

Weekly Free PDF for Food Safety Officer Exam – Set 2

Q.1

What is pasteurization primarily effective against?

1. Pathogens
2. Enzymes
3. Rats
4. None of these

Answer:

A

Sol:

Pasteurization is primarily effective against pathogenic microorganisms such as bacteria, viruses, and molds that can cause foodborne illnesses. It significantly reduces the microbial load, ensuring the safety and extending the shelf life of various food products, including milk, juices, and some canned goods.

The process works by heating the food to a specific temperature for a set period, which kills or inactivates harmful microorganisms without significantly affecting the food's nutritional value or taste.

Q.2

What does the D value signify in food preservation?

1. Time to destroy 90% of microorganisms at a certain temperature
2. Time taken for Packaging of food
3. Distance travelled by the food after Packed
4. None of these

Answer:

A

Sol:

In food preservation, the D value (decimal reduction time) signifies the time required at a specific temperature to reduce the population of microorganisms by 90%, or one logarithmic cycle. Essentially, it measures the effectiveness of a sterilization process by indicating how long it takes to kill 90% of a specific microorganism at a given temperature.

For example, if a D value is 2 minutes at 121°C, it means that it takes 2 minutes to reduce the microbial population by 90% at that temperature.

Understanding the D value is crucial for designing and validating effective thermal processing methods to ensure food safety and extend shelf life

Q.3

What is the typical temperature and duration for sterilization using wet heat?

1. 100 degree C for 15 minutes
2. 121 degree C for 15 minutes
3. 100 degree C for 45 minutes
4. 121 degree C for 45 minutes

Answer:

B

Sol:

The typical temperature and duration for sterilization using wet heat, also known as **autoclaving**, is **121°C (250°F) for 15-20 minutes**. This method uses steam under pressure to achieve high temperatures, effectively killing all microorganisms, including spores.

Autoclaving is widely used in food processing, medical instrument sterilization, and laboratory settings to ensure thorough sterilization and safety.

Q.4

Which enzyme is responsible for enzymatic browning in fruits and vegetables?

1. Protease
2. Amylase
3. Lipase
4. polyphenol oxidase

Answer:

D

Sol:

The enzyme responsible for enzymatic browning in fruits and vegetables is polyphenol oxidase (PPO). This enzyme catalyzes the oxidation of phenolic compounds in the presence of oxygen, resulting in the formation of brown pigments called melanins. This process is commonly observed in fruits like apples, bananas, and potatoes when they are cut or bruised.

Enzymatic browning can affect both the appearance and nutritional quality of fruits and vegetables. Techniques like blanching, using acidic solutions, or storing at low temperatures can help slow down or prevent this browning process.

Q.5

Which of the following is a common method of removing insects , worms and rats from stored food?

1. Fumigation
2. Vacuum Packing
3. Blanching
4. None

Answer:

A

Sol:

Fumigation is indeed a common method used to remove insects, worms, and rats from stored food. This process involves using fumigants, which are gaseous pesticides, to effectively eliminate pests in storage facilities and containers.

Fumigation is particularly useful in large-scale storage settings to ensure the safety and quality of stored food products.

Q.6

Which of the following methods in not used for heat processing in food preservation?

1. Freezing
2. Sterilization
3. Blanching
4. None of these

Answer:

A

Sol:

Freezing is not a method used for heat processing in food preservation.

Freezing is a method that preserves food by lowering the temperature to inhibit the growth of microorganisms and slow down enzymatic activity. On the other hand, heat processing methods like **pasteurization**, **blanching**, and **sterilization** use heat to achieve preservation by inactivating enzymes and killing or reducing the number of microorganisms.

Q.7

What is the PH range characterizes high acid foods?

1. 1 or lower.
2. 4.6 or higher
3. 4.6 or lower.
4. 3-4

Answer:

C

Sol:

High acid foods are characterized by a pH range of 4.6 or lower. These foods have enough acidity to prevent the growth of most bacteria, including botulism spores, which makes them safer for preservation methods like canning. Examples of high acid foods include fruits, pickles, sauerkraut, and some fermented products.

Q.8

What is the primary purpose of bleaching in food preservation?

1. Preserving color
2. Reducing microbial functioning
3. Increasing water content
4. None of these

Answer:

A

Sol:

What is the primary purpose of bleaching in food preservation?

