

## 2007 N.Y.S. District Junior Dairy Quiz Bowl Contest

### Junior Packet 1, Phase A

1) What two vaccines must be administered in cattle before they can be exhibited at a show?

- Rabies and Shipping Fever

2) Who is the US Secretary of Agriculture?

- Mike Johanns

3) You purchased 100 pounds of 8-12-10 fertilizer, how many pounds of nitrogen are in the fertilizer?

- 8 pounds

4) New born calves receive what type of immunity from colostrum?

- Passive (HD's 1/10/07, pg. 9)

## Junior Packet 1, Phase B

1) Name three factors to consider when grouping your cows in the milking herd.

Body condition, lactation number, production, reproductive status, stage of lactation, disease, milking speed, age. (2005 Virginia 4-H Dairy Bowl Materials)

2) Starting in 2008, the USDA will publish bull proofs three times per year in which 3 months?

February  
May  
August

3) A cow can be given antibiotics in a number of ways. Name three of them.

Intramuscular injection  
Intravenous injection  
Intraperitoneal injection  
Intramammary infusion  
Intrauterine infusion  
In the ration  
Sub Q  
Oral  
Topical (2006 Virginia 4-H Dairy Quiz Bowl Materials)

4) Name 4 signs or symptoms that your calf may show if they were sick.

Dry nose  
Cold ears  
Droopy ears  
Shaggy hair coat, rough hair coat  
Dull eyes  
Not getting up, lethargic  
Coughing  
Discolored mucus in nose  
Diarrhea  
Not eating  
Snotty nose  
Weight loss  
Temperature up or down  
Death

**Junior Packet 1, Phase C**

1) At what temperature should milk be held in the farm bulk tank?

36-40 degrees F

2) Toxic compounds that are produced by molds in feed are technically known as what?

Mycotoxins (World of Dairy Cattle Nutrition, pg. 16)

3) What on-farm tool is used to evaluate a ration's particle size?

Penn State Shaker Box or particle separator

4) What is the primary protein found in milk?

Casein (2006 Virginia Dairy Quiz Bowl Materials, pg. 36)

5) On which side of a pregnant cow does the fetal calf lie?

Right side

6) If corn silage has a moisture content of 65%, what is the dry matter content?

35%

7) Which parent determines the sex of the calf?

The Sire, bull, male, father

8) What enzyme is lacking in individuals who are lactose intolerant?

Lactase

9) Which two organs in a cow undergo involution?

Udder and Uterus

10) What does the term 'open' mean?

Not pregnant

11) What month is national grilled cheese month?

April

12) What is the liquid that is left after butter is made?

Buttermilk

13) What is the normal respiratory rate of the dairy cow?

30 breaths per minute

14) Niacin is a water-soluble vitamin that is added to feeds to prevent what?

Ketosis

15) What is the technical term for an accumulation of pus in the uterus?

Pyometria

16) What do the initials NAIS stand for?

National Animal Identification System

## 2007 N.Y.S District Junior Dairy Quiz Bowl Contest

### Junior Packet 2, Phase A

1) Ringworm is a contagious disease that affects what part of the animal?

Skin (HD, pg. 512)

2) Bovine Spongiform Encephalopathy (BSE) affects which system of the body?

The Nervous System

3) What is the recommended temperature of water for washing the bulk tank, lines, and other equipment?

160 F (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 13)

4) In order to calve at 22 to 24 months of age, when must a heifer be bred?

13 to 15 months of age

**Jr. Packet 2, Phase B**

1) Name two on-farm screening tests that can be used to detect mastitis.

California Mastitis Test (CMT)

Conductivity

Strip Cup (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 17)

2) What are three observable signs of a cow in estrus?

Restlessness

Bellowing

Following and smelling another cow

Mounting other cows

Vulva becomes red and swollen

Standing to be mounted

Discharge of clear mucus from the vulva

(2006 Virginia Dairy Quiz Bowl Study Materials, pg. 19)

3) Name three types of storage facilities for silage

Bunker Silo

Trench Silo

Upright/Tower Silo

Oxygen limiting silo

Plastic bad/ Ag bag

(2006 Virginia Dairy Quiz Bowl Study Materials, pg. 11)

4) Name the four compartments of the ruminant's stomach.

