**Example: AVS 411 Exams**

**Multiple choice questions**

1. A dairy cow is a:
2. In a mono-gastric animal, stomach neck chief cells secrete:
3. What is the major stimulating factor in secreting digestive enzymes:
4. What are the major functions of bile:
5. In proximate analysis, “ash” indicates amount of:
6. In fiber analysis, NDF indicates amount of:
7. In fiber analysis, ADF is great measure of:
8. A well-known example of “glucans” is:
9. “Prostaglandins” belong to:
10. “C3H6O2” is also known as:
11. A good example of “transport” proteins is:

Q- An example of ruminant concentrate eater is:

1. Reticulum secretes:
2. “Muscularis mucosa” is:
3. Major sources of rumen microorganisms are:
4. Major functions of saliva in ruminants are:
5. Methane production in the rumen is an important event because:
6. Rumen fungi are good at degrading:
7. “ *Prevotella species*” can use the following as substrate:
8. Bacterium “ *Fibrobacter succinogens*” can use the following as substrate:
9. Bacterium “*Anaerovibrio lipolytica*” can use the following as substrate:
10. Bacterium “*Ruminococcus felvefaciens*” is most numerous when diet contains large amount of:
11. Bacterium “*Butyrovibrio fibsrosolvens* ” is a major producer of:
12. The protozoa “*Holotrichs*” become least numerous when diet contains large amount of:
13. The flagellate “*Monoceromonas ruminantium*” uses the following as main substrate:

Q- In cattle under natural habitat, the following VFA is the least predominant one:

1. Which one is proportionally increased when you feed 20% concentrate (DM basis)?

Q- Which one is going to produce more energy if you combust it in a bomb calorimeter?

1. Which one is the major factor in perpetuating rumen acidosis?
2. On a molar basis, which one of following is going to produce more energy in the body:
3. What is the function of abomasal lysozome?
4. VLDL is a major transporter of:
5. What is the major function of apolipoprotein CII:
6. Under low dietary CP condition, RDP is a major source of:
7. Under high dietary RDP condition, ruminal NH3 is:
8. Ruminal degradation of cellulose results in production of :
9. Major source(s) of glucose in the body include:

Q- Too much nitrate in water causes:

1. There is a lesser protein content in:
2. Would twining have an effect in feed intake? How?
3. When consuming rice straw, which one of the following affects the intake the most?
4. Which one of the following VFAs is most affected when there is low supply of succinate:

Q- When consuming steamed flake corn, which one affects the intake the most?

1. Why the “gastric hunger” theory could not explain the feed intake regulation by itself:
2. Why the “lipostatic ” theory could not explain the feed intake regulation by itself:
3. Which VFA has shown the lowest impact on feed intake?
4. Cholecystokinin is released from ……. and ……….. the intake
5. Which one of the following factor affects the feed intake:
6. Which one of the following has a greater capacity to carry “cholesterol esters” in plasma:

An example of a microbe producing propionic acid from succinate is:

Q- In cattle nutrition, 1 kg TDN is approximately equal to ……:

1. For NEL, the efficiency of ME utilization for maintenance is equal to ?

Q- In NE system, net energy for growth is determined based on?

1. A dairy cattle body condition score of ~ 3.25 at parturition is considered:
2. A dairy cattle body condition score of 3.0 at mid-lactation indicates:
3. Which one is the important precursor for synthesis of “butyric acid” in the ruminal carbohydrate degradation?
4. Which one of the following catalyzes the synthesis of acetyl Co-A:
5. What does heat production include:
6. Amino acid composition of microbial proteins is affected the least by:
7. Limiting amino acid in microbial protein is:
8. Which one produces more gross energy?
9. What factor(s) could reduce rumen degradability of proteins:

Q- The following is an example of “catecholine mimics”:

1. In determining “biological value” of a feed, fecal N needs to be adjusted by :
2. By increasing rumen degradation of fibrous carbohydrates, we firstly expect to observe:
3. To increase synthesis of microbial proteins, we may try to:
4. When ionophores are used, the results include:
5. Which one of the factor(s) may support greater protein sources for lactation:
6. Heat increment will increase with:
7. Which one of the following has a lower NEg requirement per unit of BW0.75:
8. Which one of the following has a greater NEl requirement per day:
9. How do β agonists affect BW gain:
10. Utilization of ME for growth……… when ME intake is below maintenance:
11. Protein requirements for growth per unit weight………. with age:
12. Efficiency of ME utilization is related to :

**Short essays**

* What are the functions of gastric enzymes? (3 points)
* What are the primary enzymes for carbohydrates digestion? In your answer, include their sources and products (6 points).
* What are the primary enzymes for proteins digestion? In your answer, include their sources and products (6 points).
* Name three major functions of rumen microorganisms (3 points).
* Define the process of “rumination” (3 points).
* Name two examples for “true bacteria” and two examples for “facultative microorganisms” (4 points)
* Briefly explain feed-related factors that affect feed intake (5 points).
* Briefly explain what occurs in the rumen when you change a cattle ration from 85% forage-15% grain to 35% forage-65% grain (DM basis; 5 points).
* What are the major functions of butyric acid (5 points)?
* Briefly explain main characteristics of chylomicron compared to that of VLDL (5 points).
* Briefly describe what you would look for in assessing water quality for ruminant consumption (5 points)
* Name three methods of measuring heat production (HP) and then define one of them you know best (5 points).
* Briefly explain factors that affect milk energy (5 points).
* Briefly explain the function and importance of NPN in ruminant nutrition (5 points).
* How would you support a greater “average daily gain” in a beef operation through manipulation of rumen microbial population (5 points)?
* What are the assumptions made when conducting a Carbon-Nitrogen balance experiment (5 points)?
* Briefly explain how you experimentally determine NEm.

**Comprehensive essays**

* Explain functions of each compartment of the ruminant forestomach (8 points).
* Explain the importance and function of reticulum groove (4 points).
* What are the advantages and disadvantages of having an established protozoa population in the rumen (4 points)
* Explain the process lipid digestion (4 points)
* Explain both dietary and animal factors that affect water losses (6 points).
* Explain how each of the main VFAs is produced in the rumen [Hint: using a chart (schematic) may be useful (7 points)].
* Explain how proteins are degraded and partitioned in ruminants; start with dietary protein and go all the way to end products (Hint: using a chart (schematic) may be useful (6 points).
* Describe in details how lipid digestion and absorption post-ruminally take place (6 points)
* Explain how proteins are partitioned in ruminants; start with dietary Nitrogen sources; using a chart may be useful (7 points).
* Name all the factors that affect heat production and explain two of them in detail (6 points).
* Explain in details all the important factors that affect requirement of net energy for lactation (NEL) (7 points).