

## Review for Unit Test: The Digestive System

1. Know the meaning of these terms:

heterotrophs	digestion	peristalsis	microvilli
autotrophs	chemical digestion	chyme	lacteal
intracellular digestion	mechanical (physical) digestion	enzymes	nutrients
extracellular digestion	absorption	sphincter	macromolecule
pouch digestive system	egestion	rugae	enzyme
tube digestive system	bolus	villi	substrate

2. Know the location and function of the following parts of the human digestive system:

salivary glands	cardiac sphincter	duodenum	caecum
pharynx	pyloric sphincter	pancreas	appendix
esophagus	bile duct	jejunum	large intestine
epiglottis	liver (know 4 functions)	ileum	rectum
stomach	gall bladder	ileoocaecal valve	anus

3. Know the secretions that are involved in digestion, including where they are made, where they act and what each secretion does:

saliva	hydrochloric acid (HCl)	sodium bicarbonate	bile
mucus (mucin)	gastric enzymes	pancreatic enzymes	intestinal enzymes

4. Know the macromolecules and their subunits, including:

- proteins
- triglycerides (fats and oils)
- three different polysaccharides and their subunits
- three different monosaccharides
- three different disaccharides

5. Review the chemical tests for starch, simple sugars, proteins and fats. What indicators are used for each? Describe the appearance of a positive result.

6. How is the digestive system of an earthworm superior to that of a Cnidaria (jellyfish or sea anemone)?

7. Compare and contrast:

- |   |                                  |
|---|----------------------------------|
| a) intracellular and extracellular digestion    | d) ingestion and digestion       |
| b) mechanical (physical) and chemical digestion | e) the trachea and the esophagus |
| c) the large intestine and the small intestine  |                                  |

8. Be able to label a diagram of an earthworm. Know the function of each of the major parts of the earthworm.

9. Know the six types of nutrients required by the human body. For each nutrient:

- state whether or not it needs to be digested in order to be absorbed
- if it is digested, what are its breakdown products (subunits)

10. Fibre is known as the “essential non-nutrient”. Why is fibre important for good health?

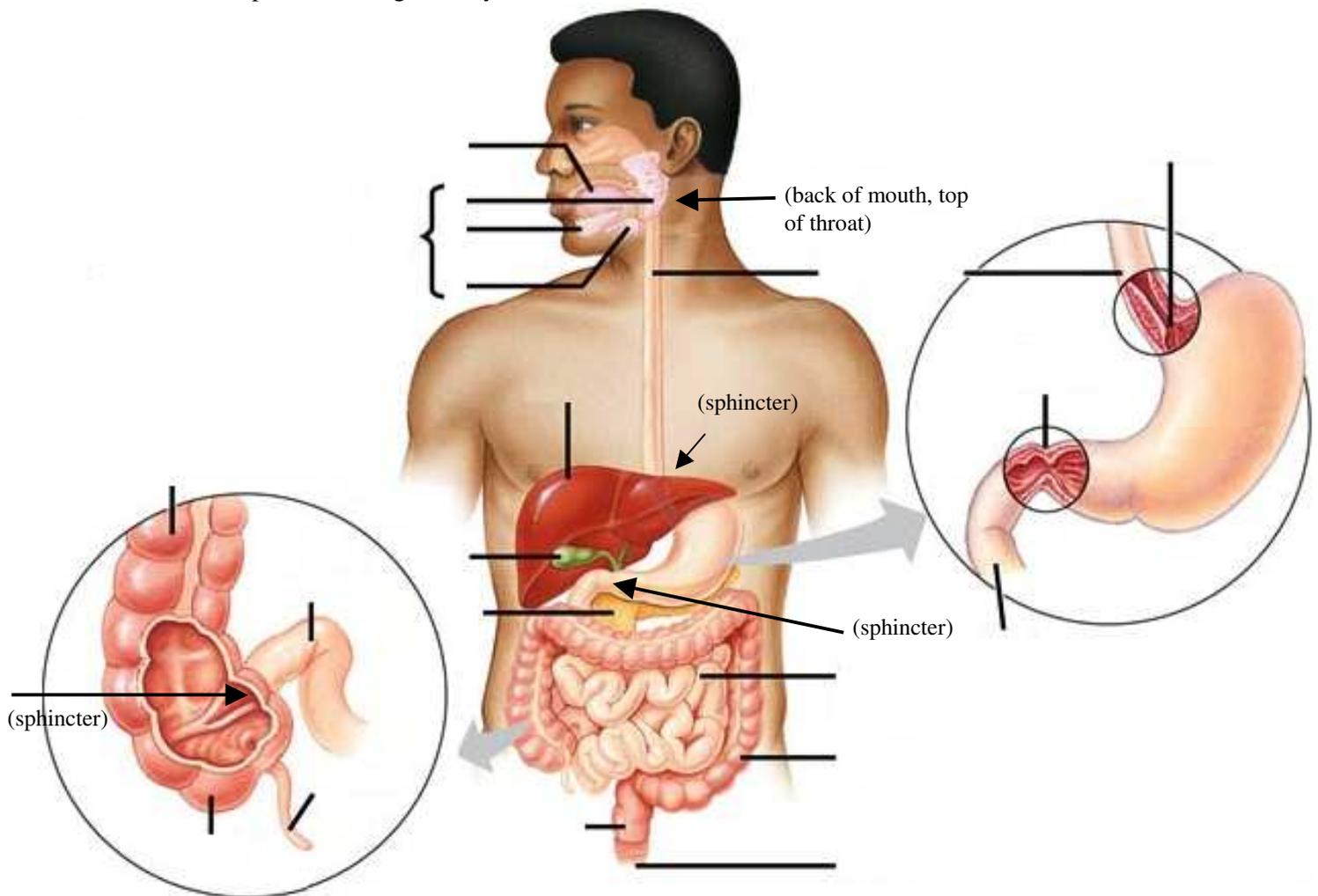
11. Review the material from the “Introduction to Nutrients” question page. Some of this material is review from our first unit on macromolecules. Know the function(s) of:

