

Weekly Free PDF for Food Safety Officer Exam – Set 3

Q.1

Which metabolic pathway is inhibited due to the depletion of stored oxygen in myoglobin after slaughter?

1. Glycolysis
2. Citrate cycle
3. Anaerobic pathway
4. Lipolysis

Answer:

B

Sol:

The citrate cycle, also known as the Krebs cycle or the tricarboxylic acid (TCA) cycle, is a key metabolic pathway that plays a crucial role in cellular respiration. It occurs in the mitochondria of cells and is essential for the production of energy in the form of adenosine triphosphate (ATP).

The depletion of stored oxygen in myoglobin after slaughter indeed inhibits the **citrate cycle (Krebs cycle)**.

Q.2

What is the immediate effect on muscle when an animal is slaughtered?

1. Increase in oxygen supply
2. Increase in temperature
3. Loss of oxygen supply
4. Increase in glycogen stores

Answer:

C

Sol:

Upon slaughter, the heart stops beating, and blood flow to the muscles ceases.

The muscles no longer receive oxygen and nutrients, which are critical for normal cellular function.

Without oxygen, muscle cells switch to anaerobic glycolysis to produce energy.

This process generates lactic acid, leading to a drop in pH within the muscle tissues.

Eventually, the muscles enter a state called rigor mortis, where they become stiff and locked in place.

This occurs because the ATP (adenosine triphosphate) required for muscle relaxation is depleted.

These changes are crucial in the process of converting muscle to meat, affecting the texture, flavor, and overall quality of the meat.

Q.3

Which procedure is used to test the milk quality and detect mastitis in dairy cows?

1. Blood test
2. Skin test
3. California Mastitis Test (CMT)
4. Ultrasound

Answer:

C

Sol:

1. CMT detects somatic cell count in milk, indicating the presence of mastitis.
2. It is a rapid and simple field test, providing immediate results.
3. Early detection through CMT helps in timely treatment, preventing the spread and severity of mastitis.
4. The California Mastitis Test (CMT) is used to test milk quality and detect mastitis in dairy cows.

Q.4

Which vitamin is crucial for the prevention of white muscle disease in livestock?

1. Vitamin C
2. Vitamin B12
3. Vitamin D
4. Vitamin E

Answer:

D

Sol:

1. Vitamin E acts as an antioxidant, protecting muscle tissue from oxidative damage.
2. Deficiency leads to white muscle disease, characterized by muscle degeneration and weakness.
3. Ensuring adequate Vitamin E intake through diet or supplements is essential for livestock health.

Q.5

Which method is commonly used to assess the body condition score (BCS) of dairy cattle?

1. Visual inspection only
2. Digital imaging
3. Manual palpation and visual assessment
4. Weighing on a scale

Answer:

C

Sol:

The BCS ranges from 1 (emaciated) to 5 (obese), with optimal scores varying by stage of lactation. It helps in monitoring the nutritional status and overall health of the cattle. Regular BCS assessments guide feeding and management decisions to optimize productivity.

Q.6

What is the primary biochemical change that occurs during the conversion of muscle to meat?

1. Increase in muscle mass
2. Decrease in muscle elasticity
3. Conversion of glycogen to lactic acid
4. Increase in fat content

Answer:

C

Sol:

During the conversion of muscle to meat, glycogen is converted to lactic acid. The accumulation of lactic acid leads to a drop in pH, which affects meat quality. Proper pH levels are essential for meat tenderness and shelf life.

Q.7

What is the primary purpose of using low-stress handling techniques in the transport of livestock?

1. To save time
2. To reduce animal anxiety and stress
3. To increase animal weight
4. To improve meat flavor

Answer:

B

Sol:

Low-stress handling techniques are used to reduce anxiety and stress in animals during transport. other benefits include:

1. **Health Benefits:** Reducing stress helps in maintaining the overall health of the animals, preventing injuries and diseases.
2. **Meat Quality:** Less stressed animals tend to produce higher quality meat with better texture and flavor.
3. **Animal Welfare:** Humane handling practices ensure the well-being of animals, adhering to animal welfare standards.

Q.8

What is the main cause of the onset of rigor mortis?

1. formation of actomyosin
2. increase in glycogen stores
3. increase in oxygen supply
4. depletion of ATP

Answer:

A

Sol:

1. ATP Depletion

- **Immediate Effect:** After an animal is slaughtered, the supply of oxygen stops, and aerobic respiration ceases.
- **Switch to Anaerobic Glycolysis:** The muscles continue to produce energy through anaerobic glycolysis, but this is limited and soon depletes the available ATP.