Rumen

Reticulum

Omasum

Abomasum

### **Jr. Packet 2, Phase C**

1) What is the highest grade of butter sold in the United States?

Grade AA (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 38)

2) What is the legal SCC limit in the United States?

750,000 cells/ml

3) What is the term used to describe milk that is left in the udder after normal milking has occurred?

Residual milk

4) What is the name of the device that is used to detect odors?

Olfactometer

5) What is the name of the lipid, protein-like substance that lines the teat canal to prevent the entrance of bacteria?

Keratin

6) What is the name of the fluid-filled structure that bursts to release an ovum when it reaches full size?

Ovarian follicle

7) In which compartment of the ruminant stomach does enzymatic digestion occur?

Abomasum (An Sc 250 Glossary)

8) TDN is a measure of the digestible energy in a feed. What do the initials TDN stand for?

Total digestible nutrients

9) What is a male bovine that is castrated before puberty called?

Steer

10) What would you use wet chemistry and near infrared spectroscopy (NIRS) for on your farm?

Forage testing (to understand nutrient composition of feeds)

11) Which compartment of the ruminant's stomach is located closest to the heart and is often referred to as the 'honeycomb'?

Reticulum (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 7)

12) What term is used to describe the taste or likeability of a feedstuff?

Palatability

13) What is the largest cost associated with producing milk?

Feed Costs (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 12)

14) What is the cyclic opening and closing of a teat cup liner called?

Pulsation (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 13)

15) What is the name of the process that occurs in the oviduct when an ovum and a sperm are joined together?

Fertilization (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 19)

16) What is a balling gun used for?

Administering pills

**2007 N.Y.S. District Junior  
Dairy Quiz Bowl Contest**

**Junior Packet 3, Phase A**

1) What is a colostrometer used for?

To check the immunoglobulin level in colostrum (DM, Nov '04, p.10)

2) Soybean meal and distiller's grains are good sources of what nutrient?

Protein

3) What compartment of the cow's stomach is called the true stomach?

Abomasum

4) On average, how many days are there between heat periods?

21 days

### **Jr. Packet 3, Phase B**

1) Name three symptoms of clinical mastitis.

Flakes

Clots

Presence of blood

Stringy milk

Watery milk

Swollen quarter

Hot quarter

Decrease in milk production (2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 15)

2) What are the two purposes of dry cow antibiotic treatment?

To remove existing infection.

To prevent new infection.

(2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 16)

3) The estrous cycle consists of two phases, the follicular phase and the luteal phase. It also consists of 4 stages. What are these four stages?

Estrus

Metestrus

Diestrus

Proestrus

4) A lot of farms today use artificial insemination to get their cows pregnant. What are three advantages of using artificial insemination over natural service?

Better disease control

Better record keeping

Easier to prove bulls

Genetic improvement

Less expensive than keeping a bull

Safety

Use of better bulls

Sexed semen

**Jr. Packet 3, Phase C**

1) What is the normal temperature of an adult cow?

101.5 – 102.5 F (2006 Virginia Quiz Bowl Materials, pg. 30)

2) What is the name of the process that removes a fertilized ovum from a donor cow and transfers it to another cow or heifer?

Embryo Transfer (ET)

3) 80-90% of displaced abomasums (DA's) occur on which side of the cow?

Left side (2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 28)

4) Warts are caused by what?

A virus

5) What is the major buffer produced by the cow to maintain an optimum rumen pH?

Saliva

6) When showing an animal, on what side of the animal should a person stand?

The left side

7) What is the major solids component of milk?

Lactose

8) What is the name of the process that destroys any disease-producing bacteria that might be present in raw milk?

Pasteurization

9) What is the term used to describe an animal that cannot reproduce?

Sterile

10) Metritis is an infection of what?

The uterus

11) What is a fertilized ovum called?

Zygote

12) What is the name of the device in the bulk tank that stirs milk to facilitate cooling and provide uniform product mixture for sampling?

Agitator

13) The food that a cow regurgitates and re-chews is known as what?

Cud

14) How many gallons of water does the average dairy cow consume in a day?

30-50 gallons (2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 9)

15) What is the most concentrated energy source in dairy rations?

