



ANIMAL PRODUCTION EXAM
3rd YEAR

January 5, 2013

Time allowed: 3 hours

Answer the following questions: (Total points 150 equal 50 Degrees):

I. Choose the correct answer, only one answer per question (20 points):

- 1. Which of these definitions are true for the lactation persistency:**
 - A. The ability of cow to maintain their high production,
 - B. The rate of decline in yield after calving,
 - C. Prolonged and steady production after the peak.
 - D. All of the above.**
- 2. Sperm can live for how many hours after being deposited in the cow's reproductive tract.**
 - A. 8 - 12 hours.
 - B. 13 - 15 hours.
 - C. 18 - 24 hours.**
 - D. 24 - 30 hours.
- 3. Feed costs generally account for _____ of the cost producing milk.**
 - A. 15%.
 - B. 25%.
 - C. 60%.**
 - D. 85%.
- 4. Which one of these is not disadvantage of purchasing replacement heifers:**
 - A. There is a risk of bringing disease into the herd.
 - B. There is no return on invested capital in the heifer and her feed care for 2 to 2½ years.**
 - C. It is often difficult to find good replacements and purchase them at a reasonable price, at the time they are needed.
- 5. The rate of culling can be increased if:**
 - A. The generation interval is shortened (Heifers freshening at 24 rather than 30 to 36 months of age),
 - B. Reproductive efficiency is high (less cows culls as non-breeders, and more calves),
 - C. Calf mortality is low.
 - D. All of the above.**
- 6. The more milk production produces by the older animals may be due to:**
 - A. The older heifer is closer to matured body size and diverts less nutrients into body tissue growth,
 - B. An ability to eat more, relative to requirements for growth and maintenance, and
 - C. She may have more developed mammary gland tissue.
 - D. All of the above.**

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7. Milk can be described as:

- A. An oil-in-water emulsion with the fat globules dispersed in the continuous serum phase.
- B. A colloid suspension of casein micelles, globular proteins and lipoprotein particles.
- C. A solution of lactose, soluble proteins, minerals, vitamins, other components.

D. All of the above

8. The best time to breed dairy cattle can be obtained by breeding during the last half of standing heat period. This time depends on what?

- A. Most cows remain in standing heat about 18 hours.
- B. The egg becomes available for fertilization about 10-12 hours after the end of standing heat and the egg remains fertile about 6 hours.
- C. Sperms remain alive inside the cow for approximately 24 hours and sperms must be in the female reproductive tract about 6 hours before they can reach the egg to fertilize it.

D. All of the above.

9. What is the primary reason a cow does not show estrous?

- A. lactation.
- B. dry period.
- C. mastitis.
- D. pregnancy.**

10. The major synthesized protein precursors are:

- A. Free amino acids.**
- B. α -lactoalbumin.
- C. β -lactoglobulin.
- D. Enzyme.
- E. Casein.

11. The fore-quarter udder usually are smaller than rear-quarters udder and secrete about -----X----- of the milk produced by the cow.

- A. 45%
- B. 40%**
- C. 35%
- D. 30%
- E. 20%

12. If adrenalin release is stimulated before the milk ejection, it almost ----- milk ejection.

- A. Partially inhibit
- B. Has no inhibition on
- C. Completely blocks**
- D. Non of the above.

13. For each unit of milk synthesized, the units of blood must pass through the udder ranged from:

- A. 400 – 500 units of blood**
- B. 800 – 900 units of blood
- C. 600 – 700 units of blood
- D. All above correct.

14. The casein in milk is part of which nutrient?

- A. Lactose
- B. Carbohydrate
- C. Fat
- D. Protein.**

15. Normal milk is approximately what percent total solids:

- A. 20%
- B. 13%**
- C. 10%
- D. 25%.

16. -----'s function is picking up yolk from body after release from follicle:-

- A. Infundibulum**
- B. Magnum
- C. Isthmus
- D. Uterus.

17. Length of incubation period in Turkey is:-

- A. 21 day.
- B. 18day.
- C. 28 days.**
- D. 32 days.

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18. Prolonged exposure to temperature above 40.5 c° is associated with

- A. embryo fails to hatch
B. reversible injury to the embryo
C. irreversible injury to the embryo
D. both A and C.

