



تغذية أبقار الحليب

سنوات فاينل

اللجان الطلابية-كلية الزراعة
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اللجان الطلابية تتمنى لكم دراسة موفقة

Dairy Cattle Production 602215
(Make up Final Exam, 80 points)

Department of Animal Production
School of Agriculture
Date: July 5th, 2023

Name:
ID #:

1. Choose ONE best answer:

(40 P)

1. Bacteria provide a very high-quality type of this macronutrient for the ruminant host:
(a) Vitamin Z (b) Protein (c) Water (d) Carbohydrate

2. Milk yield is primarily determined by the synthesis of this milk component:
(a) Fat (b) Urea (c) Lactose (d) Protein

3. The primary difference between ruminants and monogastric animals regarding carbohydrate digestion is:

- ☒ A) Both extensively utilize pre-gastric fermentation
☐ B) Both extensively utilize post-gastric fermentation
☒ C) Monogastrics have more pancreatic amylase and more glucose absorption in the small intestine.
☐ D) Biohydrogenation

4. Feeding ruminants a high concentrate diet can sometimes cause rumen acidosis.
(a) True
(b) False

5. Which of the following is NOT a function of saliva in ruminants?

- A) Provides 70% of water in the rumen. ✓
☒ B) Source of salivary amylase.
C) Lubrication ✓
D) Bicarbonate for buffering of rumen fluid. ✓

6. The abomasum and omasum both synthesize and secrete HCl.

- (a) True
☒ (b) False

7. What is the primary structure for prehension in dairy cows?

- (a) Teeth (b) Lips (c) Tongue (d) Beak

8. When a ruminant is unable to eructate, this can occur

- (a) Acidosis (b) Shingles (c) Bloat (d) Laminitis

9. Following triglyceride hydrolysis in the rumen, the glycerol back-bone is
 (a) Converted to melamine (b) Fermented to VFA (c) Isomerized (d) Biohydrogenated
10. Biohydrogenation is a process by which microbes reduce the toxicity of
polyunsaturated fatty acids.
 (a) True
 (b) False
11. The process by which glucose is metabolized into pyruvate is called:
 (a) Gluconeogenesis (b) glycolysis (c) Oxidation (d) Hydrogenation
12. The average amount of gases that eructated by a dairy cow is estimated as 30-80 L/d.
 (a) True
 (b) False
13. In ruminant animals, bacteria account for 60-90% of total microbial mass in rumen.
 (a) True
 (b) False
14. What is the compartment of ruminant digestive tract that collects hardware and has a honeycomb like appearance?
 (a) Omasum (b) Rumen (c) Reticulum (d) Abomasum
15. The percentage of nitrogen in urea is
 (a) 54% (b) 16% (c) 4% (d) 45%
16. Which of the following is not one of the immunoglobulins found in colostrum?
 (a) IgG (b) IgM (c) IgC (d) IgA
17. A cow calving for the third time will produce colostrum that contains a higher percentage of antibodies than a cow calving for the first time.
 (a) True
 (b) False
18. Colostrum is greater in lactose and fat content than whole milk.
 (a) True
 (b) False
19. Which of the following immunoglobulins is the most prevalent in colostrum and helps provide protection against invading pathogens in newborn calves?
 (a) IgA (b) IgM (c) IgG (d) IgE

- a 20. Colostrometer and refractometer are considered the primary tools for assessing colostrum quality.
 (a) True
 (b) False
- d 21. This hormone is secreted by the anterior pituitary and is required for the final stages of follicular development and maturation, and a surge of this hormone triggers ovulation to occur?
 (a) FSH (b) Estrogen (c) Progesterone (d) LH
- c 22. This hormone is stored in the posterior pituitary and released from there and responsible for water balance in the body?
 (a) FSH (b) Oxytocin (c) ADH (d) Estrogen
- b 23. This hormone is secreted from the ovary and placenta and responsible for relaxing the pelvic bones and cervix during parturition.
 (a) Inhibin (b) Relaxin (c) LH (d) Progesterone
- b 24. The nervous system controls the processes which require more time, while the endocrine system controls the rapid adjustments to changes in the environment.
 (a) True
 (b) False
- T 25. The sympathetic system controls the body during stress, while parasympathetic system controls the body during rest.
 (a) True
 (b) False
- a 26. One of the following glands is an example of exocrine glands.
 (a) Sweat (b) Hypothalamus (c) Ovary (d) Testes
27. Which of the following hormones is responsible for development of the duct system in the mammary gland?
 (a) Prolactin (b) Estrogen (c) LH (d) Progesterone
28. The primary sign of heat in dairy cows is.
 (a) hyperactivity (b) Increase rectal temperature (c) cows stand to be mounted (d) Red
- a 29. In dairy cows, ovulation occurs 10-14 h (around 12 h) after the end of estrus.
 (a) True
 (b) False
- b 30. In artificial insemination, the inseminator deposits the semen in the vagina of the female reproductive tract.
 (a) True
 (b) False

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40. Removal of adrenal gland in animal results in immediate increase in milk yield.
- (a) True
(b) False

Question 2: Explain in detail how do ruminants utilize the butyrate? (5 P)

After butyrate absorbed through rumen wall to be used by rumen epithelial cells as energy source 80% of it will be converted to ketones (BHBA) very low butyrate level in blood, (BHBA) oxidized in cardiac and skeletal muscle or utilized for fatty acid synthesis to become as fuel.

Question 3: Regarding protein metabolism in ruminants, explain in detail the concept of Nitrogen recycling? (5 P)

Ruminants consume nitrogen from protein and as NPN then get initially broken down by rumen microbes into NH_3 to be used by rumen microbes to synthesize microbial protein to be digested and absorbed into small intestine and the excess ammonia absorbed into blood stream to be transported to the liver to be converted into urea. This urea have two pathways excretion or recycling.



Question 6. Explain in detail how does the process of milk letdown start? (11)

by Teat stimulation for around 10 seconds
oxytocin Released by posterior pituitary
gland then oxytocin binds to the Receptors
on Myoepithelial cells located in the surrounding
the alveoli then milkdown after the teat
stimulation for 45-60 seconds.

Question 7. What are the 5 Q's of colostrum management in dairy calves? Mention the recommended guide for each Q? (5 P)

Quality \rightarrow $>50\%$ IgG (recommended 150-200 IgG at 1st feeding)

Quantity \rightarrow 10-15% of birth weight

Quickness \rightarrow within 2-4 hrs.

Squeaky clean \rightarrow bacterial contamination $< 100,000$ CFU/ml

Quantifying passive transfer \rightarrow monitoring

Question 8. List down hormones that are secreted by pituitary glands? (5 P)

① Growth Hormone (GH)

② (TSH) Thyroid-stimulating hormone

③ (ACTH) adrenocorticotrophic hormones

④ FSH

⑤ LH

⑥ prolactin

⑦ Endorphins

Posterior pituitary:

① ADH

② Oxytocin