SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Using Figure 23.1, match the following:

1) Mucosa.
2) Smooth muscle layer.
3) Serosa.
4) Area of the lamina propria.

MATCHING. Choose the item in column 2 that best matches each item in column 1.

Match the following:

5) Wavelike smooth muscle contractions that move foodstuffs through the alimentary tube. 
   A) Peristalsis
6) Chemical or mechanical process of breaking down foodstuffs to substances that can be absorbed.

A) Absorption

B) Hydrolysis

C) Digestion

7) Enzymatic breakdown of any type of food molecule.

8) Process by which the products of digestion pass through the lumen of the gastrointestinal tract into the blood or lymph.

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

9) Food is contained in the gastrointestinal tract from the time of ingestion until it is completely digested and the waste prepared for elimination.

T

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

T

11) Some of the microbes that often invade other organs of the body are rarely found in the stomach. The reason for this is the presence of HCl.

F

12) Kupffer cells are found in the liver and are responsible for removing bacteria and worn-out cells.

T

13) The main chemical activity of the stomach is to begin the digestion of proteins.

T

14) Chemical digestion of lipids is initiated in the mouth.

F

15) The function of the enzyme salivary amylase is to begin digesting proteins.

T

16) The peritoneum is the most extensive serous membrane in the body.

T

17) The first teeth to appear are the deciduous teeth.

T

18) The digestive function of the liver is to produce bile.

T

19) The pancreas has both an endocrine and an exocrine function.

T

20) The major stimulus for production of intestinal fluid is distention or irritation of the intestinal mucosa by hypertonic or acidic chyme.

T

21) Most nutrients are absorbed through the mucosa of the intestinal villi by active transport.

F
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

22) The mechanical and chemical receptors that control digestive activity are located:
   A) in the glandular tissue that lines the organ lumen.
   B) only in the esophagus because this is the only part of the tract that needs to change to accommodate food passage.
   C) in the pons and medulla.
   D) in the walls of the tract organs.

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

24) The chemical and mechanical processes of food breakdown are called:

25) 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) chemical digestion.  B) absorption.
   C) mechanical digestion.  D) secretion.

26) The sheets of peritoneal membrane that hold the digestive tract in place are called:

27) 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) serosa, mucosa, submucosa, and muscularis externa
   B) submucosa, serosa, muscularis externa, and mucosa
   C) muscularis externa, serosa, mucosa, and submucosa
   D) mucosa, submucosa, muscularis externa, and serosa

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

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

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

32) There are three phases of gastric secretion. The cephalic phase occurs:
   A) when the meal is excessively high in acids and neutralization is required.
   B) immediately after food enters the stomach, preparing the small intestine for the influx of a variety of nutrients.
   C) before food enters the stomach and is triggered by aroma, sight, or thought.
   D) 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.

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

34) 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) protein and peptide fragments.  B) starches and complex carbohydrates.
   C) simple carbohydrates and alcohols.  D) fatty acids.

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

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

37) The enzymatic breakdown of any type of food molecule is called ________.

38) 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) cholecystokinin  C) pepsin  D) lipase

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

40) Hepatocytes do not:
   A) detoxify.  B) process nutrients.
   C) produce digestive enzymes.  D) store fat-soluble vitamins.
41) Which vitamin requires intrinsic factor in order to be absorbed?
   A) A  B) K  C) B₁₂  D) C

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

43) The terminal portion of the small intestine is known as the:
   A) duodenum.  B) ileum.  C) pyloric sphincter.  D) jejunum.

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

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

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

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

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

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

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

50) The longest portion of the small intestine is the ________.

51) ________ is the principal enzyme for breaking down carbohydrates.

52) ________ cells of the stomach secrete HCl.

53) The chief bile pigment is ________.
54) _______ cells are found in the sinusoids of the liver and they remove debris from the blood as it flows past.

55) _______ peritoneum covers the external surfaces of most digestive organs.

56) The _______ phase of gastric secretions occurs before food enters the stomach.

57) What are chylomicrons?

58) What is heartburn and what causes it?

59) Name two regions of the digestive tract where mechanical food breakdown processes are very important. Name two organs that are primarily food conduits. Name the organ where protein digestion is begun. Name the organ where fat digestion begins.