19. Pure Egyptian chicken breeds include:

- A. Fayoumi and Baladi**
C. Montazah and Baladi
B. Dokki 4 and Alexandria.
D. Matrouh and Gimmizah.

20. ----- is not a disadvantage of artificial incubators:

- A. High incidence of chest diseases between workers.
B. High incidence of disease transmission as salmonella.
C. Disease transmission from hens to new hatched chicks.

II. Correct the following statements: (40 points)

1. Calves born to dams which have experienced no calving difficulty had a higher **mortality** rate. (**Survival**).
2. Survival of calves was higher when fed **colostrum** rather than milk replacer. (**Whole milk**).
3. Cows with a **high** return over feed cost per day should be culled. (**low**)
4. In dairy farms, if most of cows are culled for non-genetic reasons (non-breeders those with mastitis, those that have died, etc.), **more** genetic progress is possible. (**reduced /low**)
5. The rate of culling can be **decreased** if the generation interval is shortened, reproductive efficiency is high and calf mortality is low. (**Increased**).
6. Check for heats at least 2 or 3 times **weekly**. (**daily**).
7. At calving, milk production commences at a relatively high rate, and the amount of milk secreted continues to increase until reaching peak milk at about 6 to 8 **months**. (**Weeks**)
8. **Initial** milk production determines the milk yield for entire lactation i.e. ONE additional kg of peak milk translates into approximately 200 to 250 kg of additional milk over the entire milk. (**Peak**)
9. Higher-producing cows usually take **shorter** than lower- producing cows to achieve peak production. (**Longer**).
10. A gradual loss of **90%** of production per month is normal, and yields should not drop below half peak yield before the 8th month of lactation. (**10%**)
11. Cows must have high persistency as well as high peak milk production for high **reproductive efficiency** when compared to cows with equal peak yield but lower persistency. (**Lactation milk yield**).
12. Although Holsteins have the lowest fat percent, they produce the greatest average kilograms of fat due to relatively high **fat percent**. (**Milk yield**).

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13. Differences among individuals within a breed are often **lower** than differences among breed. For example, milk-fat in jersey's, while averaging about 5 to 5.5%, can range from less than 4% to greater than 7%. (**Greater**)
14. Guernsey and Jersey cows convert much less **protein** to vitamin A than other breeds of dairy cattle. Thus, milk from Guernsey and Jersey cows is yellow. (**Carotene**)
15. Colostrums is yellowish coloured, salty liquid has a high serum **protein** content and provides antibodies to help protect the newborn until its own **digestive** system is established. (**Immune**)
16. Heifers calving at 36 months of age can produce 10 to 20% **less** than heifers calving at 24 months of age. This advantage is lost in the second lactation. (**More**).
17. Milking yields increase (at a decreasing rate) until about the 8th year of age, depending upon the breed, and then decreases (at an increasing rate). However, the decrease after the 8th year is much **more** than the increase before this age. (**Less**)
18. A cow which is twice as large as another usually produces only about **20%** instead of 100% more milk. (**70 %**).
19. Although longer dry period result in higher dairy milk production in the following lactation, the total milk produced over a series of lactations is not **decreased**. (**Increased**).
20. Each quarter has a teat which is located on the ventral surface of the **abdomen**. (**Udder**).
21. The rear quarters usually are **smaller** than the fore quarters and secrete about 60% of the milk. (**Larger**).
22. The udder is innervated with **efferent sympathetic** nerve fiber which carry the sensory stimuli from the udder to the central nervous system during milk let-down. (**Afferent sensory**).
23. If the canal is **small** or the sphincter muscle is unusually weak, the cow will leak the milk between milking and is more susceptible to invasion of mastitis -causing organisms. (**Large**).
24. The alveolus is a microscopic structure almost spherical in shape and lined with a **multiple** layer of epithelial cells. (**Single**).
25. Lactose (milk sugar) is a major **protein** in milk, readily digestible source of glucose, which provides energy for the neonate. (**Carbohydrate**).
26. Milk fat is the major source of lipid as provide the young with energy and it is composed primarily of **glucose** (98%). (**Triglycerides**).