Fat

16) What is the common name for leukocytes?

White blood cells

**2007 N.Y.S. District Junior  
Dairy Quiz Bowl Contest**

**Junior Packet 4, Phase A**

1) What is the recommended crude protein content for calf starter?

18-22% (VBQBM, p.25)

2) What is predipping?

Dipping or spraying a cow's teats with disinfectant prior to milking

3) What is the name of the fatty acid in milk that has been found to have anticarcinogenic effects?

Conjugated Linoleic Acid (CLA)

4) To prevent the spread of mastitis, which age of animals should be milked first?

Heifers with no mastitis

### **Jr. Packet 4, Phase B**

1) Volatile fatty acids or VFA's are the main products of carbohydrate digestion by rumen microorganisms. What are the three major VFA's produced in the rumen?

Acetic Acid (Acetate)  
Butyric Acid (Butyrate)  
Propionic Acid (Propionate)

2) Approximately 6% of dairy cows are affected by milk fever each year. What are three symptoms of a cow that has milk fever?

Cow goes down  
Rapid heart rate  
Dilated eyes  
Body temperature below normal  
Cold ears  
Cow can't get up  
Cow lays with her head to the side and her neck in an S shape

3) What are two uses for ultrasound in a reproductive management program?

Pregnancy determination  
Determine embryonic losses  
Monitor cystic ovaries  
Determine sex of embryo  
(2006 Virginia 4-H Dairy Quiz Bowl Study Materials, pg. 21)

4) What are the two main functions of the testes in bulls?

Producing sperm  
Producing the male sex hormones

(2006 Virginia 4-H Dairy Quiz Bowl Study Materials, pg. 20)

**Jr. Packet 4, Phase C**

1) What are supernumerary teats?

Extra teats

2) Where was BSE first identified?

Great Britain

(2006 Virginia 4-H Dairy Quiz Bowl Study Materials, pg. 29)

3) The Holstein Breed uses a genetic index known as TPI. What does TPI stand for?

Type Production Index

4) In fresh cow management practices often times the personal will give dairy cow a calving score after the calf is delivered. What is the range for these calving ease scores?

1-5

5) What is the name of the condition that occurs when a cow cannot belch and her rumen gases up?

Bloat

6) Hypocalcemia is another name for what problem?

Milk Fever (parturient paresis)

7) What vitamin is essential for efficient use of calcium and phosphorus and is added to milk?

Vitamin D

8) What is the temperature of the liquid Nitrogen that is used to store semen?

-320 F

9) What is the major symptom of winter dysentery?

Diarrhea

10) What is the science that deals with inheritance called?

Genetics

11) What are male sex cells called?

Spermatazoa

12) Which part of the cow's digestive system is responsible for water absorption?

Large intestine

13) Name the hormone that is needed for establishing and maintaining pregnancy?

Progesterone

14) What do you use to score the lameness of your cows?

Locomotion Score (pg. 26 DHM Dec. 2005)

15) Where is a cow's blind spot?

Directly behind her

16) How much money is withheld per hundredweight for dairy promotion programs?

15 cents (HD 12/2005 p.807)

**2007 N.Y.S. District Junior  
Dairy Quiz Bowl Contest**

**Junior Packet 5, Phase A**

1) How many hours after the onset of standing heat should a cow be artificially inseminated?

5-15 hours (2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 20)

2) What is the name of the secretory cells in the mammary gland that are arranged in grape-like structures?

Alveoli

3) Which nutrient in milk is an important muscle builder?

Protein

4) Hay low in what mineral is best for dry cows?

Potassium

## Junior Packet 5, Phase B

1) Name 3 signs of pink eye.

- White spot in the middle of the eye
- Blindness
- Really pink/redness in the eye
- Drainage from the eye-could be white or clear
- Tend to stay in the shade-sunlight causes pain and squinting
- Crusty, cloudy eye
- Swollen

2) What are three methods that can be used to reduce soil erosion?

- Wind breaks
- Cover crop
- Strip cropping
- Contour cropping
- Terracing
- Grass waterways
- Reduce tillage
- Soil seeding
- No Till (2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 42)

3) List 3 methods of reducing heat stress in cattle.