2. Formation of Actomyosin

- **Actin and Myosin Interaction:** In living muscle cells, the proteins actin and myosin interact to enable muscle contraction and relaxation, powered by ATP.
- **Lack of ATP:** Without ATP, the myosin heads cannot detach from actin filaments, leading to the formation of actomyosin complexes.
- **Locked State:** This results in a rigid, locked state where the muscle fibers cannot relax, causing rigor mortis.

3. Stiffening of Muscles

1. **Time Frame:** Rigor mortis generally begins within 2 to 6 hours after death, peaks at around 12 to 24 hours, and then gradually dissipates as enzymatic processes break down the actomyosin complexes.
2. **Role of pH:** The drop in pH due to lactic acid accumulation further contributes to the stiffening of the muscles.

Muscle Contraction Cycle: Under normal conditions, ATP is necessary for the myosin heads to detach from the actin filaments after a contraction cycle. Without ATP, the muscles cannot relax.

3. **Temperature Influence:** The onset and duration of rigor mortis can be influenced by environmental temperatures. Warmer temperatures can accelerate the process, while cooler temperatures can slow it down.
4. **Relevance to Meat Quality:** Understanding and controlling rigor mortis is important in the meat industry as it affects the tenderness and quality of the meat. Properly managed chilling and aging processes can improve meat quality post-rigor mortis.

Q.9

What is the desired ultimate pH range in most species for proper meat conversion?

1. 3.5 to 4.0
2. 4.5 to 5.0
3. 5.5 to 5.7
4. 6.5 to 7.0

Answer:

C

Sol:

The desired ultimate pH range for proper meat conversion in most species is **5.5 to 5.7**. This range is crucial for ensuring good meat quality, as it affects factors like color, water-holding capacity, and tenderness

Q.10

What is the initial period called when actomyosin formation proceeds very slowly and the muscle is relatively extensible?

1. Onset Phase
2. Delay Phase
3. Completion Phase
4. Resolution Phase

Answer:

B

Sol:

Delay Phase Characteristics:

- **Muscle Flexibility:** During this phase, muscles are still able to remain flexible and extensible.
- **ATP Presence:** Sufficient ATP is still present, allowing the muscles to relax after contractions.
- **Glycolysis:** Anaerobic glycolysis occurs, slowly starting the production of lactic acid, but not yet at levels that induce rigor mortis.

Q.1

Which vitamin is essential for the synthesis of collagen in the human body?

1. Vitamin C
2. Vitamin D
3. Vitamin B
4. Vitamin E

Answer:

A

Sol:

Vitamin C also acts as an antioxidant, protecting cells from damage by free radicals. It supports the immune system and enhances the absorption of iron from plant-based foods. A deficiency in Vitamin C can lead to scurvy, characterized by weakened connective tissues, bleeding gums, and bruising.

Q.2

What is the primary function of carbohydrates in the human diet?

1. To build muscle
2. To provide energy
3. To synthesize hormones
4. To improve digestion

Answer:

B

Sol:

Carbohydrates are the body's main source of energy, broken down into glucose which fuels cellular activities. Carbohydrates can be simple (sugars) or complex (starches and fiber). Excess glucose is stored as glycogen in the liver and muscles for later use. Dietary fiber, a type of carbohydrate, aids in digestion and maintains bowel health.

Q.3

Which mineral is critical for oxygen transport in the blood?

1. Calcium
2. Iron
3. Potassium
4. Sodium

Answer:

B

Sol:

Iron is a vital component of hemoglobin, the protein in red blood cells that carries oxygen from the lungs to the rest of the body. Rich dietary sources of iron include red meat, poultry, fish, lentils, and spinach. There are two types of dietary iron: heme (from animal sources) and non-heme (from plant sources). Iron deficiency can lead to anemia, characterized by fatigue, weakness, and pale skin.

Q.4

What process is used to determine the caloric content of food?

1. Chromatography
2. Calorimetry
3. Spectroscopy
4. Electrophoresis

Answer:

B

Sol:

Calorimetry is the process used to measure the caloric content of food by determining the amount of heat released during combustion.

1. **Bomb Calorimeter:** A bomb calorimeter is commonly used for this purpose, where food is burned in an oxygen-rich environment.