- two minerals
- two vitamins
- proteins (know 4 functions)
- lipids (know 4 functions of fats and 4 functions of cholesterol) and
- carbohydrates (know one function in animals)

12. Review the function of enzymes and how they work.

- What is the role of enzymes in digestion?
- What factors affect how well an enzyme functions?

13. Mucus has different functions in different parts of the body. What is the function of mucus in the esophagus and the stomach?
14. Pathogens may enter the digestive system along with food and water.
  - a) What enzyme is found in saliva that kills bacteria in the mouth?
  - b) What secretion(s) of the stomach kill bacteria?
15. What happens in the following disorders of the digestive system:
  - a) gastric ulcers
  - b) 'heartburn' (acid reflux aka GERD: gastroesophageal reflux disease)
  - c) gallstones
16. Many aspects of digestion and absorption involve increasing surface area.
  - a) Give four specific examples of where/when surface area is increased to improve digestion or absorption.
  - b) Why is it so important to increase surface area?
17. A student has a plate of nachos for a snack after school. It has tortilla chips (fat and starch), chili (protein), cheese (fat and protein), onions and peppers (fiber).
  - a) Beginning in the mouth, describe all of the different locations and ways that physical and chemical digestion occur.
  - b) Describe where/how the subunits of digestion are absorbed and how wastes are eliminated.
18. Label the parts of the digestive system:



