Multiple Choice Questions

1. Which of the following takes place in the mouth?
   A. food is fashioned into a bolus
   B. carbohydrate digestion begins
   C. food becomes partially liquified
   D. all of the above
   E. A and B only

2. In the mouth:
   A. food is propelled primarily by peristalsis
   B. the saliva is used to lubricate and dissolve food
   C. the front teeth are called incisors
   D. all of the above
   E. B and C only

3. The chemical digestion of ___ begins in the stomach through the action of the enzyme ___.
   A. fat; lipase
   B. fat; bile
   C. carbohydrate; salivary amylase
   D. protein; pepsin
   E. both C and D

4. Digestion of proteins:
   A. consumes water (hydrolysis) and amino acids
   B. consumes water (hydrolysis) and releases amino acids
   C. releases water (dehydration) and amino acids
   D. releases water (dehydration) and consumes amino acids

5. Which of the following statements is false?
   A. the enamel is the softest part of the teeth; the pulp is the hardest part of the teeth
   B. the root of a tooth is embedded in the alveolus of the jaw
   C. blood vessels and nerves are contained within the central pulp cavity
   E. periodontal tissue lines the tooth socket

6. The small intestine is the main site of absorption of:
   A. carbohydrates absorbed as monosaccharides
   B. carbohydrates absorbed as amino acids by active transport
   C. fats absorbed into lacteals of the lymphatic system
   D. proteins absorbed as small molecules or proteoses
   E. A and C only

7. General functions of the stomach include the:
   A. metabolism of consumed foods and vitamins
   B. absorption of many of the digested nutrients
   C. mixing of the gastric contents to form chyme
   D. secretion of alkaline enzymes
   E. none of the above

8. Digestion involves:
   A. transport of nutrient molecules from the intestine to cells
   B. intracellular change of nutrient molecules into essential intracellular nutrients
   C. splitting polymers into absorbable monomers in the GI tract
   D. secretion of insulin and glucagon
   E. absorption of nutrient molecules into the body
9. Secretin produced by the mucosa of the duodenum is stimulated by:
   A. distention of the stomach
   B. large quantities of bile
   C. a fatty chyme
   D. acidity of the chyme
   E. none of the above

10. Amino acids, monosaccharides, glycerol and fatty acids are:
    A. transported in the lymph to all the lymph nodes in the body
    B. all hormones
    C. products of carbohydrate metabolism
    D. enzymes
    E. end products of digestion

11. Which of these is false about "gastric juice?"
    A. is highly acidic because of its HCL content
    B. contains the intrinsic factor for absorption of vitamin B12
    C. is controlled in part by a hormone called gastrin
    D. becomes neutralized in the duodenum by the action of sodium bicarbonate from the pancreas
    E. none of the above

12. Which of the following conditions lead to release of bile into the duodenum?
    A. presence of fat into the duodenum
    B. release of CCK into blood
    C. contraction of gallbladder
    D. all of the above
    E. B and C only

13. The small intestine:
    A. measures about one inch in diameter and 22 feet in length
    B. completes the digestion of foods
    C. secretes hormones which aid digestion
    D. absorbs the end products of digestion into blood and lymph
    E. all of the above

14. The bile salts are:
    A. enzymes for digesting food in the small intestines
    B. detergents for breaking up large fat globules to small ones
    C. stimulants to pancreatic secretion of enzymes
    D. the major ingredients of gallstones
    E. reabsorbed primarily by the gallbladder

15. The sodium bicarbonate in pancreatic juice helps to raise the pH of chyme. What substance originally lowered the pH of chyme?
    A. chyle
    B. \( \text{H}_2\text{CO}_3 \)
    C. HCL
    D. alkali
    E. base

