Digestion &Metabolism

<u>Multiple choice</u>: Choose the single best answer

1. The digestive system performs all of the following functions except
   a. deglutition.
   b. peristalsis.
   c. metabolism.
   d. defecation.

2. The _____ is part of the gastrointestinal system, but not the gastrointestinal tract.
   a. esophagus
   b. stomach
   c. liver
   d. small intestine

3. Regurgitation of stomach contents is normally prevented by the actions of the
   a. lower esophageal (cardiac) sphincter.
   b. gastroesophageal junction.
   c. esophageal hiatus.
   d. glottis.

4. In the small intestine lipids are absorbed
   a. into the lacteals.
   b. into the intestinal crypts.
   c. by the actions of enterokinase.
   d. by goblet cells.

5. The liver detoxifies ammonia by converting it to
   a. bilirubin.
   b. urea.
   c. uric acid.
   d. none of the above

6. The process of _____ allows the liver to produce glucose from amino acids and some fatty acids when there is inadequate glucose in the diet.
   a. glycogenesis
   b. glycogenolysis
   c. gluconeogenesis
   d. lipogenesis

7. Pancreatic juice contains _____ which is involved in the breakdown of proteins.
   a. insulin
   b. trypsin
   c. amylase
   d. bicarbonate

8. Contraction of the gallbladder is stimulated by the action of
   a. cholecystokinin.
   b. secretin.
   c. gastrin.
   d. lipase.

9. Digestive enzymes are not secreted into
   a. the esophagus.
   b. the mouth.
   c. the small intestine
   d. the stomach.

10. Saliva contains the enzyme
   a. amylase.
   b. lipase.
   c. pepsin.
   d. peptidase.

11. The process of _____ allows the liver to store glucose as a long chain of glucose molecules.
   a. glycogenesis
   b. glycogenolysis
   c. gluconeogenesis
   d. lipogenesis

12. The appendix is attached to the
   a. anal canal.
   b. cecum.
   c. colon.
   d. ileum.

13. The last part of the colon is called the _____ colon.
   a. ascending
   b. descending
   c. sigmoid
   d. transverse

14. The large intestine functions to
   a. absorb nutrients.
   b. absorb water.
   c. absorb vitamins.
   d. absorb water and vitamins.
   e. all of the above

15. Which of the following is not a function of the liver?
    a. Detoxification of the blood
    b. Bile secretion
    c. Digestive enzyme production
    d. Storage of glucose as glycogen
16. The pancreatic enzymes function in the _____.
    a. stomach
    b. pancreas
    c. small intestine
    d. large intestine
17. The liver stores _____ for energy.
    a. nucleic acids
    b. glycogen
    c. glucose
    d. vitamins
18. The chemical and mechanical processes of food breakdown is
    a. digestion.
    b. secretion.
    c. ingestion.
    d. absorption.
19. An intestinal hormone that stimulates the pancreas to release a watery secretion that is high in bicarbonate ion is
    a. secretin.
    b. gastrin.
    c. enterocrinin.
    d. cholecystokinin.
    e. GIP.
20. Decreased levels of bile would interfere with digestion of
    a. fat.
    b. vitamins.
    c. complex carbohydrates.
    d. disaccharides.
    e. protein.

<u>Fill-in-the-Blanks:</u> Complete the following statements. The answer may be a single word or a phrase.

1. The flap of tissue suspended from the midpoint of the posterior border of the soft palate is the _____.
2. After leaving the stomach, food (chyme) enters the _____.
3. The structure that controls the opening of the stomach into the small intestine it the _____.
4. Bile is released from the _____ into the _____ to aid in the digestive process.
5. The _____ produces the hormone gastrin.
6. The _____ detoxifies various substances.
7. The purpose of _____ is to propel food forward along the GI tract.
8. The final product of carbohydrate digestion is a _____.
9. The process of _____ consists of breaking fats into small droplets.
10. The hormone that stimulates the release of bicarbonate substance from the pancreas is _____.
11. The hormone that stimulates the gallbladder to release bile is _____.
12. The major site for the absorption of the end products of digestion is the _____.
13. Chylomicrons are formed for the transport of _____.
14. _____ is a back-and-forth action that breaks apart chunks of food and mixes in digestive juices.
15. _____ _____ are the end products of protein digestion.
16. The preferred energy fuel of the body is _____.
17. The breakdown of glycogen is called _____.
18. Glycolysis occurs in the _____ of cells.
19. The Krebs cycle takes place in the _____.
20. An increased blood sugar level stimulates the release of _____.
21. The conversion of proteins to glucose is an example of _____.
22. The splitting off of an amino group from an amino acid molecule is _____.
23. The most common lipids in the diet are _____.
24. Catabolism of fatty acids, without the presence of carbohydrates causes the production of _____.
25. The functions of the digestive system are: _____, _____ and _____.