The primary purpose of bleaching in food preservation is to **enhance the appearance** of food products by restoring or improving their natural white or bright color. This makes the food more visually appealing to consumers¹.

Bleaching agents are often used in products like flour and sugar to ensure consistency in color, which is important for consumer expectations

Q.9

Which method is used to inactivate enzymes in food?

1. High Temperature
2. Vacuum Pumping
3. Adding preservatives
4. None of these

Answer:

A

Sol:

The heating food to a specific temperature for a set period of time to kill harmful microorganisms and inactivate enzymes that can cause spoilage.

Q.10

Which type of packaging material is most commonly used for preserving the freshness of dry foods like cereals and snacks?

1. Glass
2. Plastics
3. Leaves
4. Foil Papers

Answer:

B

Sol:

Plastic is the most commonly used packaging material for preserving the freshness of dry foods like cereals and snacks. It offers excellent moisture and air barriers, which help prevent the food from becoming stale and maintain its quality. Additionally, plastic packaging is lightweight, durable, and cost-effective, making it a popular choice in the food industry.

Q.1

How do whey proteins react to heat?

1. They are insoluble and do not coagulate
2. They are stabilised and became more soluble
3. They are easily coagulated by heat
4. None of these

Answer:

C

Sol:

Whey proteins, such as beta-lactoglobulin and alpha-lactalbumin, are sensitive to heat. When exposed to high temperatures, whey proteins undergo denaturation, which involves the unfolding of their molecular structures. This process can lead to several outcomes:

1. **Loss of solubility:** Denatured whey proteins become less soluble in water, which can affect the texture and appearance of food products.
2. **Gel formation:** When heated, denatured whey proteins can aggregate and form gels, which can be useful in products like yogurt and certain types of cheese.
3. **Reduction in functional properties:** The functional properties of whey proteins, such as their ability to emulsify or foam, may decrease as a result of heat denaturation.

These changes are important in food processing and product formulation, where controlled heating can be used to achieve desired textural and structural properties.

Q.2

Compared to sucrose , how sweet is lactose?

1. 1/6th as sweet
2. 3 times sweeter
3. Twice as sweet
4. Just as sweet

Answer:

A

Sol:

Lactose is indeed about **1/6** as sweet as sucrose. This makes it significantly less sweet, which is why milk and dairy products have a more subtle sweetness compared to foods sweetened with table sugar.

Q.3

Which fraction of casein is also called calcium insensitive casein:

1. Kappa-casein
2. Alpha-casein
3. Gamma-casein
4. Delta-casein

Answer:

A

Sol:

The fraction of casein that is referred to as calcium-insensitive casein is kappa-casein. Kappa-casein plays a crucial role in stabilizing casein micelles in milk, preventing them from precipitating or coagulating prematurely. Unlike other types of casein (alpha and beta-casein), kappa-casein does not precipitate in the presence of calcium, hence the term "calcium-insensitive."

Q.4

y- Caseins are the breakdown products cleaved from beta casein by the major milk proteolytic enzyme :

1. Rennin
2. Plasmin
3. Pepsin
4. All of the above

Answer:

B

Sol:

Plasmin is a major proteolytic enzyme in milk that cleaves beta-casein into smaller fragments known as gamma-caseins and proteose-peptones. This process affects the stability and properties of milk, influencing its texture and how it behaves during processing.

Q.5

Casein may be precipitated by all of the following except:

1. High pressure
2. Heat
3. Rennet
4. Alcohol

Answer:

A

Sol:

Casein may be precipitated by all of the following except **high pressure**.

The usual methods for precipitating casein include:

- **Heat:** Combined with other factors, can lead to coagulation.
- **Addition of acid:** Lowers the pH and causes casein to precipitate.
- **Addition of enzymes** (e.g., rennet): Causes the casein micelles to destabilize and coagulate.

High pressure, on the other hand, does not precipitate casein out of milk. High pressure can have various effects on food, such as inactivating microorganisms and enzymes, but it doesn't cause casein precipitation.

Q.6

Which of the following can cause casein to precipitate out of milk?