- Shade
- Ventilation
- Cooling
- Sprinklers
- Fans
- Keep water available

4) What are the three critical factors in colostrum management when feeding calves?

- Quantity
- Quality
- Timing.

**Jr. Packet 5, Phase C**

1) What is the only part of the milking system that touches the cow?

The teat cup liner or inflation

2) How long should pre-dip be left on the teat before being wiped off?

20-30 seconds

3) An animal that receives a fertilized ovum from a donor is known as what?

A recipient

4) What structure provides the major support for the udder?

The median suspensory ligament

5) Why would you give a cow an IV of calcium?

To treat her for milk fever or indigestion.

6) What is the optimal pH level in the rumen?

6.0 to 6.3 (HD Feeding Guide, p. 11)

7) How long should newly purchased cattle be quarantined to help prevent disease transfer?

3 weeks (HD, pg. 552)

8) Bermuda, timothy, broome, and orchard are all types of what?

Grasses (HD Feeding Guide)

9) What is the name of the exterior opening of the female reproductive tract?

Vulva

10) Which disease occurs when cows eat metal?

Hardware disease (HD's 1/10/07, pg. 20)

11) When one does artificial insemination, where in the female is the semen deposited?

In the uterine body

12) If your facilities have good cow comfort, what % of cows should be lying down at any time?

85%

13) What is the premature expulsion of a fetus from the uterus called?

Abortion

14) What term is used to describe the release of a mature ovum from an ovarian follicle?

Ovulation

15) What are assets?

Things that you own.

16) Fetal cotyledons and maternal caruncles attach the placenta to what structure in the cow?

The uterus

**2007 N.Y.S District Junior  
Dairy Quiz Bowl Contest**

**Junior Packet 6, Phase A**

1) SPC is a measure of bacteria counts in milk. What do the letters SPC stand for?

Standard Plate Count

2) What term do you use to refer to feed left after all the water has been removed?

Dry matter( HD's, 12/06, pg. 840)

3) Productive life is a measure of how many months a cow produces milk up until what age?

Until she dies (HD's, 12/06, pg. 840)

4) What are obstetrical chains used for?

Help deliver a calf during birth

**Junior Packet 6, Phase B**

1) What are the 3 sections of the small intestine?

Duodenum  
Jejunum  
Ileum

2) Name four reasons for culling a dairy cow.

Poor reproduction performance  
Low milk production  
Lameness issues  
Overcrowded and need to make room  
Attitude  
Poor udder conformation  
Health  
Diseases

3) Name 3 common ways to identify calves.

Eartags-plastic  
Freezebranding  
Photos  
Sketch  
Tattoos  
Metal tags (2006 Virginia materials, pg. 25)

4) Name the 4 classes of milk and give an example of each

Class I-Fluid or liquid milk  
Class II-soft milk products such as yogurt and cream cheese  
Class III-Hard cheese  
Class IV-Butter and powdered milk (2006 Virginia materials, pg. 36)

### **Junior Packet 6, Phase C**

1) What fast food chain uses the most milk in the United States?

Mc Donald's (2006 Virginia 4-H Dairy Quiz Bowl Materials, pg. 39)

2) Who invented the pasteurization process?

Louis Pasteur

3) What does the J-5 vaccine protect against?

Coliform Mastitis (Ecoli, klebsiella, enterobacter, citrobacter)

4) How many pounds does a gallon of milk weigh?

8.6 pounds

5) How many servings of dairy products should people be consuming every day according to the "My Pyramid" guide?

3 servings

6) Locomotion scoring is used to measure what in dairy herds?

The number of lame cows in the herd (DT, 5/06)

7) What nutrient does potash provide to crops?

Potassium (HD's 5/10/06)

8) What do we call milk that contains strings of white blood cells?

Ropy milk

9) ME production is a way to compare younger cows against older herdmates. What do the letters ME stand for?

Mature equivalent

10) What is the name of the acid which is undesirable during ensiling?

Butyric acid

11) What does the term lactation mean?

The period of time when the cow is in milk

12) If a farmer said he was feeding an 18% dairy feed, the 18% would refer to what?

Crude protein

13) In reproduction the term yellow body is also called what?

Corpus luteum

14) What is the minimum % fat butter must contain?