<u>True or False</u>

1. As food passes through the digestive tract, it becomes less complex and the nutrients are more readily available to the body.

2. Chemical digestion involves processes such as segmentation.
3. The function of the enzyme salivary amylase is to begin digesting proteins.
4. A digestive function of the liver is to produce bile.
5. The pancreas has both an endocrine and an exocrine function.
6. Most nutrients are absorbed through the mucosa of the intestinal villi by active transport.
7. Fats significantly delay the emptying of the stomach.
8. Essential nutrients are chemicals that can be produced in the liver
9. Cellular respiration is an anabolic process.
10. In order for amino acids to be oxidized for energy, the amine group (NH_2) must be removed.
11. The greatest amount of ATP energy is generated during the Krebs cycle.
12. Bile is necessary to emulsify proteins.

Urinary System

<u>Multiple choice</u>: Choose the single best answer

1. The kidney regulates all of the following except
   a. volume of blood plasma.
   b. concentrations of certain electrolytes and waste products in the blood.
   c. absorption of substances from the gastrointestinal tract.
   d. acid-base balance (pH) of the blood plasma.
2. The blood vessel delivering blood directly to the glomerulus is the
   a. efferent arteriole.
   b. interlobar artery.
   c. arcuate artery.
   d. afferent arteriole.
3. The portion of the nephron responsible for filtering the blood is the
   a. glomerular capsule.
   b. proximal convoluted tubule.
   c. glomerulus.
   d. distal convoluted tubule.
4. Which substance is not easily filtered by the glomerulus and therefore not normally found in the filtrate?
   a. erythrocytes and leukocytes
   b. glucose
   c. amino acids
   d. electrolytes
5. The return of filtered molecules from the nephron tubules back into the blood is called
   a. filtration.
   b. reabsorption.
   c. secretion.
   d. excretion.
6. When the concentration of antidiuretic hormone rises in the blood
   a. the walls of the collecting ducts become less permeable to dissolved solutes and water.
   b. cell membranes of the collecting duct become more permeable promoting the reabsorption of water from the filtrate.
   c. the filtrate flowing through the collecting duct becomes more hypotonic.
   d. a greater volume of dilute urine is excreted.
7. Which of the following is not an excretory organ?
   a. kidney
   b. large intestine
   c. liver
   d. lungs
8. Where does tubular secretion primarily occur?
   a. distal convoluted tubule
   b. glomerular capsule
   c. loop of the nephron
   d. proximal convoluted tubule
9. Where is the juxtaglomerular apparatus located?
   a. In the nephron loop
   b. In the medulla oblongata
   c. Between the afferent arteriole and the distal convoluted tubule
   d. Between the efferent arteriole and the proximal convoluted tubule
10. What structure conveys urine from the kidney to the bladder?
    a. ureter
    b. urethra
    c. collecting duct
    d. distal convoluted tubule
11. The glomerular capsule and glomerulus make up the
    a. renal corpuscle.
    b. renal pyramid.
    c. juxtaglomerular apparatus.
    d. nephron.
12. Urine normally contains all of the following except
    a. sodium.
    b. urea.
    c. glucose.
    d. creatinine.
    e. potassium.
13. Which structure monitors blood volume?
    a. juxtaglomerular apparatus
    b. medulla oblongata
    c. midbrain
    d. hypothalamus

14. Which of the following is not a function of the kidneys?
    a. They help regulate the pH of body fluids.
    b. They have a role in erythrocyte production.
    c. They secrete hormones that stimulate thirst.
    d. They regulate blood pressure.
15. The kidneys are located in the _____ space.
    a. pelvic cavity
    b. peritoneal cavity
    c. abdominal
    d. retroperitoneal

Fill-in-the-Blanks: Complete the following statements. The answer may be a single word or a phrase.

1. The function of the urinary bladder is to _____
2. Urine leaving the renal papilla is collected in the cuplike structures called _____.
3. Urine is conducted from the kidney to the urinary bladder through the _____.
4. Substances travel from the glomerulus into Bowman's capsule by the process of _____.
5. In the kidney, blood flows from the interlobular artery into the _____.
6. Under normal conditions most nutrients are reabsorbed in the _____.
7. Two blood testes most often measured to determine normal kidney function are _____ and _____.
8. The portions of the nephron that are essentially impermeable to water are the _____ and the _____.
9. Urine formation involves three processes that are _____, _____ and _____.
10. When aldosterone is released, secretion of _____ occurs.
11. ADH has the greatest effect on the reabsorption of water in the _____.
12. The movement of substances out of the blood into the tubule is _____.
13. The movement of molecules out of the tubules and into the peritubular blood is _____.
14. The kidneys are stimulated to produce renin when _____.
15. The glomerulus differs from other capillaries in the body in that it _____.
16. The mechanism of water reabsorption by the renal tubules is _____.
17. The hormone important in the regulation of sodium ion concentrations in the body is _____.
18. When the level of ADH (antidiuretic hormone increases, urine concentration _____.
19. A glomerulus is a _____.
20. The portion of the nephron closest to the renal corpuscle is the _____.