1. Rennet
2. High PH level
3. Dilution with water
4. None of these

Answer:

A

Sol:

Rennet is an enzyme complex that specifically cleaves the kappa-casein on the surface of casein micelles, leading to the destabilization of these micelles and causing the casein to coagulate and form a solid mass. This process is fundamental in cheese-making, where the coagulation of milk proteins is a crucial step.

Q.7

The state in which casein exists in milk is :

1. colloidal
2. gaseous
3. dissolved
4. crystalline

Answer:

A

Sol:

The state in which casein exists in milk is colloidal. Casein forms micelles, which are colloidal particles suspended in the liquid. This colloidal state is essential for the stability and properties of milk, allowing it to stay uniformly mixed and preventing the casein from precipitating out under normal conditions.

Q.8

The proteins of milk consists mainly of:

1. whey proteins.
2. casein
3. Both a and b
4. None of these

Answer:

C

Sol:

The proteins of milk consists mainly of:

The proteins in milk consist mainly of two types: **casein** and **whey proteins**.

1. **Casein:** Makes up about 80% of the protein content in milk. It forms micelles, which are stable structures that help keep the protein dispersed in the liquid. Casein is responsible for the white color of milk and is used in cheese-making, as it coagulates when exposed to certain conditions like acids or enzymes.
2. **Whey proteins:** Comprise the remaining 20% of milk proteins. These proteins remain in the liquid after the casein has been coagulated and removed. Whey proteins are highly soluble and are known for their excellent nutritional quality. They are commonly used in dietary supplements and protein powders.

Both types of proteins contribute to the nutritional value and functional properties of milk.

Q.9

_____ prevents the fat globules from coalescing

1. Milk Protein
2. Tri glycerols
3. Both a and b
4. None of these

Answer:

A

Sol:

Milk proteins, specifically **casein** and **whey proteins**, prevent the fat globules from coalescing in milk. These proteins form a protective membrane around the fat globules, stabilizing them within the emulsion and ensuring that the fat remains evenly dispersed throughout the milk.

Q.10

Milk fat is present in milk as:

1. water in oil emulsion
2. oil in water emulsion
3. oil in water colloid
4. water in oil colloid

Answer:

A

Sol:

Milk fat is present in milk as an oil-in-water emulsion. In this emulsion, tiny droplets of fat are dispersed throughout the water-based liquid, which gives milk its smooth and creamy texture. This structure is stabilized by proteins and other components in milk, preventing the fat from separating out easily.

Q.1

Which of the following is a polysaccharide derived from algae and seaweeds?

1. Gelatin
2. Pectin
3. Agar agar
4. None of these

Answer:

C

Sol:

Agar agar is a polysaccharide derived from red algae and seaweeds, specifically from genera like *Gelidium* and *Gracilaria*.

Q.2

Which of the following is a commonly used emulsifier in commercial bread doughs?

1. Baking powder
2. Lecithin
3. Glycerin
4. Sodium stearyl lactylate

Answer:

D

Sol:

Sodium stearyl lactylate (SSL) is indeed a commonly used emulsifier in commercial bread doughs.

1. **Improves Dough Handling:** SSL helps improve the machinability and handling properties of the dough, making it easier to work with.
2. **Increases Volume:** It enhances the volume of the bread by strengthening the gluten network, allowing the dough to trap more gas during fermentation and baking.
3. **Improves Texture:** It results in a finer crumb structure and softer texture in the finished bread.
4. **Shelf Life:** SSL helps extend the shelf life of bread by maintaining its softness and delaying staling.

Q.3

Which of the following is not a common leavening agent?

1. Baking powder
2. Beer
3. Yeast
4. Lecithin



Answer:

D

Sol:

lecithin is not a leavening agent. Lecithin is an emulsifier. Its primary function is to help mix ingredients that typically don't combine well, such as oil and water, ensuring a smooth and uniform texture. It's commonly used in baking and other food products to improve texture, extend shelf life, and provide consistent quality. leavening agents are substances used to produce gas and cause doughs and batters to rise. Common leavening agents include baking powder, baking soda, and yeast.

Q.4

What is the purpose of anti caking agents in powdered or granulated ingredients?

