

ANSWER KEY

2026 Ag Bowl FFA Milk Quality CDE Exam

Select the one best answer for each question. Please DO NOT write on the exam. Place your answers on the upper right section of your scantron.

MILK PRODUCTION

1. What is the primary carbohydrate found in milk?
A) Glucose **B) Lactose** C) Maltose D) Sucrose

2. The freezing point of normal milk is approximately:
A) 32.5°F **B) 31°F** C) 30°F D) 29°F

3. The high somatic cell count in milk usually indicates:
A) Bacterial contamination **B) Mastitis infection** C) Improper cooling D) Old milk

4. What is the main purpose of pasteurization?
A) Destroy all microorganisms
B) Improve flavor
C) Destroy pathogenic bacteria
D) Homogenize fat globules

5. Which enzyme is commonly used to test for proper pasteurization?
A) Lipase B) Peroxidase **C) Alkaline phosphatase** D) Lactase

6. Milk with a rancid flavor is most often caused by:
A) Lipase activity **B) Oxidation** C) Protein breakdown D) High salt

7. The main mineral in milk is:
A) Potassium B) Sodium **C) Calcium** D) Iron

8. Which test determines the presence of water added to milk?
A) Cryoscopy B) CMT C) MUN D) Resazurin

9. Homogenization of milk is used to:
A) Kill bacteria B) Mix fat and water **C) Prevent cream separation** D) Improve protein

10. What is the average milk fat percentage in whole milk?
A) 3.25% B) 4.0% C) 2.0% D) 3.0%

11. Which vitamin is naturally found in milk fat?
A) C **B) A** C) D D) K

12. What does SCC stand for in dairy testing?
A) Somatic Cell Count B) Standard Count Check C) Solids Composition D) Sterility Control

13. Which piece of equipment is used for cleaning pipelines in a dairy?
A) Vacuum pump **B) Clean-in-place (CIP) System** C) Bulk tank D) Separator

14. Milk flavor described as “oxidized” tastes like:
A) Cardboard or metallic B) Sweet C) Bitter D) Salty

15. The standard plate count measures:

- A) Somatic cells
- B) Bacteria**
- C) Yeast
- D) Spores

16. What is the minimum pasteurization temperature for HTST milk?

- A) 145°F for 30 min
- B) 161°F for 15 sec**
- C) 180°F for 5 sec
- D) 190°F for 1 sec

17. What is the main cause of high bacteria counts in milk?

- A) Dirty equipment**
- B) High SCC
- C) Old cows
- D) Homogenization

18. What gas gives milk a “malty” flavor?

- A) Oxygen
- B) Carbon dioxide
- C) Diacetyl**
- D) Methane

19. Which test detects abnormal milk due to mastitis?

- A) CMT**
- B) Cryoscopy
- C) Phosphatase
- D) Lipase

20. Milk is composed of roughly how much water?

- A) 80%
- B) 87%**
- C) 90%
- D) 95%

21. A high PI (Preliminary Incubation) count often indicates:

- A) Poor cow health
- B) Poor cleaning practices**
- C) Over pasteurization
- D) Water addition

22. What temperature should milk be cooled to within two hours of milking?

- A) 60°F
- B) 45°F
- C) 50°F
- D) 40°F**

23. Which component of milk provides most of the calories?

A) Fat B) Protein C) Lactose D) Minerals

24. What is the white protein in milk that coagulates when milk sours?

A) Casein B) Whey C) Albumin D) Gluten

25. Which bacteria are most often associated with poor sanitation?

A) Psychrotrophic B) Thermophilic C) Coliform D) Spore-formers

26. A salty flavor in milk often results from:

A) Early lactation B) Late lactation or mastitis C) Freezing D) Improper cooling

27. The legal maximum SCC for Grade A milk in the U.S. is:

A) 500,000 B) 600,000 C) 750,000 D) 1,000,000

28. When milk foams excessively during pumping, it may be due to:

A) Low fat B) Detergent residue C) High bacteria D) High SCC

29. Which milk defect smells like barnyard or manure?

A) Rancid B) Oxidized C) Feed D) Foreign odor

30. The primary source of lipase enzyme in raw milk is:

A) Bacteria B) Leukocytes C) Blood D) Fat globules

MILK MARKETING

31. What is the term for milk marketed by components such as fat and protein?

A) Class pricing B) Component pricing C) Blend pricing D) Premium pricing

32. Which federal milk marketing order covers Minnesota?
A) Mideast **B) Upper Midwest** C) Northeast D) Southwest

33. What is the “blend price”?
A) Average price paid to producers based on milk utilization
B) Price paid for butterfat only
C) The retail price
D) Futures price

34. Class I milk is used for:
A) Butter B) Cheese **C) Fluid milk** D) Yogurt

35. Which product is Class IV?
A) Yogurt **B) Butter and dry milk** C) Cheese D) Ice cream

36. What government agency oversees milk marketing orders?
A) USDA B) FDA C) EPA D) CDC

37. “Dairy Margin Coverage” is a program for:
A) Consumers **B) Dairy producers** C) Processors D) Retailers

38. What does the term “hundredweight” mean in milk pricing?
A) 10 gallons **B) 100 pounds** C) 100 liters D) 1 barrel

39. The most important factor determining farm milk price is:
A) Location **B) Utilization class** C) Somatic cell count D) Protein percent