2. **Calorie Measurement:** The heat released is measured in calories or joules, indicating the energy content of the food.
3. **Nutritional Labels:** The information obtained from calorimetry is used to calculate the energy values shown on nutritional labels.

Q.5

Which enzyme breaks down lactose in the digestive system?

1. Amylase
2. Lipase
3. Protease
4. Lactase

Answer:

D

Sol:

Lactase is the enzyme responsible for breaking down lactose, the sugar found in milk, into glucose and galactose. A deficiency in lactase leads to lactose intolerance, causing symptoms like bloating, diarrhea, and gas. Lactase supplements can help individuals with lactose intolerance digest dairy products. Yogurt and some fermented dairy products may contain lower levels of lactose due to the activity of bacteria.

Q.6

What is the primary role of dietary fiber?

1. To provide energy
2. To build muscle
3. To regulate blood sugar levels
4. To aid in digestion

Answer:

D

Sol:

Dietary fiber aids in digestion by adding bulk to stool and promoting regular bowel movements. There are two types of fiber: soluble and insoluble, each with different roles in digestion. Fiber helps prevent constipation, lowers cholesterol levels, and may reduce the risk of colon cancer. Good sources of dietary fiber include fruits, vegetables, whole grains, legumes, and nuts.

Q.7

Which vitamin is fat-soluble and stored in the liver?

1. Vitamin B12
2. Vitamin C
3. Vitamin K
4. Vitamin D

Answer:

D

Sol:

Vitamin D is a fat-soluble vitamin that is stored in the liver and fatty tissues, and it is essential for calcium absorption and bone health. The body can synthesize Vitamin D when the skin is exposed to sunlight. A lack of Vitamin D can lead to rickets in children and osteomalacia or osteoporosis in adults. Dietary sources include fatty fish, fortified milk, and egg yolks.

Q.8

What method is commonly used to separate and identify different components in a food sample?

1. Calorimetry
2. Electrophoresis
3. Chromatography
4. Spectroscopy

Answer:

C

Sol:

Chromatography is a technique used to separate, identify, and quantify the components in a food sample.

Common types of chromatography include gas chromatography (GC) and high-performance liquid chromatography (HPLC).

It is used in food analysis to detect additives, contaminants, and nutritional components.

The technique separates components based on their interactions with a stationary phase and a mobile phase.

Q.9

What is the primary function of lipids in the human body?

1. To provide energy
2. To build muscle
3. To enhance mineral absorption
4. To regulate water balance

Answer:

A

Sol:

Lipids are a major source of energy, providing more than twice the energy per gram compared to carbohydrates and proteins.

Lipids also provide insulation and protect vital organs.

Cell Structure: They are essential components of cell membranes, maintaining cell integrity and function.

Hormones: Lipids are precursors to important hormones and signaling molecules.

Q.10

Which compound is responsible for the blue color in blueberries?

1. Carotene
2. Anthocyanin
3. Chlorophyll
4. Lycopene

Answer:

B

Sol:

Anthocyanins are pigments responsible for the blue, purple, and red colors in fruits and vegetables, including blueberries

Anthocyanins have antioxidant properties, which can help protect cells from damage.

They may contribute to heart health, cognitive function, and anti-inflammatory effects.

The color of anthocyanins can change with pH, appearing red in acidic conditions and blue in alkaline conditions.

Q.1

Which bacterium is commonly associated with foodborne illness caused by undercooked poultry?

1. Escherichia coli
2. Salmonella
3. Staphylococcus aureus
4. Listeria monocytogenes

Answer:

B

Sol:

1. **Salmonella:** This bacterium is a common cause of foodborne illness and is frequently found in raw or undercooked poultry, eggs, and meat.
2. **Symptoms:** Infection can lead to symptoms such as diarrhea, fever, and abdominal cramps, usually within 6 to 48 hours after consuming contaminated food.
3. **Prevention:** Proper cooking, good hygiene practices, and avoiding cross-contamination are essential to prevent Salmonella infections.

Q.2

What is a common method used to detect adulteration in milk?

1. Polymerase Chain Reaction (PCR)
2. Lactometer test
3. ELISA test
4. Gram staining

Answer:

B

Sol:

A lactometer measures the specific gravity of milk, which can indicate if water or other substances have been added.

Pure milk has a specific range of density; deviations can suggest dilution with water or the addition of other substances.