80% fat

15) During the herd milking schedule, when should mastitis infected cows be milked?

Last

16) The highest percent digestibility is what part of the alfalfa plant?

Leaves

**2007 N.Y.S District Junior  
Dairy Quiz Bowl Contest**

**Junior Packet 7, Phase A**

1) Bacteria, protozoa and fungi are all examples of what kind of organisms?

Microbes

2) What is the name of the sugar found only in milk?

Lactose

3) What is the major cost item on dairies?

Feed cost (HD's 12/06)

4) What does it mean if a feed is palatable?

Animals will eat the feed, they like it

## Junior Packet 7, Phase B

1) What are 2 disadvantages of using sexed semen?

Lower conception rate  
Higher semen cost

2) Name 3 types of milking parlors.

Parallel  
Herringbone  
Rotary  
Flat barn parlor  
Parabone  
Side opening

3) Give 4 examples of a common by-product feedstuff.

Cottonseed hulls  
Cottonseed meal  
Distiller grains  
Dried brewers grain  
Hominy feed  
Soybean hulls  
Soybean meal  
Wheat middlings  
Whole cottonseed  
Beet pulp  
Citrus pulp

4) What are 3 functions of saliva?

Moisten food  
Lubricates food  
Acts as a buffer  
Provides fluid base for many nutrients  
Provides the proper environment for bacterial growth

**Junior Packet 7, Phase C**

1) How many mammary glands does a cow have?

4 glands

2) What is dystocia?

Abnormal and/or difficult labor/birth

3) Which compartment of the ruminant stomach is filled with many leaves that resemble the pages in a book and is called “many plies”?

Omasum (World of Dairy Cattle Nutrition, pg. 3)

4) What is the name of the active enzyme that comes from a calf’s stomach that curdles milk?

Rennin (World of Dairy Cattle Nutrition, pg. 19)

5) What is the name of the disorder that occurs when an animal doesn’t release the placental materials from the uterus after calving?

Retained Placenta

6) What are the tiny projections attached to the inside wall of the small intestine that increase the absorptive surface area called?

Villi

7) What liquid compound is used to freeze and store semen?

Liquid Nitrogen

8) First calf heifers should weight what percent of their mature body weight at calving?

85-90%

9) What is the most popular cheese on pizzas?

Mozzarella cheese

10) Where do heavy metal object collect most of the time in a cow’s digestive tract?

Reticulum

11) On a cow's registration, what do the initials E.T. stand for?

Embryo transfer

12) Name the hormone that is needed for establishing and maintaining pregnancy?

Progesterone

13) What is the most common breed of dairy cattle in the U.S. ?

Holstein

14) Organisms that live on or in an animal at the expense for the host are called what?

Parasites

15) Which flavor of ice cream continues to be America's favorite?

Vanilla

16) Where do mycotoxins originate from?

Molds

## 2007 N.Y.S District Junior Dairy Quiz Bowl Contest

### Junior Packet 8, Phase A

1) Which method is more complete in coating the teat with dip; spraying or dipping with dip cup?

Dipping with dip cup

2) What is the best test to detect ketosis in cows?

Urine or milk test to detect ketosis DHM 7/06 p12

3) Your cow has acidosis, what does this mean?

It is a metabolic disorder that occurs when a dairy cow eats too much grain

4) What part of the digestive tract is the largest in total stomach volume of the newborn calf; the reticulum, omasum, rumen or abomasums

Abomasum

## Junior Packet 8, Phase B

1) Name 3 ways a dairy cow excretes or loses water.

- Breathing
- Sweating
- Feces
- Milk
- Urine

2) Name 3 sources of environmental bacteria in dairy herds?

- Feces
- Bedding
- Feedstuffs
- Soil
- Urine
- Water
- Mud

3) What are 3 signs or characteristics of dairy character?

- Sharpness of withers
- Flat, clean rump
- Lack of flesh over hips and pins
- Ribs are flat and open
- Openness of body
- Smooth, long lean neck, throat, dewlap, and brisket
- Should be clean cut

4) Name 3 important points to consider in selecting a calf as a project animal.

- Age
- Breed
- Health
- Pedigree
- Conformation
- Cost
- Where to house it

### **Junior Packet 8, Phase C**

1) When talking about heifers and raising them, what do the letters AFC stand for?