### Practice Multiple Choice:

- Autotrophs obtain their energy by:
  - intracellular digestion of organic material
  - extracellular digestion of organic material
  - photosynthesis or metabolizing inorganic molecules
  - decomposing organic materials
- What happens to indigestible material after intracellular digestion has taken place?
  - it passes out of the cell by endocytosis
  - it is broken down by lysosomes
  - it is released into the cytoplasm for destruction
  - it passes out the cell by exocytosis
- During embryonic development, a blastula forms. This is a:
  - hollow ball of cells
  - zygote
  - miniature person in the head of a sperm cell
  - folded-in group of cells with endoderm and ectoderm
- The lining of the digestive system is formed by the:
  - endoderm
  - mesoderm
  - ectoderm
  - epidermis
- During intracellular digestion, digestive enzymes are:
  - secreted outside of the cell by exocytosis
  - not necessary because the cell is an autotroph
  - stored in lysosomes and released into food vacuoles
  - released into the cytoplasm by the ribosomes
- Which of the following are examples of intracellular digestion?
  - white blood cells performing phagocytosis and destroying pathogens
  - amoeba engulfing and digesting food
  - a jellyfish taking food into its internal cavity for digestion
  - an earthworm digesting food in its gizzard
  - I and II only
  - III and IV only
  - II and III only
  - I, II, III and IV
- Which of the following are examples of mechanical (physical) digestion?
  - teeth chewing and grinding food
  - peristalsis pushing food through the digestive tract
  - stomach muscles 'kneading' and mixing food as it makes it into chyme
  - an earthworm's gizzard grinding food with sand
  - I and II only
  - III and IV only
  - II and III only
  - I, III and IV only
- Which combination(s) of enzymes and substrates is/are correct?
  - pepsin breaks down protein
  - lipase breaks down triglycerides
  - amylase breaks down starch
  - all of the above
- Which of the following are examples of increasing surface area for digestion?
  - teeth chewing and grinding food
  - the stomach lining being folded into rugae
  - bile emulsifying globules of fat into small droplets
  - villi and microvilli protruding into the middle (lumen) of the small intestine
  - I and II only
  - III and IV only
  - I and III only
  - I, II, III and IV
- Which secretion(s) is/are correctly matched with their function?
  - pancreatic juice neutralizes stomach acid
  - gastric juice emulsifies large fat particles
  - intestinal enzymes digest cellulose in humans
  - all of the above are correct
- Which of the following is/are functions of mucus?
  - mucus in the nasal cavities traps dirt, bacteria and viruses as a non-specific first line of defense
  - mucus in the esophagus provides lubrication to help the bolus move to the stomach more easily
  - mucus in the stomach protects the stomach from being digested by stomach acid and enzymes
  - all of the above

12. Peristalsis takes place in the:  
 a) mouth                              b) stomach                              c) small intestine                              d) all of the above
13. The major site of absorption of nutrients in humans is the:  
 a) esophagus                              b) stomach                              c) duodenum                              d) jejunum
14. Bile is made in the:  
 a) gall bladder and secreted into the jejunum                              c) liver and stored in the gall bladder  
 b) gall bladder and used in the duodenum                              d) stomach and activated in the duodenum
15. Which of the following are true about saliva?  
 I) saliva contains lysozyme which kills bacteria in the mouth  
 II) saliva contains amylase which begins chemical digestion of starch  
 III) saliva moistens and lubricates food to make swallowing easier  
 IV) saliva contains proteases which begin the chemical digestion of protein  
 V) saliva contains lipases which begin the chemical digestion of fats  
 a) II and III only                              b) II, IV and V only                              c) I, II and III only                              d) I, II, III, IV and V
16. The finger-like projections that line the small intestine are called:  
 a) pili                              b) villi                              c) pylori                              d) lacteals
17. Heartburn is caused when stomach acid:  
 a) gets into the blood vessels and damages the heart  
 b) gets into the esophagus and damages its lining  
 c) escapes from the stomach because the pyloric sphincter is weakened or ineffective  
 d) digests the stomach wall when there is insufficient mucus protecting the stomach
18. The main nutrient absorbed in the large intestine is :  
 a) water                              b) fibre                              c) starch                              d) minerals
19. The structure which helps to prevent food or water from entering the trachea and lungs is the:  
 a) uvula                              b) epiglottis                              c) pharynx                              d) larynx
20. Which of the following is secreted into the stomach?  
 a) secretin                              b) chyme                              c) pepsinogen (pepsin)                              d) trypsin
21. Which of the following does NOT enter the duodenum?  
 a) insulin                              b) bile                              c) lipase                              d) chyme
22. Which of the following areas is/are NOT lined with mucus?  
 a) esophagus                              b) stomach                              c) intestine                              d) all have mucus
23. Which of the following are functions of the liver?  
 I) makes vitamins for the whole body  
 II) stores vitamins  
 III) detoxifies harmful substances  
 IV) stores glucose as glycogen  
 V) stores bile  
 VI) breaks down RBC and hemoglobin  
 a) I, III and VI only                              b) I, II, IV and V only                              c) II, III, IV and VI only                              d) I, II, III, IV, V & VI
24. Hydrolysis reactions:  
 a) break down macromolecules into their subunits by removing water  
 b) break down macromolecules into their subunits by adding water  
 c) build up macromolecules from their subunits by removing water  
 d) build up macromolecules from their subunits by adding water