Detecting adulteration ensures the safety and quality of milk for consumers, preventing potential health risks associated with adulterated products.

Q.3

Who is the father of Microbiology ?

1. Pasteur
2. Robert Koch
3. Leeuwenhoek
4. Alexander Fleming

Answer:

C

Sol:

Who is the father of Microbiology ?

The title "Father of Microbiology" is often attributed to **Antonie van Leeuwenhoek**. He was a Dutch scientist who is best known for his pioneering work in microscopy and for being the first to observe and describe microorganisms, which he originally called "animalcules." His discoveries laid the foundation for the field of microbiology.

Q.4

In which century did Leeuwenhoek live?

1. 17th century

2. 19th century
3. 20th century
4. 21st century

Answer:

A

Sol:

Antonie van Leeuwenhoek lived during the **17th and early 18th centuries**. He was born on October 24, 1632, and passed away on August 26, 1723. He is often referred to as the "Father of Microbiology" due to his pioneering work in the field of microscopy

Contributions to Science

- **Microscopy:** Leeuwenhoek is best known for his improvements to the microscope and his meticulous observations of microscopic life. He crafted single-lensed microscopes with very high magnification, which were more effective than the compound microscopes of his time².
- **Discoveries:** He was the first to observe and describe bacteria, protozoa, sperm cells, red blood cells, and muscle fibers. His observations refuted the doctrine of spontaneous generation, which claimed that living organisms could arise from nonliving matter³.
- **Scientific Correspondence:** Although he did not publish books, Leeuwenhoek shared his findings through letters to the Royal Society of London, which published many of his letters in their Philosophical Transactions.

Q.5

Which of the following is the primary method used to sterilize laboratory equipment?

1. Filtration
2. Autoclaving
3. Radiation
4. Pasteurization

Answer:

B

Sol:

Autoclaving method uses high-pressure steam at around 121°C (250°F) to sterilize equipment, effectively killing all microorganisms, including bacteria, viruses, fungi, and spores.

It ensures that laboratory instruments are free from any contaminants, which is crucial for accurate experimental results and safety.

Autoclaving typically involves a cycle of heating, maintaining the temperature for a certain period, and then cooling. This ensures thorough sterilization.

Q.1

What is the main advantage of microfiltration in food processing?

1. It increases the shelf life of food
2. It removes large particles from food
3. It removes microorganisms from food
4. It enhances the taste of food

Answer:

C

Sol:

1. Microfiltration: A membrane filtration process that removes particles, bacteria, and some viruses from liquids and gases.
2. Improved Safety: By removing harmful microorganisms, microfiltration ensures the microbiological safety of food products, making them safer for consumption.
3. Quality Preservation: This process is gentle and does not involve heat, which helps retain the original taste, texture, and nutritional value of the food.
4. Applications: Widely used in the dairy industry, juice production, and the treatment of water and beverages.

Q.2

What is the primary purpose of bactofugation in the dairy industry?

1. To increase milk fat content
2. To remove bacteria and spores
3. To enhance milk flavor
4. To pasteurize milk

Answer:

B

Sol:

1. Bactofugation: A process that uses high-speed centrifugation to remove bacterial spores and other microorganisms from milk.
2. Enhancing Safety: This technique improves the microbiological quality of milk, making it safer for consumption and extending its shelf life.
3. Non-Thermal Process: Bactofugation is a physical method that doesn't involve heat, preserving the sensory and nutritional qualities of milk.
4. Usage: Often used in the production of high-quality dairy products, such as cheese and butter, to prevent spoilage and contamination.

Q.3

What is the main purpose of the Codex Alimentarius?

1. To regulate international trade b) To set food standards and guidelines c) To promote organic farming d) To control food prices
2. To set food standards and guidelines
3. To promote organic farming
4. To control food prices

Answer:

B

Sol:

A collection of internationally recognized standards and guidelines created by the Codex Alimentarius Commission, which is a joint venture between the FAO and WHO is Codex Alimentarius.

The Codex aims to protect consumer health and ensure fair practices in the food trade by providing a reference point for food safety standards.

These include standards for food additives, contaminants, pesticide residues, and labelling.

Many countries use Codex standards as the basis for their national regulations, which facilitates international trade and helps ensure the safety of food products worldwide.

Q.4

What does HACCP stand for?