Age at First Calving

2) Who is the new Commissioner of Agriculture in New York State?

Pat Hooker

3) What hormone is released when a cow becomes frightened or excited?

Adrenaline or epinephrine

4) During the winter months when it is cold, what happens to a calf's requirement for energy?

Increases

5) How many upper teeth does a dairy cow have in the front?

None

6) Which dairy cattle breed originated in the Netherlands (Holland)?

Holsteins

7) How many pounds of whole milk are required to make one pound of cheese?

10 pounds (2006 Virginia Dairy Quiz Bowl Study Materials, pg. 37)

8) What program financially compensates dairy producers when domestic milk prices fall below a specified level and is recognized by the initials MILC?

Milk Income Loss Contract

9) When milk is used for ice cream it is classified as what class of milk?

Class II

10) What mineral is your cow deficient in if she has grass tetany?

Magnesium

11) Define the term lactation?

Period of time when a cow is in milk

12) What percent of cows at rest should be chewing their cud?

70-90%

13) What percent of the cow's diet must be organic in order for her milk to be sold as organic milk?

100% (DHM, 3/06)

14) About what percentage of a cow's milk production is made by her rear udder?

60%

15) The term often used to identify cows with mastitis is known as SCC. What do the initials SCC stand for?

Somatic Cell count

16) Your cow has clinical mastitis, what are the characteristics of this?

Visible abnormalities in the udder or milk

**2007 N.Y.S. District Junior  
Dairy Quiz Bowl Contest  
Extra Questions**

**Phase A or C**

1) What are wrapped, round bales of silage called?

Baleage

2) What is the act of taking a young animal off of milk as the main source of nutrition called?

Weaning

3) When talking about conformation and physical characteristics of a dairy animal, what is strutting?

The condition in which the teats point out too much.

4) What is the normal birth position of a calf?

The front feet first with the head between the legs.

5) To maximize the number of motile sperm, what temperature should frozen semen be thawed at?

90-95°F

6) What is the most desirable acid produced during the fermentation of silage?

Lactic Acid

7) What do the initials CAFO stand for?

Concentrated or confined animal feeding operation

8) What is the dairy farmer-funded self-help program called that addresses supply and demand imbalances?

Cooperatives Working Together (CWT)

9) What is a cryoscopy used for?

An instrument used to test the freezing point of milk to determine if water has been added.

10) To monitor milk quality, what test is used to measure the bacterial content of raw milk?

The Standard Plate Count

11) What month is national ice cream month?

July

12) What is the name of a firm that is owned by its farmer-members and is operated for their benefit?

Cooperative

13) This hormone is critical in the initiation and maintenance of lactation.

Prolactin

14) How many hours is an ovum fertile after it is released from an ovary?

6-12 hours

15) What is a record of ancestry called?

Pedigree

16) What is the name of the condition that occurs when a loop of intestine protrudes from the navel?

Umbilical hernia

17) Keratoconjunctivitis is another name for what?

Pink eye

18) What is the name of the tube that connects the mouth to the rumen?

Esophagus

19) What cow's milk is known for its golden color?

Guernsey

20) What company is the largest processor of dairy foods in the United States?

Kraft Foods

21) Pigmented milk cartons are used to prevent what milk off-flavor?

Oxidized

22) What is the name of the temporary gland that forms on the ovary after the ovum is released and is also called a “yellow body”?

Corpus Luteum (CL)

23) What is the most frequent cause of high bacteria counts in milk?

Dirty equipment (VDQBSM, p. 13)

24) What does morbidity rate measure?

The number of sick animals (VDQBSM, p. 30)

### **Phase B**

1) What are the three colors found in registered Holstein cattle?

Black, Red, and White

2) What two gases are produced by the rumen?

Carbon Dioxide and Methane (VDQBSM, p. 7)

3) Macro minerals are required in the bodies of cows in relatively large quantities. Name three such macro minerals.

Calcium, Chlorine, Magnesium, Phosphorus, Potassium, Sodium, Sulfur

4) What are the four phases of silage fermentation?

Aerobic phase, anaerobic phase, stable phase, and feeding phase.

