C) vagina
D) fallopian tubes

_____ 15) Spermiogenesis involves the _____.
A) formation of four haploid cells from a spermatogonium
B) movement of sperm in the female genital tract
C) formation of a functional sperm by the stripping away of superfluous cytoplasm
D) sequence of events in the rete testis

_____ 16) Which of the following female structures is homologous to the male scrotum?
A) labia majora
B) labia minora
C) clitoris
D) vagina

_____ 17) In humans, separation of the cells at the two-cell state following fertilization may lead to the production of twins, which in this case would be _____.
A) dizygotic
B) identical
C) fraternal
D) of different sexes

_____ 18) How do the testes respond to exposure to excessive body warmth?
A) They move close to the pelvic cavity.
B) They move away from the pelvic cavity.
C) Excessive warmth has no effect on the testicles because of their location in the scrotum.
D) Excessive warmth is actually beneficial in that it speeds up the maturation of sperm.

_____ 19) Effects of estrogen include _____.
A) increased oiliness of the skin
B) deepening of the voice
C) growth of the breasts at puberty
D) growth of the larynx

_____ 20) Secretion of progesterone stimulates _____.
A) contraction of uterine muscles
B) preparation of the mammary glands for lactation
C) proliferation of the uterine myometrium
D) development of the female secondary sex characteristics

_____ 21) Which of the following statements about sperm is not true?
A) They contain very little cytoplasm or stored nutrients.
B) They are sluggish in an alkaline environment.
C) The acrosome is produced by the Golgi apparatus and contains hydrolytic enzymes.
D) The sperm mid-piece consists of mitochondria spiraled tightly around the contractile filaments of the tail.

_____ 22) The cells that produce testosterone in the testis are called _____.
A) spermatocytes
B) spermatogonia
C) sustentacular cells
D) interstitial (Leydig) cells

_____ 23) The testicular cells that construct the blood-testis barrier are the _____.
A) spermatocytes
B) spermatogonia
C) sustentocytes
D) interstitial cells

_____ 24) Which of the following occurs as a result of undescended testes?
A) Male sex hormones will not be circulated in the body.
B) Sperm will have no means of exit from the body.
C) Inadequate or nonviable sperm will be produced.
D) Inadequate blood supply will retard the development of the testes.

_____ 25) Erection of the penis results from _____.
A) a sympathetic reflex
B) parasympathetic activation of the bulbourethral glands
C) dilation of the veins in the penis
D) a parasympathetic reflex

_____ 26) Which is *not* a part of the proliferative phase of the female menstrual cycle?
A) late in this phase, cervical mucus becomes thin and crystalline
B) vesicular follicle growth
C) corpus luteum
D) development of endometrial cells

_____ 27) Which of the choices below is *not* a function of the vagina?
A) serves as a passageway for the primary oocyte
B) serves as a passageway for menstrual flow
C) serves as the birth canal
D) receives semen from the penis during sexual intercourse

_____ 28) Select the correct statement about male sexual response.
A) Sympathetic impulses are responsible for causing penile arteriolar dilation, resulting in erection.
B) Erection is the result of vascular spaces in the erectile tissues filling with blood.
C) Expansion of the penile tissues results in dilation of the venous outflow.
D) Ejaculation is the result of parasympathetic stimulation.

_____ 29) Which of the choices below is *not* a function of testosterone?
A) stimulates the male pattern of development
B) contributes to male sexual behavior and spermatogenesis
C) stimulates protein synthesis
D) stimulates mammary gland development

_____ 30) Which male hormone inhibits the secretion of FSH?
A) ACTH
B) inhibin
C) ICSH
D) GnRH

_____ 31) During the secretory phase of the menstrual cycle _____.
A) LH reaches its highest levels
B) progesterone levels are at their highest
C) estrogen reaches its highest levels
D) the Graafian follicle forms

_____ 32) Select the correct statement about the uterine cycle.
A) The menstrual phase of the cycle is normally from day 1 to day 8.
B) During the secretory phase, estrogen levels are at their highest.
C) During the proliferative phase, levels of progesterone rise as the follicle begins to produce more hormone.
D) If fertilization occurs, the corpus luteum is maintained by a hormone secreted by the developing embryo.