1. Health Analysis and Critical Control Points

2. Hazard Analysis and Critical Control Points
3. Hazard Analysis and Critical Criteria for Production
4. Hazard Analysis and Critical Criteria for Population

Answer:

B

Sol:

HACCP stands for Hazard Analysis and Critical Control Points.

It is a systematic approach to food safety that identifies, evaluates, and controls hazards.

Q.5

Which of the following is not a primary objective of food technology?

1. Preservation of food
2. Enhancement of food quality
3. Reduction of food safety
4. Improvement of nutritional value

Answer:

C

Sol:

The primary objectives of food technology include the preservation of food, enhancement of food flavor, and improvement of nutritional value.

Reducing food safety is not an objective; in fact, food technology aims to enhance food safety.

Q.1

Which of the following is the main carbohydrate present in milk?

1. Sucrose
2. Glucose
3. Lactose
4. Fructose

Answer:

C

Sol:

- Lactose is the primary carbohydrate found in milk, making up about 4-5% of its composition.
 - It is a disaccharide composed of glucose and galactose, and it's important for providing energy.
 - Lactose also plays a role in the absorption of calcium and phosphorus in the intestines.
 - People who are lactose intolerant lack the enzyme lactase, which is necessary to digest lactose.
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Q.2

Which microorganism is primarily responsible for the spoilage of milk?

1. Escherichia coli
2. Staphylococcus aureus
3. Lactobacillus
4. Pseudomonas

Answer:

D

Sol:

Pseudomonas bacteria are psychrotrophic, meaning they can grow at refrigeration temperatures.

These bacteria produce enzymes that degrade milk proteins and fats, leading to spoilage.

Pseudomonas spp. can cause off-flavors and odors in milk, making it unpalatable. Effective refrigeration and sanitation practices are essential to control these bacteria.

Clean Milk Production

Q.3

What is the primary purpose of clean milk production?

1. To increase milk fat content
2. To improve milk flavor
3. To ensure milk is free from contaminants
4. To enhance milk's color

Answer:

C

Sol:

- Clean milk production focuses on hygienic practices during milking to ensure the milk is free from contaminants such as bacteria, dirt, and foreign particles.
 - This includes proper sanitation of milking equipment, clean udder preparation, and maintaining healthy livestock.
 - Clean milk is essential for producing safe dairy products and extends the shelf life of milk.
 - It also reduces the risk of milk-borne diseases, ensuring consumer safety.
-

Q.4

What is the main purpose of pasteurization?

1. To enhance the flavor of milk
2. To increase the fat content of milk
3. To kill pathogenic microorganisms
4. To make milk thicker

Answer:

C

Sol:

- Pasteurization involves heating milk to a specific temperature for a set period to kill harmful microorganisms without significantly altering the nutritional value or taste.
 - Common methods include High-Temperature Short-Time (HTST) and Ultra-High Temperature (UHT) pasteurization.
 - This process ensures that milk is safe for consumption by destroying pathogens like Mycobacterium tuberculosis, Salmonella, and Listeria.
 - Pasteurization also helps in extending the shelf life of milk.
-

Q.5

What is "dahi" in the context of dairy products?

1. A type of cheese
2. A form of fermented milk
3. A milk-based hard sweet
4. A milk-based sweet

Answer:

B

Sol:

- **Dahi** is a traditional Indian fermented milk product similar to yogurt.
- It is made by inoculating milk with lactic acid bacteria such as *Lactobacillus bulgaricus* and *Streptococcus thermophilus*.
- The fermentation process causes the milk to thicken and develop a tangy flavor due to the production of lactic acid.
- Dahi is known for its probiotic properties, which can aid digestion and boost the immune system.

Q.1

Which microorganism is primarily responsible for the spoilage of bread, causing it to develop a moldy appearance?

1. *Saccharomyces cerevisiae*
2. *Lactobacillus acidophilus*
3. *Penicillium* spp.
4. *Escherichia coli*

Answer:

C

Sol:

Penicillium spp. are molds commonly responsible for the spoilage of bread, leading to a moldy appearance. These molds thrive in the moist environment of bread and can grow rapidly under favorable conditions. Spoiled bread often exhibits blue, green, or white fuzzy growths, which are the mold colonies. It's important to discard moldy bread, as some molds can produce mycotoxins, which are harmful to health.

Q.2

Which type of packaging material is commonly used to prevent the oxidation of food products?