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27. The site of milk synthesis is the epithelial cell lining the udder cistern. (Alveoli).
28. Some milk components such as most of the protein, lactose and fat are synthesized in the epithelial cells from nutrient constituents. (Blood).
29. For most effective milk let-down attach the milking machine within ten minute of stimulation of the udder. (One).
30. The maximum effect of adrenaline lasts for 7 to 8 minutes, so prompt initiation of milking (1 minute after stimulation) and rapid milking are important in obtaining maximum milk yields. This means that the dairy farmer has about five minutes to milk the cow completely. (Oxytocin).
31. All of the major milk proteins except for serum albumin and caseins are synthesized by the epithelial cells in the mammary gland from amino acids extracted from blood. (Immunoglobulins).
32. Lactose content is increased in colostrum compared with normal milk, high lactose in intestine can cause scours in calves, and presumably the reduce content of colostrum helps to prevent this disease. (Depressed).
33. If majority of these cows are culled for low production (genetic or voluntary culling), this results in increase female selection pressure. When these cows are replaced by high-genetic-potential heifers, the result is decreased genetic progress in the herd. (Increased).
34. Over 90% of calf and heifer mortality occurs during the first months. Nearly one-quarter of the totals occur during the first week and most of the remainder during the first month. (Half).
35. Brahman breed belong to English class. (Asiatic).
36. Fayoumi is a crossbred resulting from crossing of Dokki 4 (male) with barred Plymouth Rock (female). (Gimmizah).
37. Chicken of Asiatic class lay fewer egg/year, large body size, high growth and feed efficiency, early sexual maturiy, quite and lazy. (Late).
38. Zone of disproportionate development is temperature below which embryonic growth is arrested, and above which is initiated. (Physiological zero).
39. Usually higher hatchability from the first eggs set until about the 12th to 14th week of egg production, after which hatchability gradually increases. (Decreases).
40. For higher hatchability, frequency of turning once per day, at turning Angle of 45 degree about the longitudinal axis with broad end up. (Eight times).

(6)

III. Match each of the terms in the right column to the best fitting phrase from the left column. (15 points)

Letter	Phrase	Terms
J	Calculated by dividing the total number of breeding for pregnant cows in the herd by the number of pregnant cows.	A. Mammary glands B. Colostrums C. Dry period D. Days open E. 45-60 days F. The cow is going out of heat G. Standing heat H. Replacement rate I. Lateral suspensory ligament J. S/C K. > 90% L. 90% M. < 10% N. 65-70% O. Persistency P. Non-return rate (%) Q. Reproductive indices R. Reproductive efficiency S. Galactopoesis
S	The maintenance of lactation once lactation has been established.	
R	The ability of a dairy producer to get cows bred back soon after calving, with a minimum number of breeding per cow.	
P	The percentage of animals inseminated for the first time within a certain period and for which not returned for another service because they are presumed pregnant.	
O	The rate of decline in yield after calving.	
B	Produced by the udder immediately after parturition.	
E	Numbers of days from calving until a cow is bred for the first time.	
A	Exocrine glands, which secrete milk and serve as accessory glands to the reproductive system.	
I	One on each side of the udder, are composed of fibrous, inelastic tissue that extend between the skin and gland tissue on both sides of the udder and have numerous lamellae that extends into the glands.	
F	Stage in estrous lasts about 10-12 hours and normally the egg is released from the ovary near the end of this stage.	
Q	Indicators of the reproductive performance of a herd (days open, calving interval, etc.).	
M	Incidence of milk fever (% of multiparous cows calved mo)	
G	That period of time in which the cow is most active in her desire to mate and will stand still to mate.	
K	Number of cows observed in heat within 60 days post-partum (%)	
N	First service conception of heifers (%)	