_____ 33) Which of the choices below is *not* a part of the hypothalamic-pituitary-gonadal axis?
A) hypothalamus
B) anterior pituitary gland
C) thalamus
D) interstitial cells

_____ 34) Which of the following statements is true concerning the mammary glands of both males and females?
A) Both sexes are equally prone to breast cancer.
B) All lumps identified in breast tissue are malignant.
C) The only time hormones target breast tissue is during pregnancy and lactation.
D) The mammary glands are modified sweat glands that are actually part of the integumentary system.

_____ 35) Normally menstruation occurs when _____.
A) blood levels of FSH fall off
B) blood levels of estrogen and progesterone decrease
C) blood levels of estrogen and progesterone increase
D) the corpus luteum secretes estrogen

_____ 36) The basic difference between spermatogenesis and oogenesis is that _____.
A) during spermatogenesis two more polar bodies are produced
B) the mature ovum is n, while the sperm is 2n
C) in oogenesis, one mature ovum is produced, and in spermatogenesis four mature sperm are produced from the parent cell
D) spermatogenesis involves mitosis and meiosis, but oogenesis involves meiosis only

_____ 37) Occasionally three polar bodies are found clinging to the mature ovum. One came from an unequal division of the ovum, but from where did the other two arise?
A) There were originally four polar bodies and one disappeared.
B) One is an undeveloped primary oocyte that failed to mature.
C) The first polar body has also divided to produce two polar bodies.
D) What you really see are two polar bodies and the sperm that will fertilize the egg.

_____ 38) Which of the following will occur after ovulation?
A) The corpus luteum secretes estrogen only.
B) The endometrium enters its secretory phase.
C) The secretion of anterior pituitary gonadotropins is enhanced.
D) The corpus luteum prepares to become a corpus albicans.

_____ 39) Why doesn't semen enter the urinary bladder during ejaculation?
A) There is no common duct between the reproductive system and the urinary system.
B) There is no urge to urinate during sexual intercourse because of the suppression of LH by testosterone buildup in the blood.
C) The smooth muscle sphincter at the base of the urinary bladder closes.
D) Ejaculation is a parasympathetic reflex resulting in no response by urinary contraction muscles.

_____ 40) Spermatogenesis _____.
A) is the process of releasing mature sperm cells into the lumen of the seminiferous tubule
B) involves a kind of cell division limited to the gametes
C) results in the formation of diploid cells
D) uses mitosis to produce gamete cells

_____ 41) Which hormone is absolutely necessary for ovulation to occur?
A) LH
B) FSH
C) progesterone
D) estrogen

_____ 42) The hypothalamic-pituitary-gonadal axis _____.
A) is the tight relationship between the cortex and the control of testicular function
B) involves FSH and LH release
C) involves posterior pituitary release of regulating hormones
D) involves a positive feedback loop control of spermatogenesis

_____ 43) Select the correct statement about testosterone control.
A) GnRH from the hypothalamus causes FSH and LH release from the anterior pituitary.
B) FSH stimulates testicular production of testosterone.
C) Inhibin and testosterone exert positive feedback on the hypothalamus and pituitary.
D) The pineal gland is believed to be the gland that exerts the most influence in testosterone control.

_____ 44) Which of the following is a correct statement about uterine tubes?
A) The ampulla is the narrow constricted region.
B) The infundibulum is the funnel-shaped region near the ovary.
C) The isthmus is the normal site of fertilization.
D) The mesometrium supports the uterine tubes along their entire length.

_____ 45) Select the correct statement about the hormonal events of the ovarian cycle.
A) Rising levels of estrogen start follicle development.
B) High estrogen levels result in a surge of LH release.
C) The follicle begins to secrete progesterone in response to estrogen stimulation.
D) The LH surge stimulates further development of the secondary oocyte.

