Nutrition & Ruminant Anatomy Notesheet C. Kohn, Waterford WI

Name: Hour Date:

Date Assignment is due: Why late? Score: + ✓ -  
 Day of Week Date If your project was late, describe why**Directions**: Use the accompanying PowerPoint (*available online*) to complete this sheet. This sheet will be due upon the completion of the PowerPoint in class. These assignments are graded on a +/✓/- scale.

1. Nutritional requirements from   
     
   and even from in many cases.
2. The science of nutrition studies
3. An animal nutritionist is a professional who
4. What are the six types of nutrients needed by all living species?
5. True or false: all living organisms need the same nutrients. Explain:
6. What are six roles played by water in the bodies of animals?
7. True or false: water is the most important nutrient. Explain:
8. What is the primary role played by carbohydrates in the diet?
9. Carbohydrates are composed of
10. Carbohydrates are broken down into by
11. What will happen if an animal’s diet is too low in carbohydrates?   
      
       
      
    Is this a good thing? Explain:
12. What can also serve as a source of energy in an animal’s diet?
13. Which is more likely to depend on fat for energy, a carnivore or herbivore? Why?
14. If cows are herbivores, from what sources do they obtain dietary fat?
15. Dietary proteins are the of in animals.
16. Proteins are the in an animal’s body.
17. Proteins do in cells and are required for the
18. Proteins are made of
19. True or false: a cow should have all 27 amino acids in its diet. Explain:
20. What is the difference between an essential and a nonessential amino acid?
21. True or false: proteins are an excellent source of energy for an animal. Explain:
22. What is the difference between protein catabolism and anabolism?
23. Vitamins are catalysts, which means that they
24. How are vitamins different from other nutrients like carbohydrates and fats?
25. What are the two categories of vitamins?
26. Fat soluble vitamins are stored in the and are
27. The fat soluble vitamins are . Briefly summarize the role of each vitamin below:  
      
    A   
      
    D   
      
    E   
      
    K
28. Water soluble vitamins must be by animals as they cannot be   
      
     .
29. True or false: Vitamin C supplementation is important for the diets of cattle. Explain:
30. Summarize the roles played be each of the following:   
      
    B1/B3:   
      
    Choline:   
      
    B12:
31. Minerals are required in   
      
    in the diets of animals and can be classified as either
32. Macrominerals are needed
33. Summarize the role of each of the following macrominerals using the space provided. Abbreviate if needed:   
      
    Calcium/Phosphorus:   
      
       
      
    Potassium:   
      
       
      
    Magnesium:   
      
    Sodium/Chlorine:   
      
       
      
    Sulfur:
34. Microminerals are known as and are needed
35. True or false: microminerals are less important to the diet than macrominerals which is why they are needed in smaller doses.
36. Summarize the role of each of the following microminerals using the space provided. Abbreviate if needed:   
      
    Iron:   
      
    Copper:   
      
    Zinc:   
      
    Fluorine:   
      
    Manganese:
37. What is anemia?
38. What is perosis?
39. While animals have widely-varying digestive strategies, what do all these strategies have in common?
40. Briefly summarize each of the following kinds of digestive strategies:   
      
    Monogastrics:   
      
    Avian:   
      
       
      
    Ruminants:   
      
       
      
    Post-gastric Fermenters:
41. The primary difference between monogastrics and ruminants is
42. What is the primary role of microbes in a ruminant tract?
43. True or false: many of the structures in a ruminant perform the same functions in a similar manner as a monogastric organism.
44. Summarize the three main advantages of ruminants:
45. Summarize the three main disadvantages of ruminants:
46. How long does it take for food to move through the tract of a ruminant?
47. This process begins in the mouth with in order to
48. This enables
49. The saliva of the cow plays two key roles in digestion. These are…
50. What is happening when a cow chews its cud?
51. Why is this necessary?
52. What is reverse peristalsis?
53. What is rumination?
54. What is eructation?
55. Why is eructation so important?
56. Write the four stomach chambers in order:
57. The rumen is kind of like a
58. Inside live in an   
      
    where
59. What are the two possible outcomes for feed in the rumen once it is fermented?
60. The forage will remain in the rumen for . Why does it remain in the   
      
    rumen for this long?
61. As plant matter is broken down, it will where   
      
    it can
62. Why are rumen contractions necessary?
63. Almost all feed ingested by the cow is actually used to feed
64. The cow itself gets
65. Fermentation occurs under . Why?
66. \_\_\_\_\_\_\_\_\_\_ provide the majority of the energy for the cow.
67. A VFA is a . VFA’s are absorbed by the  
      
     and provide \_\_\_\_\_\_% of the energy needs of the cow.
68. What would happen if the VFA’s were not absorbed by cow?
69. What are papillae?   
      
    What do they do for the cow?
70. What are the four key services provided by rumen microbes to a cow? Summarize them below:
71. True or false: calves under 3 months old are not ruminants. Explain:
72. What is the esophageal groove?
73. From where does a calf get the microbes for its rumen?
74. As the calf matures, the rumen and omasum
75. Rumen papillae will
76. If the calf cannot digest forage before 3 months, how does it meet its energy needs? &
77. The reticulum is a of the and is   
      
    considered the of the cow’s stomach.
78. What is the job of the reticulum?
79. It has a structure that is
80. After day-old forage is , it moves to the , the
81. The omasum resembles
82. The rumen will inject a of into this structure.
83. What is the job of the omasum?
84. The folds to maximize
85. The is the chamber and the stomach and operates   
      
    much like by
86. What makes a cow’s abomasum unique from other true stomachs?
87. What is a lysozyme?
88. After the abomasum, the plant matter will enter the . What happens   
      
    here?
89. What are villi? What is their function?
90. How is the digested food moved through the small intestine?
91. Any plant matter that remains after the small intestine will be passed on to the
92. This is the site of , with a small amount of   
      
     . How is this site different in animals like horses?
93. Besides a small amount of fermentation, what important function happens in the large intestine?   
      
     . What would happen if the large intestine became infected and swollen?
94. Any plant matter that remains at this point is

Unit Wrap-up C. Kohn, Agricultural Sciences - Waterford WI

This page is designed to help raise your grade while enabling you to develop skills you will need for after high   
school. You will need to complete every question and blank in order to receive full credit for your notes. Note: if you cannot come up with a strategy to remember a difficult concept on your own, see your instructor for help.

1. What is a topic or concept from this unit that you found to be more challenging? Write or describe below:  
     
      
     
   In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
2. What is a 2nd topic or concept from this unit that you found to be more challenging? Write or describe below:  
     
      
     
   In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
3. What is a 3rd topic or concept from this unit that you found to be more challenging? Write or describe below:  
     
      
     
   In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
4. Circle the most appropriate response. You will only be graded on whether or not you completed this section, so be entirely honest with yourself when completing this section.

Circle one: *I used my notes outside of class to prepare for the quiz.* Definitely – Yes – Sort of - No

Circle one: *I took extra notes in the margins for very difficult concepts.* Definitely – Yes – Sort of - No

Circle one: *I created a personal strategy for at least three difficult items.* Definitely – Yes – Sort of - No

Circle one: *I was very involved and actively studying during the quiz review.* Definitely – Yes – Sort of - No

Circle one: *I think I will be satisfied with the quiz grade I received this week.* Definitely – Yes – Sort of - No

Circle one: *I might need to meet with the instructor outside of class.* Definitely – Yes – Sort of - No