25. Carbohydrates are important in living things because they:
- store energy
  - are important building blocks to make enzymes, ribosomes and muscle fibers
  - are the major structural component of cell membranes
  - all of the above
26. Which of the following is NOT a function of cholesterol?
- it is used to make bile
  - it is found in cell membranes
  - it is used to make steroid hormones
  - it is used to make bone
27. When fats are digested, they are broken down into:
- simple sugars
  - amino acids
  - glycerol and fatty acids
  - steroid hormones
28. Which list includes only minerals?
- zinc, sodium and potassium
  - calcium, cobalt and iron
  - magnesium, iodine and chloride
  - all of these are minerals
29. Minerals are:
- important in nerve transmission, muscle contraction and maintaining osmotic (water) balance
  - organic molecules that can be absorbed without being digested
  - required by the body in large amounts
  - all of the above
30. Vitamins are:
- made in the body as needed
  - required in relatively large amounts
  - micronutrients
  - all of the above
31. Proteins are used to make:
- enzymes such as lipase
  - transport molecules such as hemoglobin
  - structural body parts such as bone, hair and nails
  - all of the above
32. Which of the following is NOT a part of the digestive system?
- intestines
  - liver
  - kidneys
  - pancreas
33. Salivary amylase and pancreatic amylase are enzymes responsible for the chemical breakdown of:
- proteins
  - carbohydrates
  - lipids
  - nucleic acids
34. Enzymes from the pancreas enter the digestive system just below the:
- cardiac sphincter
  - pyloric sphincter
  - ileocaecal valve
  - epiglottis
35. The movement of digestion products, minerals, vitamins and water from the intestine into the blood and lymphatic vessels is called:
- absorption
  - digestion
  - egestion
  - indigestion
36. Contraction of smooth muscle around the small intestine churns and mixes the chyme with intestinal secretions in addition to moving it along. This is called:
- rugae
  - peristalsis
  - egestion
  - excretion
37. Which digestive organ mechanically and chemically transforms a food bolus into chyme?
- esophagus
  - stomach
  - small intestine
  - large intestine
38. The folds that line the stomach are called:
- rugae
  - pylori
  - villi
  - papillae
39. Beginning at the stomach, the correct order for the parts of the small intestine is:
- ileum, duodenum and jejunum
  - duodenum, jejunum and ileum
  - jejunum, ileum and duodenum
  - duodenum, ileum and jejunum

40. Beginning at the ileocaecal valve, the correct order for the parts of the large intestine is:
- caecum, rectum and colon
  - rectum, caecum and colon
  - colon, rectum and caecum
  - caecum, colon and rectum
41. The function of the villi in the small intestine is to:
- decrease the amount of exposed surface
  - help mix the digestive enzymes with chyme
  - increase the surface area for absorption
  - move particles along with a sweeping motion
42. When food is swallowed, it moves through or past the:
- larynx, epiglottis and down the trachea
  - uvula, pharynx, epiglottis and then esophagus
  - pharynx, then past the uvula and down the esophagus
  - epiglottis, cardiac sphincter and down the esophagus
43. The function of the tongue is to:
- moisten and lubricate food as it is chewed
  - increase the surface area of food
  - physically digest food in preparation for swallowing
  - push food to the back of the mouth for swallowing
44. If the epiglottis does not function properly, what might happen?
- the person might choke
  - acid reflux will damage the esophagus
  - the person might vomit
  - peristalsis can not take place
45. What macromolecule is used to store glucose in the liver?
- starch
  - amylose
  - cellulose
  - glycogen
46. Which standard test and nutrient are correctly paired?
- if starch is present, Biuret solution turns purple
  - if protein is present, iodine solution turns black
  - if glucose is present, Benedict's solution turns orange
  - if lipids are present, litmus turns red
47. The esophagus:
- connects the mouth to the stomach and has no function in chemical digestion
  - secretes digestive enzymes as food passes from the mouth to the stomach
  - secretes a thick layer of mucus to protect it from stomach acid and enzymes
  - is the major site for chemical digestion and absorption of fats
48. The primary digestive function of the stomach is to:
- store, digest and absorb food nutrients
  - move food along by peristalsis
  - secrete HCl which is needed in the small intestine
  - begin the break down of fats and proteins
49. Chemical digestion of food takes place in the:
- mouth
  - esophagus
  - stomach
  - small intestine
  - large intestine
- I, II and III only
  - III, IV and V only
  - I, III and IV only
  - I, II, III, IV & V
50. The primary function of the small intestine is to:
- maintain constant levels of nutrients in the blood
  - kill bacteria in food
  - pass indigestible waste from the body
  - digest and absorb nutrients
51. The pancreas is considered an accessory organ for the digestive system because it:
- secretes important digestive enzymes into the small intestine
  - secretes bile into the small intestine
  - helps to regulate the amount of water in the small intestine
  - removes toxins that may have been absorbed from the food
52. The throat divides into the trachea and esophagus. What prevents food from entering the trachea?
- the uvula
  - the tongue
  - the larynx
  - the epiglottis