_____ 46) Which of these statements about sexually transmitted infections is false?
A) Chlamydia is caused by bacteria that can often be asymptomatic or bring on a wide variety of symptoms.
B) Gonorrhea is caused by a bacterium that can bring on painful discharges in males.
C) Syphilis is caused by a virus that may lead to death if untreated.
D) Genital herpes is caused by a virus that may cause intermittent lesions.

_____ 47) Which of the following statements about spermatogenesis is *not* true?
A) The spermatogonium forms the primary spermatocyte.
B) The primary spermatocyte forms two secondary spermatocytes.
C) The secondary spermatocytes each form two spermatids.
D) Each spermatid forms two sperm.

_____ 48) A boy who has not passed through puberty sustains an injury to his anterior pituitary such that FSH is no longer released, but LH is normal. After he grows to maturity, one would expect that he would _____.
A) be unable to produce viable sperm
B) not develop secondary sex characteristics
C) be impotent (unable to have an erection)
D) have impaired function of interstitial cells

_____ 49) Which of the following statements about the female reproductive process is not true?
A) Fertilization usually occurs in the fallopian tube.
B) Ovulation usually occurs 14 days after the beginning of menses.
C) Rebuilding the endometrium is under the control of prolactin.
D) The monthly discharge of the uterus (menses) is initiated by the decrease in secretion of female hormones.

_____ 50) A low secretion of luteinizing hormone (LH) in the normal male adult would cause _____.
A) decreased testosterone secretion
B) excessive beard growth
C) increased spermatogenesis
D) shrinkage of the anterior pituitary gland

_____ 51) All of the following statements referring to the uterine cycle are true *except* _____.
A) FSH and LH directly promote development of the uterine endometrium
B) estrogen is secreted by the developing follicle in the follicular phase of the cycle
C) the corpus luteum is formed from the ruptured follicle after ovulation
D) a decrease in the levels of ovarian hormones signals menstruation

_____ 52) Which of the following phases or processes in the monthly reproductive cycle of the female occur simultaneously?
A) maximal LH secretion and menstruation
B) maximal steroid secretion by the corpus luteum and menstruation
C) early follicular development and the secretory phase in the uterus
D) regression of the corpus luteum and a decrease in ovarian progesterone secretion

_____ 53) The duct system of the male reproductive system includes all but which of the following?
A) epididymis
B) urethra
C) ductus deferens
D) corpus spongiosum

_____ 54) Prostate cancer is _____.
A) the number-one cause of death in men
B) sometimes a slow-growing cancer that may never represent a threat to the patient
C) most common in young men aged 20 to 30
D) often the result of a distortion of the urethra

Chapter 28: Pregnancy:

_____ 1) What destroys the sperm receptors on the surface of the oocyte?
A) the acrosomal reaction
B) zonal inhibiting proteins
C) the process of capacitation
D) human placental lactogen

_____ 2) The result of polyspermy in humans is _____.
A) multiple births
B) a nonfunctional zygote
C) interruption of meiosis
D) mitotic insufficiency

_____ 3) It is impossible for sperm to be functional (able to fertilize the egg) until after _____.
A) the tail disappears
B) they become spermatids
C) they undergo capacitation
D) they have been stored in the uterus for several days

_____ 4) Milk ejection or letdown reflex is stimulated by which of the following hormones associated with pregnancy?
A) inhibin
B) oxytocin
C) prolactin
D) gonadotropin

_____ 5) Estrogen and progesterone maintain the integrity of the uterine lining and prepare the mammary glands to secrete milk. Which of the following structures makes this possible during the first three months of pregnancy?
A) the amnion
B) the chorion
C) corpus luteum
D) corona radiata

_____ 6) The placenta, a vitally important metabolic organ, is made up of a contribution from mother and fetus. Which portion is from the fetus?
A) chorion
B) umbilicus
C) yolk sac
D) amnion

_____ 7) Relaxin is a hormone produced by the placenta and ovaries. The function of this hormone is to _____.
A) block the pain of childbirth
B) ensure the implantation of the blastula
C) relax the pubic symphysis
D) prevent morning sickness

_____ 8) Proteases and acrosin are enzymes. How do they function in reproduction?
A) They neutralize the mucous secretions of the uterine mucosa.
B) They direct the sperm to the egg through chemical messengers.
C) They act to break down the protective barriers around the egg, allowing the sperm to penetrate.
D) Their function is unknown.