16. Which of the following is not a function of the pancreas?
    A. secretes insulin as well as glucagon into pancreatic duct
    B. secretes alkaline juice which neutralizes chyme while chyme is stored in the stomach
    C. secretes both endocrine and exocrine substances
    D. secretes lipase which acts on bile-emulsified fats to convert them to fatty acids and glycerol
    E. secretes amylase which acts on starches to convert them to maltose
17. Only one type of digestive juice contains carbohydrate, protein and fat-digesting enzymes. Which one is it?
   A. pancreatic juice
   B. saliva
   C. bile
   D. intestinal juice
   E. gastric juice

18. What action does pancreatic juice have on carbohydrate digestion?
   A. converts maltose to glucose
   B. converts sucrose to glucose and fructose
   C. converts polysaccharides and starches to maltose
   D. converts lactose to glucose and galactose
   E. all of the above

19. The action of bile in lipid digestion is to:
   A. emulsify fats by a detergent action
   B. chemically degrade triglycerides to fatty acids and glycerol
   C. chemically convert triglycerides to diglycerides
   D. chemically reduce cholesterol esters to cholesterol
   E. A and B

20. The major function of the watery bicarbonate secretion of the exocrine portion of the pancreas is:
   A. to complete the digestion initiated in the stomach
   B. to add water to the rather dry chyme entering the duodenum from the stomach
   C. to facilitate the digestion of lipids
   D. to neutralize the acid chyme from the stomach
   E. none of the above

21. The major stimulus for the release of CCK is the presence of:
   A. bile in the intestine
   B. pancreatic juice in the intestine
   C. fatty acids and amino acids in the stomach or duodenum
   D. acidic chyme in the intestine
   E. sugars in the duodenum

22. Gastrin, which is secreted by stomach cells, functions to:
   A. inhibit the production of hydrochloric acid
   B. increase the secretions of the gastric glands
   C. change pepsin into pepsinogen
   D. initiate the cephalic phase of digestion
   E. inhibit the secretory activities of the pancreas, liver and small intestine

23. Which of the following is not a characteristic of the large intestine?
   A. absorbs much of the water remaining in the waste material of undigested food
   B. it is divided into ascending, transverse, and descending portions
   C. contains bacteria which synthesize certain vitamins
   D. serves as the main absorptive surface for digested foods
   E. all of the above

24. The most important function of the large intestine is:
   A. absorption of water and electrolytes
   B. secretion of enzymes
   C. digestion of incompletely digested foods
   D. removal of toxic substances
   E. all of the above are equally important
25. Which of the following is a true statement?
   A. villi increase the absorptive surface of an organ
   B. digestion does not occur in the large intestine
   C. mass peristalsis occurs in the LI during defecation
   D. churning within the stomach can only occur if the cardiac and pyloric sphincters are closed
   E. all of the above

26. After the hepatic threshold for glycogen formation has occurred any excess glucose in the blood is:
   A. converted to lipid and stored as fat
   B. excreted by the kidney
   C. converted to urea
   D. is used in protein synthesis
   E. b and c

27. Blood glucose is actually:
   A. absorbed from GI tract
   B. released by the muscles into the blood when it isn’t needed as energy source for contraction
   C. glycogen from the liver
   D. glucag  on which can be converted to sugar when glucose is needed for energy source
   E. the kinetic energy of the blood

28. Functions of the liver
   A. acts as a storehouse for certain vitamins and iron
   B. synthesizes fibrinogen and prothrombin for coagulation
   C. synthesis of the serum albumin essential for blood colloid osmotic pressure and fluid balance
   D. regulates blood levels of glucose, ketone bodies and fatty acids
   E. destroys bacteria that enter the blood from the intestine before reaching the general circulation

29. The amount of heat liberated during oxidation of 9 gr of carbohydrate, 19 gr of protein and 37 gr of fat is:
   A. 24 cal
   B. 100 cal
   C. 445 cal
   D. 28.72 cal
   E. 151 cal

30. When the undigested chime is about to leave the SI, it passes through---?--- into the ascending colon. It stays in a---?-----form.
   A. caecum/ solid form
   B. ileocecal valve/ semi – liquid form
   C. jejunum/gaseous form
   D. all of the above
   E. none of the above