53. Bile is:
- produced in the gallbladder
  - important in the digestion of proteins
  - an emulsifier to break fat into small droplets
  - all of the above
54. Villi, microvilli, and the folds of the small intestine all function to:
- prevent the intestine from digesting itself
  - provide crevices where bacteria can live
  - secrete important enzymes
  - increase the surface area for absorption
55. Which of the following is NOT a function of the liver?
- to monitor glucose levels in the blood
  - to digest food as it passes through the liver on the way to the large intestine
  - to break down red blood cells when they get too old
  - to aid in digestion by producing bile
56. The primary role of the large intestine is to:
- complete the breakdown of indigestible food
  - absorb water and some minerals and vitamins
  - maintain a sterile environment where no bacteria can grow
  - secrete the enzyme lactose to break down lactase
57. Which of the following is/are function(s) of bacteria in the human digestive system?
- a healthy gut flora competes with pathogens to limit their growth
  - bacteria produce vitamin B12 and vitamin K which are absorbed and used in the body
  - bacteria help to reabsorb water from the large intestine
  - all of the above
58. Which is the correct order that food travels through the digestive tract?
- mouth, pharynx, stomach, small intestine, large intestine and rectum
  - mouth, esophagus, stomach, large intestine, small intestine and rectum
  - mouth, stomach, esophagus, small intestine, large intestine and rectum
  - mouth, stomach, pharynx, small intestine, large intestine and rectum
59. Which of the following does NOT manufacture digestive juices?
- liver
  - kidneys
  - stomach
  - pancreas
60. Which of the following enzymes is secreted by the stomach and what does it digest?
- trypsin, which digests protein
  - trypsin, which digests starch
  - pepsin, which digests lipids
  - pepsin, which digests protein
61. Methanogens live in the human gut. They belong to:
- Domain Archaea, Kingdom Bacteria
  - Domain Bacteria, Kingdom Archaea
  - Domain Eukarya, Kingdom Protista
  - Domain Archaea, Kingdom Archaea
62. Which of the following lists includes only disaccharides?
- lactase, maltase and sucrase
  - glucose, fructose and galactose
  - cellulose, amylose and mannose
  - sucrose, lactose and maltose

**Answers to multiple choice:**

1. c	11. d	21. a	31. d	41. c	51. a	61. d
2. d	12. c	22. c	32. c	42. b	52. d	62. d
3. a	13. d	23. c	33. b	43. d	53. c	
4. a	14. c	24. b	34. b	44. a	54. d	
5. c	15. c	25. a	35. a	45. d	55. b	
6. a	16. b	26. d	36. b	46. c	56. b	
7. d	17. b	27. c	37. b	47. a	57. d	
8. d	18. a	28. d	38. a	48. d	58. a	
9. d	19. b	29. a	39. b	49. c	59. b	
10. a	20. c	30. c	40. d	50. d	60. d	