_____ 9) Which of the following is *not* a germ layer?
A) ectoderm
B) mesoderm
C) epiderm
D) endoderm

_____ 10) The formation of endodermal and ectodermal germ layers occurs at _____.
A) fertilization
B) cleavage
C) gastrulation
D) blastula formation

_____ 11) Which hormone maintains the viability of the corpus luteum?
A) estrogen
B) progesterone
C) human chorionic gonadotropin
D) human placental lactogen

_____ 12) Which of the following events does *not* occur during the first 8 weeks of development?
A) beginning of ossification
B) formation of a functional cardiovascular system
C) presence of all body systems
D) myelination of the spinal cord

_____ 13) Which of the following is *not* a correct matching of a fetal structure with what it becomes at birth?
A) foramen ovale—fossa ovalis
B) ductus arteriosus—ligamentum teres
C) ductus venosus—ligamentum venosum
D) umbilical arteries—medial umbilical ligament

_____ 14) Which body system of a pregnant woman undergoes the most dramatic physiological changes during pregnancy?
A) digestive system
B) urinary system
C) cardiovascular system
D) respiratory system

_____ 15) A premature separation of the placenta from the uterine wall is called _____.
A) ectopic pregnancy
B) abrupto placenta
C) placenta previa
D) placenta cleavage

_____ 16) The correct sequence of pre-embryonic structures is _____.
A) zygote, blastocyst, morula
B) zygote, morula, blastocyst
C) blastocyst, morula, zygote
D) morula, zygote, blastocyst

_____ 17) Which of the following is *not* assessed as part of the Apgar score?
A) heart rate
B) respiration
C) muscle tone
D) temperature

_____ 18) Hormones concerned with events of lactation include _____.
A) estrogen
B) oxytocin
C) progesterone
D) hCG

_____ 19) How long is the egg viable and capable of being fertilized after it is ovulated?
A) 12-24 hours
B) 24-36 hours
C) 36-72 hours
D) a full week

_____ 20) Select the correct statement about fertilization.
A) Both spermatozoa and the ovulated secondary oocyte remain viable for about 72 hours in the female reproductive tract.
B) Millions of sperm cells are destroyed by the vagina's acidic environment.
C) If estrogen is present, the pathway through the cervical opening is blocked from sperm entry.
D) Once inside the uterus, most sperm cells are protected and remain viable.

_____ 21) Shortly after implantation _____.
A) maternal blood sinuses bathe the inner cell mass
B) myometrial cells cover and seal off the blastocyst
C) the trophoblast forms two distinct layers
D) the embryo gastrulates (within 3 days)

_____ 22) The dorsal surface cells of the inner cell mass form _____.
A) a structure called the embryonic disc
B) one of the fetal membranes
C) the primitive streak
D) the notochord

_____ 23) Muscle tissue is formed by the _____.
A) mesoderm
B) ectoderm
C) endoderm
D) epiderm

_____ 24) Neural tissue is formed by the _____.
A) epiderm
B) endoderm
C) mesoderm
D) ectoderm

_____ 25) The trophoblast is mostly responsible for forming the _____.
A) allantois
B) archenteron
C) placental tissue
D) lining of the endometrium

_____ 26) The cardiovascular system of a newborn must be adjusted after the infant takes its first breath. Which of the following is also true?
A) The foramen ovale between the atria of the fetal heart closes at the moment of birth.
B) The ductus venosus is disconnected at the severing of the umbilical cord and all visceral blood goes into the vena cava.
C) The urinary system is activated at birth.
D) The ductus arteriosus constricts and is converted to the ligamentum arteriosum.