1. Plastic wrap
2. Aluminum foil
3. Wax paper
4. Cardboard

Answer:

B

Sol:

Aluminum foil is used to prevent the oxidation of food products because it provides an effective barrier to oxygen, moisture, and light, which can cause food to spoil.

This property makes aluminum foil ideal for packaging perishable items like dairy products, meats, and baked goods. Additionally, aluminum foil is durable, flexible, and can be easily molded to fit various shapes, making it a versatile packaging material. Its reflective surface also helps protect food from temperature fluctuations.

Q.3

Which process involves the use of high pressure to preserve food by inactivating microorganisms and enzymes?

1. Pasteurization
2. High-pressure processing (HPP)
3. Freeze-drying
4. reeze-drying

Answer:

B

Sol:

High-pressure processing (HPP) uses extremely high pressure, typically between 300-600 MPa (megapascals), to inactivate microorganisms and enzymes without the need for high temperatures, preserving the food's quality and extending its shelf life.

This method retains the fresh taste, texture, and nutritional value of the food, making it suitable for products like juices, ready-to-eat meats, and seafood.

HPP is a non-thermal process, which means it does not involve heat, thereby minimizing the impact on food quality.

Q.4

What is the primary purpose of food irradiation?

1. To enhance flavor
2. To increase nutrient content
3. To extend shelf life
4. To improve texture

Answer:

C

Sol:

Food irradiation is a process that uses ionizing radiation to kill bacteria, parasites, and other pathogens, thereby extending the shelf life of food and ensuring its safety for consumption.

Irradiation also helps in delaying the ripening and sprouting of fruits and vegetables, reducing the risk of foodborne illnesses, and controlling insect infestation in grains.

It is approved by various health authorities, including the FDA and WHO, as a safe method of food preservation.

Q.5

Which method of food preservation involves the removal of moisture to inhibit the growth of microorganisms?

1. Pasteurization
2. Canning
3. Drying
4. Fermentation

Answer:

C

Sol:

Drying removes moisture from food, which inhibits the growth of microorganisms that require water for survival. This method is commonly used for preserving fruits, vegetables, and meats.

Q.1

Ultra-high temperature (UHT) processing is a method used in dairy technology to extend the shelf life of milk. Which of the following statements about UHT processing is NOT correct?

1. UHT processing involves heating milk to at least 135°C (275°F) for 2 to 5 seconds.
2. UHT milk can be stored at room temperature for several months.
3. UHT milk retains all the original taste and nutritional quality of fresh milk.
4. UHT processing destroys both pathogenic and spoilage microorganisms.

Answer:

C

Sol:

- Statement (a): Correct. UHT processing involves heating milk to at least 135°C (275°F) for 2 to 5 seconds, which effectively destroys all microorganisms and spores.
- Statement (b): Correct. UHT milk can be stored at room temperature for several months because the high-temperature process ensures it is free from microorganisms that cause spoilage.
- Statement (c): Incorrect. While UHT processing extends shelf life and ensures safety, it can alter the taste and slightly reduce some of the nutritional quality of the milk compared to fresh milk.
- Statement (d): Correct. UHT processing destroys both pathogenic and spoilage microorganisms, making the milk safe to consume for a longer period without refrigeration.

Q.2

What is the effect of homogenization on milk?

1. Reduces lactose content
2. Stabilizes fat globules
3. Increases calcium content
4. Decreases protein levels

Answer:

B

Sol:

Homogenization is a mechanical process that breaks down fat globules in milk into smaller, uniformly distributed particles, preventing the cream from separating.

This process ensures a consistent texture and taste in the milk.

Q.3

Why is payment by weight preferred over payment by volume?

1. Easier to transport
2. not affected by specific gravity
3. variation in color
4. None of these

Answer:

B

Sol:

Payment by weight provides a consistent and reliable measure that is unaffected by factors such as foam or temperature variations. This ensures that farmers are compensated fairly based on the actual amount of milk supplied.

Payment by volume can be influenced by the presence of air bubbles, foam, and temperature changes, which can alter the apparent volume of milk and lead to inaccurate measurements.

Milk's specific gravity is influenced by its fat content and other solids. When milk is paid for by volume, variations in specific gravity can result in inconsistent payments. For example, milk with higher fat content is denser and has a higher specific gravity, which might not be accurately reflected in volume measurements.