60) Define constipation and diarrhea. Note possible causes of each.

61) Assume you have been chewing a piece of bread for 5 or 6 minutes. How would you expect its taste to change during this time? Why?

62) Why is it necessary for the stomach contents to be so acidic? How does the stomach protect itself from digestion?

63) What is bile and where is it produced? What is its digestive function? Where is it stored and concentrated?

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

64) Mrs. Wong goes to the emergency room with the following symptoms: severe pain in the umbilical region, loss of appetite, nausea, and vomiting. While she was waiting to see a doctor, the pain moved to the lower right abdominal quadrant. What is the diagnosis and treatment?

65) A patient was admitted to the hospital because of severe epigastric pain. He has noted that his stools were darker than the usual brown color. He appears pale and very anxious. The history reports that he drinks 2 – 3 beers per day and smokes 2 packs of cigarettes a day. Based on the assessment data, the nurse determines the patient has what? Explain why.
Answer Key
Testname: 23-DIGESTION.TST

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) A  
2) C  
3) D  
4) A

MATCHING. Choose the item in column 2 that best matches each item in column 1.

5) A  
6) C  
7) B  
8) A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

9) TRUE  
10) TRUE  
11) TRUE  
12) TRUE  
13) TRUE  
14) FALSE  
15) FALSE  
16) TRUE  
17) TRUE  
18) TRUE  
19) TRUE  
20) TRUE  
21) TRUE

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

22) D  
23) B  
24) C  
25) A  
26) D  
27) D  
28) C  
29) D  
30) B  
31) B  
32) C  
33) A  
34) A  
35) A  
36) A  
37) A  
38) D  
39) D  
40) C  
41) C  
42) A
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

50) ileum
51) Amylase
52) Parietal
53) bilirubin
54) Kupffer
55) Visceral
56) cephalic (or reflex)
57) Chylomicrons are tiny fatty droplets composed of triglycerides, small amounts of phospholipids, cholesterol, free fatty acids, and some protein.
58) The acidic gastric juices get regurgitated into the esophagus. This may happen when someone has eaten or drunk too much, or it can be caused by extreme obesity or the discomfort of pregnancy. It is sometimes due to obstructions or structural faults in the esophagus as well.
59) Mechanical food processes are very important in the mouth (mastication) and stomach (contractions causing mixing of food into chyme). The esophagus and pharynx are primarily food conduits. Protein digestion begins in the stomach. Fat digestion begins in the small intestine.
60) Watery stools are called diarrhea. Constipation is a condition in which too much water has been absorbed and the stool becomes hard and difficult to pass. Any condition, such as irritation of the colon by bacteria that rushes food residue through the large intestine before that organ has had sufficient time to absorb the remaining water, is known as diarrhea. Constipation may ensue from the lack of fiber in the diet, improper bowel habits, laxative abuse, or anything that decreases motility.
61) The bread will begin to taste sweet as some of the starch is broken down into sugar due to the chemical digestion of carbohydrates by salivary amylase.
62) HCl is necessary for the activation and optimal activity of pepsin, and it kills many of the bacteria ingested with food. Mucous cells in the lining of the stomach secrete an alkaline mucus that clings to the stomach wall and helps to shield it from the acid. The epithelial cells of the mucosa are joined together by tight junctions that prevent gastric juice from leaking into underlying tissue layers. Damaged epithelial cells are shed and quickly replaced by cell division.
63) Bile is an alkaline solution containing bile salts, bile pigments, cholesterol, neutral fats, phospholipids, and a variety of electrolytes. It is produced in the liver. Its digestive function is to emulsify fats. It is stored and concentrated in the gallbladder.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

64) The diagnosis is appendicitis. The accepted treatment is immediate surgical removal of the appendix.

65) The patient most likely has a gastric ulcer. The most distressing symptom of a gastric ulcer is gnawing epigastric pain that seems to bore through to the back. The danger posed by ulcers is perforation of the stomach wall followed by peritonitis and massive hemorrhage. Because the patient's stools are darker than usual and he is pale and anxious, the nurse suspects a bleeding ulcer. Factors such as smoking and alcohol increase hypersecretion of hydrochloric acid and low secretion of mucus.