_____ 27) Sperm move to the uterine tube through uterine contractions and the energy of their own flagella. What other factor is involved in sperm movement?
A) hormonal attraction to the ova
B) reverse peristalsis of the uterus and uterine tubes
C) the cilia on the apex of the cells lining the endometrium
D) the increased temperature in the vagina, which stimulates sperm motility

_____ 28) At which stage of labor is the "afterbirth" expelled?
A) dystocia
B) expulsion
C) placental
D) full dilation

_____ 29) Which hormone is *not* produced by the placenta?
A) human placental lactogen
B) human chorionic thyrotropin
C) relaxin
D) inhibin

_____ 30) During which stage of labor is the fetus delivered?
A) dilation stage
B) expulsion stage
C) placental stage
D) gastrula stage

_____ 31) Implantation of the blastocyst is the result of all of the following *except* _____.
A) phagocytosis by the trophoblast cells
B) proteolytic enzymes produced by the trophoblast cells
C) settling of the blastocyst onto the prepared uterine lining
D) adherence of the trophoblast cells to the endometrium

_____ 32) Cleavage as part of embryonic development is distinctive because it involves _____.
A) cell division by mitosis with little or *no* growth between successive divisions
B) forming the primary germ layer
C) splitting the cell into two separate cells
D) meiotic cell divisions

_____ 33) Which of the following is true in reference to what may pass through the placental barriers?
A) nutrients and respiratory gases only
B) hormones, blood cells, and nutrients
C) nutrients, respiratory gases, wastes, and alcohol
D) respiratory gases, hormones, nutrients, and blood cells

_____ 34) Which of the following is *not* usually considered a teratogen?
A) aspirin
B) wine
C) thalidomide
D) German measles

_____ 35) Derivatives of the mesoderm include _____.
A) all nervous tissue
B) endothelium of blood and lymph vessels
C) glandular derivatives of the digestive tract
D) epithelium of the digestive tract

_____ 36) Derivatives of the endoderm include _____.
A) epithelium of the respiratory tract
B) synovial membranes of the joints
C) blood, bone marrow, and lymphoid tissue
D) organs of the urogenital system

_____ 37) Which of the choices below occurs if fertilization of the ovum occurs and implantation takes place?
A) The corpus luteum is maintained until the placenta takes over its hormone-producing functions.
B) The corpus luteum degenerates and becomes the corpus albicans.
C) The ovarian cycle begins.
D) Increased levels of FSH will be produced.

_____ 38) Select the correct statement about the special fetal blood vessels.
A) The distal parts of the umbilical arteries form the superior vesical arteries.
B) The fossa ovalis becomes the foramen ovale.
C) The umbilical vein becomes the ligamentum teres.
D) The hepatic portal vein forms from the umbilical artery.

_____ 39) The decidua basalis is _____.
A) destined to remain in the uterus after the birth of the infant
B) located between the developing embryo and the myometrium
C) not a maternal contribution to the placenta
D) the tissue that surrounds the uterine cavity face of the implanted embryo

Chapter 29: Heredity:

_____ 1) Two alleles expressing exactly the same information for a trait are designated as _____.
A) hemizygous
B) monogamous
C) heterozygous
D) homozygous

_____ 2) Dominant alleles are so called because under most circumstances they _____.
A) code for desired traits only
B) suppress the expression of other alleles
C) code for genes that are never considered lethal
D) code for most phenotypic and genotypic expressions of a trait

_____ 3) Recessive genes are usually expressed in humans only when _____.
A) they are coding for skin color
B) they are coding for genetic diseases
C) the organism is in the embryonic stage
D) both alleles are exactly the same, or homozygous

_____ 4) Those characteristics that can be determined on superficial inspection of an individual are known as _____.
A) genotypic
B) polygenic
C) polyspermic
D) phenotypic

_____ 5) Is genetic diversity due entirely to inherited genes on the sex chromosomes?
A) Yes, because the female has two X chromosomes and the male has only one X chromosome.
B) Yes, because the male has a Y chromosome.
C) Yes, because genetic diversity is due to the Y influence on the autosomes.
D) No, because genetic diversity has nothing to do with the sex chromosomes but is due to crossing-over of chromosomes, independent assortment of chromosomes, and segregation of chromosomes.

