

Name: _____

AP Biology


Chapter 33 Active Reading Guide **Animal Nutrition**

Section 1

1. When asked “Why do animals eat?” you might answer something like “in order to live.” However, this would not be a college-level response, so carefully read the first few paragraphs of this concept to pull out what animals must obtain from the food they eat.
2. What are essential amino acids? What must vegetarians do in order to obtain them?
3. Which category of vitamin, water-soluble or fat-soluble, is most likely to result in overdose? Why?
4. What is the difference between being undernourished and malnourished?

Section 2

5. Tell what happens in each of these stages of food processing:
ingestion:

digestion:

absorption:

elimination:

6. What is an alimentary canal? Where does it begin? Where does it end?

7. In what sense are nutrients from a recently ingested meal not really “inside” your body before they enter the absorption stage of food processing?

Section 3

8. Food is kept in compartments during digestion by muscular valves called _____.
9. What keeps food from entering the lungs when we swallow?
10. What is the term for the wavelike muscular contractions that are moving the bolus to the stomach?
11. There are two types of digestion, mechanical and chemical.
 - a. What type involves enzymes? _____
 - b. What type of digestion is accomplished by the chomping of the teeth and the churning activity of the stomach? _____
12. Here are some digestive secretions that are not enzymes. What is the function of each?
mucus:

bile:

bicarbonate:

hydrochloric acid:
13. Does stress cause ulcers? Discuss the finding that received the 2005 Nobel Prize.

14. What is the pH of the stomach? _____ Of the small intestine? _____
15. Explain, based on tertiary structure, why pepsin does not function in the small intestine.
16. What is the function of bile?
17. Where is bile produced? _____ Where is it stored? _____
18. Remember the mantra: Structure fits function. How is that true for the villi of the small intestine?
19. Triglycerides are digested by lipase, diffuse into epithelial cells of the villi, and are packed into chylomicrons. Where do these chylomicrons go?
20. Explain the absorption of fats.
21. What are the lacteals?
22. Monosaccharides and amino acid move directly into capillaries in the villi and then travel to the liver via the hepatic portal vein. What two major functions does this arrangement serve?
23. Summarize here: What are the two functions of the small intestine?

24. Many enzymes are involved in the process of digestion. Use Figure 33.10 to complete the following table. You need to know where each enzyme is produced and what its substrates and products are. This will require careful study of the following table.

	Carbohydrates	Proteins	Nucleic Acids	Fats
Mouth				
Stomach				
Lumen of Small Intestine				
Epithelium of Small Intestine				

25. The small intestine connects to the large intestine at a T-shaped junction. One arm forms a blind pouch called the cecum. What is the role of the cecum in grazing animals?

26. What is the human appendix? What is its role?

27. What is a major function of the colon?

28. What makes up the feces?

29. Your colon is inhabited by an immense number of bacteria. Although they produce sometimes embarrassing gases and odors, they are actually your friends. What do your symbiotic bacteria do for you?

Section 4

30. From a study of the dentition of a mammal's skull, you should be able to determine its diet. Explain.

31. Why do herbivores have longer alimentary canals than those of carnivores?

Section 5

32. In humans, the first sites used for energy storage are _____ and _____ cells. Once these sites are full, how is any additional energy stored?

33. Explain the role of the two pancreatic hormones insulin and glucagon in glucose homeostasis.

34. Overnourishment causes obesity. What is obesity?

35. What health problems are related to obesity?

36. What is the role of leptin in maintaining body fat levels?