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

1) Mechanical digestion refers to
   A) the progressive dehydration of indigestible residue.
   B) the input of food into the digestive tract.
   C) the enzymatic breakdown of food.
   D) the absorption of nutrients in the gut.
   E) the effects of chewing, churning, and segmentation.

2) Which function(s) is/are NOT continuously regulated by the GI tract?
   A) absorption
   B) motility
   C) secretion
   D) All of the above are regulated.
   E) None of the above are regulated.

3) Which of the following is an accessory organ of digestion?
   A) stomach
   B) pancreas
   C) spleen
   D) colon
   E) esophagus

4) The ________ is a significant site of absorption of water and electrolytes, but NOT of nutrients.
   A) mouth
   B) stomach
   C) small intestine
   D) large intestine
   E) none of the above

5) Which of the following is the sequence of layers from the lumen to the outer wall of the digestive tract?
   A) serosa, submucosa, mucosa, muscularis externa
   B) submucosa, mucosa, serosa, muscularis externa
   C) mucosa, submucosa, serosa, muscularis externa
   D) submucosa, muscularis externa, serosa, mucosa
   E) mucosa, submucosa, muscularis externa, serosa

6) The lamina propria and mucous epithelium are components of the
   A) serosa.
   B) adventitia.
   C) muscularis mucosa.
   D) mucosa.
   E) submucosa.
7) The layer of loose connective tissue beneath the digestive epithelium is the
A) lamina propria.
B) muscularis mucosae.
C) submucosa.
D) submucosal plexus.
E) myenteric plexus.

8) Contraction of the _______ alters the shape of the intestinal lumen and moves epithelial pleats and folds.
A) mucosa
B) submucosa
C) submucosal plexus
D) muscularis mucosa
E) adventitia

9) Rugae, plicae, and villi are all features that accomplish
A) secretion of enzymes.
B) secretion of hormones.
C) an increase in surface area.
D) immune function.
E) mechanical digestion.

10) Intestinal crypts
A) increase the surface area of the mucosa of the small intestine.
B) carry products of digestion that will not pass through the walls of blood capillaries.
C) produce new cells for the mucosa of the small intestine.
D) function in the absorption of nutrients.
E) A and C

11) Chief cells secrete
A) pepsinogen.
B) gastrin.
C) mucus.
D) hydrochloric acid.
E) intrinsic factor.

12) Partiel or G cells of the stomach secrete
A) cholecystokinin.
B) secretin.
C) gastrin.
D) enterokinase.
E) pepsin.
13) Peyer’s patches are characteristic of the
   A) stomach.
   B) esophagus.
   C) pancreas.
   D) ileum of small intestine.
   E) colon.

14) The ________ are double sheets of peritoneal membrane that hold some of the visceral organs in their proper position.
   A) serosa
   B) adventitia
   C) mesenteries
   D) fibrosa
   E) lamina propria

15) Which of the following events does NOT occur when you swallow?
   A) Respiration is inhibited.
   B) The upper esophageal sphincter closes.
   C) The glottis and epiglottis close.
   D) The lower esophageal sphincter relaxes.

16) Mucus functions in
   A) protection.
   B) lubrication.
   C) enzyme activation.
   D) A and B
   E) A, B, and C

17) In the digestive system, HCl is released by ________, whereas HCO₃⁻ is secreted primarily from the ________.
   A) parietal cells of the stomach, pancreas
   B) the pancreas, parietal cells of the stomach
   C) parietal cells of the stomach, liver
   D) the liver, parietal cells of the stomach

18) Nutrient absorption occurs primarily in the
   A) stomach.
   B) liver.
   C) small intestine.
   D) large intestine.
   E) A and C

19) When eaten, nearly 90% of our dietary calories from fat are in the form of
   A) steroids.
   B) phospholipids.
   C) triglycerides.
   D) cholesterol.
   E) fat-soluble vitamins.
20) Bile is
   A) secreted by hepatocytes.
   B) manufactured by the gall bladder.
   C) released into the stomach.
   D) A and B
   E) A, B, and C

21) An enzyme that will digest proteins into peptides is

22) Most products of fat digestion are absorbed by

23) Decreased levels of bile salts in the bile would interfere with digestion of

24) In response to the arrival of acidic chyme in the duodenum, the blood levels of
   A) secretin rise.
   B) cholecystokinin fall.
   C) gastrin rise.
   D) enterocrinin fall.
   E) all of the above

25) A blockage of the ducts from the parotid glands would
   A) result in the production of more viscous saliva.
   B) impair the lubricating properties of saliva.
   C) interfere with carbohydrate digestion in the mouth.
   D) eliminate the sense of taste.
   E) all of the above

26) In response to the hormone secretin, the pancreas secrete a fluid
   A) rich in enzymes.
   B) rich in bicarbonate.
   C) rich in bile.
   D) that contains only proteases.
   E) that contains only amylase.
27) In response to the hormone cholecystokinin, the pancreas secretes a fluid
   A) rich in enzymes.
   B) rich in bicarbonate.
   C) rich in bile.
   D) that contains only proteinases.
   E) that contains only amylase.

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

28) The largest collection of _________ tissue in the body is the gut-associated lymphoid tissue (GALT).

29) Digestion is essentially completed in the _________.

30) The three sections of the small intestine, in order according to movement of its contents, are _________, _________, and _________.

31) Most absorbed nutrients first enter the blood of the _________ system.

32) The primary complex carbohydrate ingested and digested by people is _________.

33) After processing in the stomach, the gastric contents are referred to as _________.

34) Bile salts aid in the digestion of fats by _________ large fat droplets.

Match the following structures with the appropriate description.

   A. appendix
   B. colon
   C. duodenum
   D. ileum
   E. jejunum

35) distal-most section of small intestine

36) located at the ventral end of the cecum

37) section where chyme is processed to remove water and electrolytes, leaving waste products of digestion

38) location of most peptic ulcers
**Match the following structures with their functions.**

A. pancreas  
B. pylorus  
C. rectum  
D. small intestine  
E. stomach

39) organ where most digestion occurs  
40) location of the sphincter that prevents premature emptying of the stomach  
41) organ that adds exocrine secretions to the duodenum via a duct  
42) chyme is released from here

**Match the structure to its function.**

A. mouth  
B. stomach  
C. rectum  
D. small intestine  
E. large intestine

43) Fat digestion is completed here.  
44) Fat digestion begins here.  
45) Protein digestion is completed here.  
46) Protein digestion begins here.  
47) Carbohydrate digestion is completed here.  
48) Carbohydrate digestion begins here.

**Match each product with the cell or region that secretes or contains it.**

A. enzymes  
B. HCl  
C. \( \text{HCO}_3^- \)  
D. mucus  
E. more than one of these

49) pancreatic cells  
50) brush border
51) goblet cells

52) parietal cells

*Match the hormone with the correct statement.*

A. gastrin  
B. cholecystokinin  
C. secretin  
D. motilin  
E. gastric inhibitory peptide

53) stimulates insulin release

54) stimulates bile release

55) inhibits gastric emptying

56) secreted by cells in the stomach