True or False

1. A ureter is a tube that carries urine to the urinary bladder.
2. The reproductive and urinary systems are completely separate in males.
3. The efferent arteriole carries blood away from the glomerulus.
4. The hormone that regulates sodium reabsorption by the distal convoluted tubule is antidiuretic hormone (ADH).
5. The functional unit of the kidney is the renal column.
6. The terminal portion of the urinary system is the urethra.
7. The entire responsibility for urine formation lies with the nephron.
8. Glomerular filtration is an ATP-driven process.
9. In the absence of hormones, the distal tubule and collecting ducts are relatively impermeable to water.
10. The proximal convoluted tubule is the portion of the nephron that attaches to the collecting duct.
11. The main activity in the proximal tubule is secretion.

Fluid & Electrolyte/Acid-Base Study Guide

Multiple choice: Choose the single best answer

1. Intracellular fluid
   a. comprises a smaller percentage of body weight than extracellular fluid.
   b. has a lower concentration of sodium ions than extracellular fluid.
   c. has a lower concentration of potassium ions than extracellular fluid.
   d. has a higher concentration of calcium ions than extracellular fluid.
   e. all of these
2. In the body, the dominant intracellular cations are
   a. Ca^{2+} ions
   b. K^{+} ions
   c. Mg^{2+} ions.
   d. Na^{+} ions.
   e. Cl^{-} ions.
3. Large organic molecules such as proteins are not usually found in the
   a. interstitial fluid.
   b. intracellular fluid.
   c. plasma.
4. _____ plays a major role in regulating the concentration of K^{+} ions in the extracellular fluid by increasing the rate of K^{+} ion secretion in the distal tubule and collecting duct.
   a. Aldosterone
   b. Angiotensin II
   c. ADH
   d. Atrial natriuretic hormone
   e. Renin
5. Which of these normally represents the smallest source of water loss from the body?
   a. respirations
   b. feces
   c. perspiration
   d. urine
6. If the pH of the blood decreases, the pH of the urine will
   a. decrease.
   b. increase.
   c. be unaffected.
7. Excess tissue fluid is usually returned to the blood by _____.
   a. hydrostatic forces
   b. through the capillaries
   c. lymphatic vessels
   d. tissue osmosis
8. ADH has a direct effect on _____.
   a. blood pressure
   b. water reabsorption
   c. blood concentration
   d. all of these
10. Which of the following favor the development of edema?
    a. hypoproteinemia
    b. decreased venous pressure
    c. decreased capillary permeability
    d. lymphatic flow
11. Which cells are most sensitive to electrolyte changes?
    a. osteoblasts
    b. epithelial
    c. leukocytes
    d. neurons

Fill-in-the-Blanks: Complete the following statements. The answer may be a single word or a phrase.

1. If the sodium concentration in the blood is decreased it is known as _____.
2. In the body, the dominant extracellular cation is _____
3. Proteins are not usually found in the _____ fluid
4. If blood pressure decreases, blood levels of _____ increase.
5. The most common cation in the intracellular fluid is _____.
6. The _____ are the primary organs that regulate the composition and volume of body fluids.
7. Buffers _____
8. Nephrons directly regulate acid-base balance by _____.
9. Decreased elimination of CO2 from the body causes pH to _____ and can result in _____.

10. Someone who has untreated diabetes mellitus, has an increase in ketones. This can cause _____.
11. Most of the water in the body is found in the _____.
12. The main pressure that causes water to move among the various fluid compartments is _____ pressure.
13. The main force that causes fluid to leave the plasma compartment is _____ pressure.
14. The presence of excess fluid in the interstitial space is _____.
15. _____ is usually exchanged for sodium during absorption.
16. Hypokalemia can affect the proper function of the _____.
17. The organs involved in acid-base balance are the _____ and the _____.
18. The three common buffer systems are _____, _____ and _____.
19. Hyperventilation from anxiety usually causes _____.
20. _____is the most common extracellular cation, while _____ is the most abundant intracellular cation.
21. Diabetic ketoacidosis can cause _____ which is compensated for by _____.
22. Hypoventilation tends to cause an increase in _____ which leads to _____.