IV. Mention the cause: (30 points)

1. Cows freshening at ages less than 24 months of age is undesirable.
(Because of inconsistent ease of calving, health around calving, or lactation performance after calving.
Or
Too small heifers will have serious calving problems and their small size also limits their production
2. Mature cows produce about 25% more milk than 2-year-old heifers.
(Because of increased body weight accounts for about 1/5 (5%) of this increase. The remaining 4/5 (20%) results from increased udder development during recurring pregnancies.
3. A cow treated in one quarter with antibiotic must have milk from all quarters discarded.
(Because antibiotics can be transferred from one quarter to others through the extensive blood network throughout the udder.
4. Calving interval is a very accurate indicator of what has happened in the past, but does not indicate current status.
(Because this measure only reflects reproductive successes (pregnancies) and does not account for reproductive problems can be considered failures.
5. A dairy producer can control calving interval by management component that affects days open.
(Because calving interval as a reproductive management figure is affected by two reproductive figures: days open and gestation length. Obviously, gestation length can not be altered).
6. Successful reproduction demands a lot of expertise by the dairy producer.
(Because many factors affect the likelihood of pregnancy:
1. Cow's fertility 2. Bull's (semen) fertility 3. Heat detection efficiency 4. Insemination efficiency.
7. Fatty and overconditioned cows are not preferred by a dairy producer.
(Because Fat heifers can be predisposed to fatty liver which can lead to ketosis and reduced feed intake. Moreover, over conditioned heifers have low lactation performance and high incidence of dystocia or calving difficulty.
8. Visual heat detection efficiency in dairy farms is difficult and very low.
(Because sexual activity often occurs during night. More than 70% of estrus activity can occur between 7.00 p. m. and 7.00 a. m. (outside normal working hours).
9. When culling due to reproductive failure increases, the genetic progress reduced.
(Because of a low level of female selection pressure (culling of higher producers and replaced with low genetic progress heifers)
10. Colostrum helps to prevent scours in calves.
(Because of high lactose in intestine can cause scours in calves, and presumably the reduce content of colostrum helps to prevent this disease)

(8)

V. Answer the following questions: (45 points)

1. The number of replacement heifers needed in dairy farms is primarily dependent on what? (3 points).
a. The herd culling rate, and
b. The calf and heifer loss rate.
2. If a large proportion of the cows do not maintain high persistency of lactation, especially if milk yield decreases rapidly during the 3rd to 4th month in a large number of cows, what are the causes of this problem? (3 points).
This problem could be caused by incomplete milking, poor milk ejection, or inadequate nutrient intake.
3. Toward the end of lactation the chlorides increase markedly suggesting what? (2 point).
Suggesting that the composition of milk tends to approach the composition of blood at this time.
4. The right and left halves of the udder are separated by distinct septum (membranous wall), externally appeared as intermammary groove, what is called? (1 point).
The median suspensory ligament
5. Draw the main features of the normal lactation curve? (4 points).

a. Initial milk yield b. Peak milk yield c. Lactation length
6. What are the average days to first service for a dairy herd influenced by? (6 points).
The average days to first service for a herd are influenced by:
1. The onset of ovarian function postpartum,
2. The number of unobserved estrous periods, (the most common cause), and
3. A management decision of when first breeding will occur postpartum.
7. What is the single most important factor in shortening days open? (2 points).
Efficient and successful heat detection
8. How does low reproductive efficiency affect profitability? (4 points).
Poor reproductive performance reduces income and profitability through its effect on several areas of herd performance:-
1. C. I. too long or too short.
2. A.I. performance
3. Production costs.
4. Culling policy.
9. What muscle keeps the teat colsed and helps prevent organisms from entering the udder? (1 point).
Sphincter muscle

(9)

10. The goal of the replacement program is to have an adequate supply of herd replacement that meets certain characteristics. **Mention these characteristics.** (8 points).

1. Have high genetic potential for economically important traits.

2. Are well grown but not overconditioned.

3. Are healthy, free of disease and parasites, and immune against the disease to which they are likely to be exposed and for which there is an effective vaccine.

4. Are reasonable in cost.

11. What muscle cells surrounding alveoli are essential for milk-letdown? (1 points).

Myoepithelial cells

12. Non-return rates should be used by dairymen to compare fertility rate of AI bulls within what limitations? (6 points).

A. Compare only the bulls within the same stud and whose semen is similarly priced.

B. Use a plus or minus from bull stud average for the within comparison.

C. Compare only bulls with sufficient number of services (inseminations) is useful measure for assessing the relative fertility of individual technicians and sires.

13. What do we call the white blood cells, which are present in milk? (1 points).

Somatic cell.

14. Beta-carotene is found in most grasses is the precursor of what vitamin in milk?(1 point).

Vitamin A

15. What is the biggest cause of reproductive management problems in most herds? (2 point).

Failure to observe cows in estrus

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