_____ 6) A female infant is born with several hundred oocytes, each one genetically unique. This is due to _____.
A) mutation
B) recessive inheritance
C) chromosome deletion
D) independent assortment and random crossover

_____ 7) In meiosis the spermatozoa that are produced are genetically unlike each other and unlike the cell that produces them. This is one reason for the great variation among humans. What causes this effect?
A) crossing-over, chromosome segregation, and independent assortment
B) crossing-over and chromosome segregation only
C) chromosome segregation and independent assortment only
D) crossing-over and independent assortment only

_____ 8) The reason recessive genetic disorders are more frequent than disorders inherited as dominant is that _____.
A) dominant genetic disorders are never expressed in males
B) people carrying dominant genetic disorders always die before birth
C) carriers are not eliminated by the disease before passing the defective alleles on to their offspring
D) recessive genetic disorders are limited to persons of the same ethnicity

_____ 9) The gene responsible for the condition known as sickle-cell anemia demonstrates _____.
A) incomplete dominance
B) a dominant genetic disorder
C) a sex-linked genetic disorder
D) a recessive genetic disorder

_____ 10) An example of multiple-allele inheritance is _____.
A) the ABO blood group
B) the appearance of freckles on the skin
C) the appearance of birthmarks on the skin
D) hair that seems to have several shades of a color

_____ 11) Which of the following is true concerning environmental influence on genetic expression?
A) It is impossible to alter in any way the expression of a gene in humans.
B) The only time a gene can be influenced by environmental factors is in the second trimester of pregnancy.
C) Environmental factors determine the way in which 90 percent of our genes are expressed.
D) Drugs and nutrition can alter normal gene expression.

_____ 12) Sex chromosomes of a normal male are _____.
A) XX
B) YY
C) XY
D) any of these, depending on the father

_____ 13) A woman has blond hair and brown eyes. This statement is best described as indicating _____.
A) allelic pairs
B) recessive traits
C) phenotype
D) genotype

_____ 14) A chromosomal aberration in which part of a chromosome is lost is known as _____.
A) deletion
B) inversion
C) translocation
D) crossing-over

_____ 15) Inheritance of stature (height) in humans is probably due to _____.
A) polyploidy
B) polymorphism
C) incomplete dominance
D) polygene inheritance

_____ 16) An individual who is heterozygous for a particular trait, yet expresses both alleles of that trait, is an example of _____.
A) dominance
B) recessive inheritance
C) incomplete dominance
D) sex-linked inheritance

_____ 17) _____ is the most common type of fetal testing.
A) Blood chemistry
B) Amniocentesis
C) A DNA probe
D) CVS

_____ 18) Huntington's disease involves _____.
A) hypersecretion of growth hormone
B) the presence of an extra chromosome
C) degeneration of the basal nuclei of the brain
D) hyposecretion of thyroxine

_____ 19) Which of the following statements is true concerning genetic screening?
A) Screening is illegal in over half of the world.
B) Screening can be done only in the first trimester of pregnancy.
C) Genetic screening is rarely done because it yields very little accurate information.
D) Screening can be done before conception by carrier recognition or during fetal testing.

_____ 20) Amy's hand was exposed to X rays. A gene in a skin cell of her hand mutated. This mutant gene will _____.
A) definitely cause skin cancer
B) replicate itself and be passed on to Amy's children
C) not form an exact duplicate of itself when the cell divides
D) replicate itself when the cell divides but will not be passed on to Amy's offspring

_____ 21) The main way a recessive allele would be expressed even when only one copy is present would be _____.
A) dominance
B) recessive inheritance
C) sex-linked inheritance
D) incomplete dominance

_____ 22) A couple whose blood types are A (I^Ai) and B (I^Bi) may have a child with which of the following blood types?
A) AB only
B) A or B only
C) A, B, AB, or O
D) AB or O only

_____ 23) Gene mutations in the sex chromosomes of the human would tend to become visibly expressed _____.
A) more frequently in males
B) more frequently in females
C) equally frequently in both sexes
D) in neither males or females

_____ 24) For which of the following are newborn infants *not* routinely screened at birth?
A) PKU
B) color blindness
C) imperforate anus
D) congenital hip dysplasia