By paying by weight, these variations in specific gravity are accounted for, ensuring that all milk, regardless of its fat content, is measured accurately.

Q.4

What is a common method of payment for milk in the unorganized sector?

1. by cow's age
2. by weight
3. by the packaging
4. by the color

Answer:

B

Sol:

A common method of payment for milk in the unorganized sector is by weight. This method is preferred because it is not affected by factors like foam or specific gravity, making it a straightforward and fair way to compensate farmers

Q.5

Which of the following statements about microfiltration in dairy processing is correct?

1. Microfiltration uses high temperatures to sterilize milk.
2. Microfiltration removes bacteria and spores from milk without affecting its creaminess.
3. Microfiltration is primarily used to homogenize milk.
4. Microfiltration adds essential vitamins and minerals to milk.

Answer:

B

Sol:

1. Statement (a): Incorrect. Microfiltration is a mechanical process that uses membranes with pore sizes typically between 0.1 and 10 micrometers, not high temperatures, to filter out bacteria and spores from milk.
 2. Statement (b): Correct. Microfiltration effectively removes bacteria and spores from milk while preserving its natural creaminess and nutritional qualities. This process helps extend the shelf life of milk without the need for high temperatures, making it a preferred method for producing high-quality dairy products.
 3. Statement (c): Incorrect. Microfiltration is not used for homogenizing milk; homogenization is a separate process that breaks down fat globules.
 4. Statement (d): Incorrect. Microfiltration does not add vitamins and minerals to milk; it focuses on removing unwanted microorganisms to improve safety and shelf life.
-

Q.1

What should be used to identify which animal have received ante-mortem inspection and their outcome?

1. Ear tags
2. Pen cards
3. Tattoos
4. None of these

Answer:

B

Sol:

- **pen cards are commonly used to identify animals that have received ante-mortem inspection and to record their outcomes.**
 - **Pen cards are used to clearly identify animals that have undergone ante-mortem inspection, ensuring they can be tracked and monitored throughout the process**
 - Using pen cards helps slaughterhouses comply with regulatory requirements for animal health and food safety.
-

Q.2

What should be done for aggressive animals during ante-mortem inspection?

1. Ignore
 2. Isolate
 3. Release back to the farm
-

4. None of these

Answer:

B

Sol:

Aggressive animals should be handled separately from the rest of the stock to prevent injuries and stress to other animals

Appropriate restraints, such as squeeze chutes or holding pens, should be used to safely control the animal during inspection

Efforts should be made to minimize stress and agitation in the animals, as this can exacerbate aggressive behavior. This includes avoiding loud noises and sudden movements.

Q.3

What does pH measures in meat?

1. acidity or alkaninity
2. Fat content
3. Water content
4. Protein content

Answer:

A

Sol:

- pH measures the **acidity** or **alkalinity** of meat.
High pH (alkaline): Can indicate stress or disease before slaughter, leading to dark, firm, and dry (DFD) meat, which is less desirable.
Low pH (acidic): Indicates proper post-mortem glycolysis, resulting in tender meat with good water-holding capacity and color.
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Q.4

What is the normal physiological pH of living muscles?

1. 8.2
2. 9.2
3. 7.2
4. None of these

Answer:

C

Sol:

The normal physiological pH of living muscles is approximately 7.0 to 7.2. Here are a few key points to understand this:

The body tightly regulates the pH of muscle tissue to maintain homeostasis, ensuring optimal conditions for enzymatic and metabolic activities.

A neutral to slightly alkaline pH is crucial for muscle function, affecting processes like contraction and energy production.

During intense exercise, the accumulation of lactic acid can temporarily lower the pH of muscle tissue, leading to acidity and muscle fatigue.

The body employs buffer systems, such as bicarbonate and phosphate, to stabilize pH levels in muscle tissue and other bodily fluids.

After death, muscle pH typically drops to around 5.5 due to the production of lactic acid, which affects meat quality.

Q.5

What is the major pigment responsible for meat color?

1. Catalase
2. Cytochrome enzymes
3. Haemoglobin
4. Myoglobin

Answer:

D

Sol:

The major pigment responsible for meat color is myoglobin.

Meat Color Changes:

- **Oxymyoglobin:** Bright red, associated with fresh meat.
- **Deoxymyoglobin:** Purple-red, seen in vacuum-packed meat.
- **Metmyoglobin:** Brown, indicating oxidized myoglobin, often seen in older or spoiled meat.

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