True or False

1. Solutes, regardless of size, are able to move freely between compartments because water carries them along the osmotic gradients.
2. Water loss in excess of water intake causes dehydration.
3. A condition of unusually high levels of plasma proteins will cause tissue edema.
4. The single most important electrolyte involved in maintaining water balance through urinary output is sodium.
5. Aldosterone stimulates the excretion of sodium while reabsorbing potassium.
6. Aldosterone is secreted in response to low extracellular potassium.
7. Neuromuscular function is influenced by serum levels of sodium.
8. Chloride is the major anion accompanying sodium in the ECF.
9. The normal pH of blood is 7.4.
10. The phosphate buffer system is relatively unimportant for buffering blood plasma.
11. As ventilation increases and more carbon dioxide is removed from the blood, the hydrogen ion concentration of the blood decreases.
12. The respiratory system attempts to compensate for metabolic acid-base imbalances, and the kidneys work to correct imbalances caused by respiratory disease.
13. Prolonged hyperventilation can cause alkalosis.

Reproductive Systems

<u>Multiple choice</u>: Choose the single best answer

1. Where does spermatogenesis occur?
   a. epididymides
   b. seminal vesicles
   c. seminiferous tubules
   d. vas deferens
2. Which cells produce testosterone?
   a. interstitial
   b. seminiferous
   c. spermatogonia
   d. spermatozoa
3. Where do sperm mature?
   a. epididymides
   b. seminal vesicles
   c. seminiferous tubules
   d. vas deferens
4. Which hormone stimulates testosterone production?
   a. inhibin
   b. interstitial cell stimulating hormone
   c. follicle stimulating hormone
   d. gonadotropic-releasing hormone
5. Which of the following structures conducts an egg toward the uterus?
   a. cervix
   b. ovary
   c. uterine tube
   d. urethra
6. Fertilization, the completion of oogenesis, and zygote formation normally occur in the
   a. cervix.
   b. ovary.
   c. uterine tube.
   d. uterus.
7. The _____ of the female is homologous to the penis in males.
   a. clitoris
   b. uterus
   c. vagina
   d. vulva
8. Which hormone stimulates ovulation?
   a. estrogen
   b. FSH
   c. GnRH
   d. LH
9. Which of the following hormones is secreted primarily by the corpus luteum?
   a. estrogen
   b. FSH
   c. LH
   d. progesterone
10. Estrogen is responsible for the
    a. development of a follicle.
    b. formation of the corpus luteum.
    c. release of an egg.
    d. thickening of the endometrium.
11. The glans penis is part of the
    a. corpus spongiosum.
    b. corpus cavernosa.
    c. prepuce.
    d. prostate gland.
    e. scrotum.
12. From the ejaculatory duct, sperm cells travel directly into the
    a. seminal vesicle.
    b. prostatic part of the urethra.
    c. spongy part of the urethra.
    d. membranous part of the urethra.
    e. vas deferens.

<u>Fill-in-the-Blanks:</u> Complete the following statements. The answer may be a single word or a phrase.

1. The tubular structure in males that produces a secretion that contains fructose, prostaglandins, and fibrinogen is the _____.
2. The erectile tissue that surrounds the urethra in males is the _____.
3. The small paired structures at the base of the penis that produce a lubricating secretion are the _____.
4. The structure that transports the ovum to the uterus is the _____.
5. The principal hormone secreted by the corpus luteum is _____.
6. Menstruation is triggered by a drop in the levels of _____.
7. The role of the pituitary hormone follicle stimulating hormone in males is to _____.

8. Sperm production occurs in the _____.
9. A rise in the blood levels of follicle stimulating hormone at the beginning of the ovarian cycle is responsible for _____.
10. The structure that surrounds the urethra in males and produces an alkaline secretion is the _____.
11. The surge in luteinizing hormone that occurs during the middle of the ovarian cycle triggers ____.
12. A muscular tube extending between the uterus and the external genitalia is the _____.
13. The inferior portion of the uterus is the _____.
14. The inner lining of the uterus is the _____.
15. The pituitary hormone that stimulates the interstitial cells to secrete testosterone is _____.
16. Interstitial cells produce _____.
17. The developing follicle cells secrete _____.

True or False

1. It is necessary for the testes to be kept below body temperature.
2. The prostate gland atrophies as a man ages, and it usually causes no health problems.
3. Ovarian follicles contain mature eggs.
4. The hormone that triggers ovulation is estrogen.
5. The female hormone corresponding to the male ICSH is FSH.
6. The male urethra serves the urinary system only.
7. Ovulation occurs near the end of the ovarian cycle.
8. The primary function of the testes is to produce seminal fluid.
9. The soft mucosal lining of the uterus is the endometrium.
10. The secretions of the bulbourethral glands neutralize traces of acidic urine in the urethra and serve as a lubricant during sexual intercourse.