40. What is the approximate price of milk per hundredweight in a normal market?
A) \$5 B) \$10 **C) \$20** D) \$50

41. The top dairy-producing state in the U.S. is:
A) Wisconsin B) Idaho **C) California** D) Minnesota

42. Which country imports the most U.S. dairy products?
A) Mexico B) Canada C) China D) Japan

43. What is the marketing term for milk fortified with extra vitamins?
A) Enhanced milk B) Enriched milk **C) Fortified milk** D) Premium milk

44. The “real seal” on dairy products indicates:
A) FDA approval **B) Made from real dairy ingredients** C) Organic D) Kosher

45. Which dairy product has the highest per capita U.S. consumption?
A) Cheese B) Yogurt C) Milk D) Butter

46. What is the typical butterfat test used in milk payment systems?
A) 3.0% **B) 3.5%** C) 4.0% D) 4.5%

47. Which organization promotes milk with the slogan “Got Milk?”
A) USDA **B) National Dairy Board** C) American Dairy Association D) Dairy Farmers of America

48. Class III milk is primarily used for:
A) Butter **B) Cheese** C) Ice cream D) Fluid milk

49. What does “Grade A” mean in milk marketing?

- A) Highest price
- B) Meets sanitary standards for fluid use**
- C) Organic
- D) From registered farms

50. Which product yields the most from one pound of milk fat?

- A) Cheese
- B) Butter**
- C) Ice cream
- D) Yogurt

51. Which region in the U.S. has the highest dairy production growth?

- A) Northeast
- B) Southwest
- C) West**
- D) Southeast

52. Which factor does NOT affect milk pricing?

- A) Component levels
- B) Class utilization
- C) Protein test
- D) Cow breed**

53. The base unit for milk marketing is:

- A) Gallon
- B) Hundredweight**
- C) Liter
- D) Pound

54. Organic milk must come from cows fed:

- A) Corn only
- B) Non-GMO feed
- C) Organic feed**
- D) High-protein rations

55. The “milk check” is issued by:

- A) Co-op or processor**
- B) State government
- C) USDA
- D) Retailer

56. Which product has the longest shelf life?

- A) Fluid milk
- B) UHT milk**
- C) Cheese
- D) Yogurt

57. What is the major cost input in milk production?

A) Labor **B) Feed** C) Fuel D) Supplies

58. Which dairy cooperative is based in Kansas City, Missouri?

A) DFA B) Land O'Lakes C) Prairie Farms D) Foremost Farms

59. What is the “milk marketing year” in the U.S.?

A) January–December B) July–June C) October–September D) April–March

60. The largest share of U.S. dairy exports goes to:

A) Europe B) Canada **C) Mexico** D) Asia

ANSWER KEY

2026 Ag Bowl FFA Milk Quality CDE Problem Solving

For questions 1-10, assume that:

Meadow View Dairy ships milk to a cooperative processor that uses a component pricing system based on butterfat, protein, and other solids. Meadow View Dairy ships 58,000 pounds of milk per day. The hauling fee for the milk is \$0.30 per hundredweight (cwt). The milk has a Somatic Cell Count (SCC) of 175,000 cells per milliliter, which results in no penalty or bonus. The dairy receives a premium of \$0.25 per cwt for maintaining a low bacteria count. The base price for the milk is \$1.50 per cwt before any component payments or other adjustments are applied.

Use the data table below to answer the following questions.

Table 1 – Meadow View Dairy Test and Pricing Data:

Component	Test %	Price per lb
Butterfat	3.9%	\$2.10
Protein	3.1%	\$3.25
Other Solids	5.7%	\$0.15

1. How many pounds of butterfat does Meadow View Dairy ship per day?

- A. 1,952 lb
- B. 2,000 lb
- C. 2,262 lb**
- D. 2,500 lb

2. How many pounds of protein are shipped per day?

- A. 1,450 lb
- B. 1,798 lb**
- C. 2,000 lb
- D. 2,300 lb

3. What is the total value of butterfat shipped daily?

- A. \$4,200
- B. \$4,500
- C. \$4,750**
- D. \$5,000

4. What is the total value of protein shipped daily?

- A. \$5,300
- B. \$5,600
- C. \$5,843**
- D. \$6,000

5. What is the total value of other solids shipped daily?

- A. \$400
- B. \$496**
- C. \$500
- D. \$550

6. What is the gross value of the milk per day (before hauling and premiums)?

- A. \$9,500
- B. \$11,089**
- C. \$12,000
- D. \$13,000

7. Convert 58,000 lb of milk to hundredweight (cwt).

A. 580 cwt

B. 600 cwt

C. 5800 cwt

D. 58 cwt

8. Calculate the hauling cost per day.

A. \$87

B. \$120

C. \$174

D. \$200

9. What is the net milk value per day, including the \$0.25/cwt premium and minus hauling?

A. \$10,900

B. \$11,065

C. \$11,200

D. \$11,300

10. What is the average milk price per hundredweight (cwt) received by Meadow View Dairy (rounded to nearest cent)?

A. \$18.80

B. \$19.08

C. \$19.50

D. \$20.00