31. After the hepatic threshhold for glycogen formation has occurred, any excess glucose in the blood is
   A. converted to lipid and stored as fat
   B. excreted by the kidneys
   C. converted to urea
   D. is used in protein synthesis
   E. B and C are correct
32. If an incision has to be made in the SI to remove an obstruction, the first layer of tissue to be cut into is the
   A. muscularis
   B. mucosa
   C. submucosa
   D. serosa
   E. submuscularis

33. The fat-covered membrane protecting the SI and LI anteriorly is
   A. meninges
   B. pleura
   C. peritoneum
   D. mesentery
   E. greater omentum

34. Gluconeogenesis
   A. is concerned with synthesis of glycogen
   B. refers to the conversion of glycogen into glucose
   C. refers to the ability of the liver to form precursors for glucose using fats and proteins
   D. is a process resulting from deamination of amino acids
   E. is an essential part of the emulsification of fats

35. The end product of sugar metabolism is/are?
   A. maltose, lactose and sucrose
   B. carbon dioxide, water and heat and energy
   C. urea
   D. glucose and other simple sugars
   E. glycerol

36. The production of glucose-breakdown products from protein is called
   A. glycolysis
   B. gluconeogenesis
   C. glycogenesis
   D. glycogenolysis
   E. none of the above

37. Which of the following is NOT true for the large intestine?
   A. secretes no enzymes
   B. absorbs large quantities of water
   C. secretes large quantities of mucus
   D. houses bacteria that synthesize Vit K
   E. parasympathetic fibers inhibits its emptying

38. The first step in fat digestion is:
   A. formation of micelles
   B. breakdown of fatty acids by lipases
   C. formation of monoglycerides
   D. emulsification
   E. none of the above

39. Pancreatic secretions are stimulated by
   A. secretin
   B. CCK
   C. impulses from the vagus nerve
   D. acid in the duodenum
   E. all of the above

40. Which of the following is true of vitamins?
   A. they function as coenzymes
   B. they are not energy sources
   C. they cannot generally be synthesized by the body
   D. some may be made by bacteria in the intestine
   E. all of the above
41. Which of the following groups contain only water soluble vitamins?
A. A, B
B. B, C
C. C, D
D. D, E
E. A, D

42. Glycogenolysis refers to
A. the formation of glycogen
B. the formation of urea
C. conversion of fat and/or protein to glucose
D. the anaerobic metabolism of glucose
E. conversion of glycogen to glucose

43. Glycogenolysis is promoted by
A. glucagon
B. growth hormone
C. insulin
D. cortisol (corticosteroids)
E. both A and D are correct

44. The regulation of normal blood sugar level is accomplished by
A. insulin, glucagons and adrenalin
B. cell tissue absorption of glucose from the blood
C. the breakdown of glycogen by the liver
D. glycogenesis and glycogenolysis
E. all of the above

45. Which aspect of swallowing is voluntary?
A. movement of food into the pharynx
B. movement of food through the pharynx
C. movement of food into the esophagus
D. movement of food through esophagus
E. more than one of the above

46. Mixing of chime with digestive juices in the SI is achieved by
A. mastication
B. segmentation
C. peristalsis
D. churning
E. deglutition

47. Stimulation of the parasympathetic nerve supply to the stomach
A. would increase peristalsis
B. would decrease peristalsis
C. would have no effect on peristalsis
D. all of the above
E. none of the above

48. Which of the following is NOT correct?
A. final digestion of disaccharides is done by enzymes from pancreas
B. sugars are absorbed as monosaccharides
C. glucose is absorbed by active transport
D. fructose is absorbed by facilitated diffusion
E. proteins are absorbed as amino acids

49. Which of the following is NOT true of salivary amylase?
A. it is an enzyme
B. it has a stable range of pH, from pH 4 to pH 9
C. it function best at pH 6.9 – 7.0
D. it splits starch into polysaccharides
E. all of the above