1. enhances flavor
2. limit growth of microbes
3. prevent lumping , caking, or sticking
4. None of these

Answer:

C

Sol:

Anti-caking agents serve an important role in maintaining the quality and usability of powdered or granulated ingredients.

such as: prevent lumping , caking, or sticking
also they have other properties such as

1. **Preventing Clumps:** They help prevent the formation of clumps or lumps, ensuring that the powder remains free-flowing and easy to handle.
2. **Moisture Absorption:** Anti-caking agents absorb excess moisture from the environment, which can cause powders to stick together.
3. **Improving Shelf Life:** By keeping the powders dry and free-flowing, these agents help extend the shelf life of the product.
4. **Enhancing Dispersion:** In the case of food products, anti-caking agents make it easier to mix and disperse the ingredients uniformly.

Q.5

Which PH control agent is commonly found in bottled fruit flavored drinks?

1. Adipic acid
2. Sodium citrate
3. Acetic acid
4. Nitric acid

Answer:

A

Sol:

Adipic acid is chosen as a pH control agent in fruit-flavored drinks for a few compelling reasons:

1. **Neutral Flavor:** Unlike some other acids, adipic acid has a relatively neutral flavor. This helps in maintaining the intended taste profile of the fruit-flavored drink without adding any unwanted sourness or bitterness.
2. **Consistency:** Adipic acid is very effective at maintaining a consistent pH level throughout the shelf life of the beverage, ensuring the product remains safe and pleasant to consume.
3. **Stability:** It helps in stabilizing the color and flavor of the drink, preventing any changes that could occur due to variations in acidity over time.
4. **Synergy with Other Ingredients:** Adipic acid works well in combination with other ingredients and additives commonly used in beverages, enhancing their overall effectiveness.

Q.6

Where is lactic acid commonly used as a PH control agent?

1. In gelatin making
2. In ice cream making
3. In candy making
4. In cheese making

Answer:

D

Sol:

Lactic acid is commonly used as a pH control agent in cheese making.

1. **pH Control:** Lactic acid helps in lowering the pH of the milk, which is essential for the coagulation process. A lower pH aids in the action of rennet, an enzyme used to curdle the milk, forming the curds and whey.
2. **Flavor Development:** The controlled pH environment facilitated by lactic acid promotes the growth of beneficial bacteria. These bacteria contribute to the development of the characteristic flavors and textures of various cheeses.
3. **Texture Improvement:** By controlling the acidity, lactic acid ensures a firmer curd structure, which is crucial for the final texture of the cheese. It also helps in reducing the chances of unwanted microbial growth, ensuring a consistent and high-quality product.
4. **Preservation:** The acidic environment created by lactic acid helps in preserving the cheese by inhibiting the growth of spoilage organisms and pathogens.

Q.7

What is the most commonly used food preservative?

1. Sodium benzoate
2. Sodium Cyclamate
3. Chlorine
4. None of these

Answer:

A

Sol:

most commonly used food preservatives is **sodium benzoate**. It is widely used because of its effectiveness in preventing the growth of mold, yeast, and some bacteria. Sodium benzoate is often found in acidic foods and beverages such as:

- Carbonated drinks
- Fruit juices
- Salad dressings
- Pickles

Q.8

What role do oxidizing agents play in bread making?

1. Increase Dough Strength and Elasticity
2. Decrease Dough Strength and Elasticity
3. Lessen Natural Taste
4. None of these

Answer:

A

Sol:

Dough Strength and Elasticity: Oxidizing agents enhance the dough's strength and elasticity, making it easier to handle and shape. This is particularly important in high-speed bread production

Q.9

What is the purpose of adding colors to foods ?

1. To maintain shelf life
2. To improve nutritional value
3. To enhance the appearance
4. None of these

Answer:

C

Sol:

Color enhances the visual attractiveness of food, making it more appealing to consumers. Vibrant and appetizing colors can stimulate appetite and create a positive eating experience. During processing and storage, some foods may lose their natural color. Adding colors can help restore the original appearance of the food.

Q.10

Which of the following is a commonly used sequestrant ?

1. Guar gum
2. EDTA
3. Gelatin
4. Agar agar

Answer:

B

Sol:

Ethylenediaminetetraacetic acid (EDTA) is a versatile and commonly used sequesterant in the food industry, as well as in various other applications.

Uses in Food Industry:

1. **Metal Ion Binding:** EDTA acts as a chelating agent, binding to metal ions like calcium and magnesium. This prevents these ions from participating in reactions that could spoil food.
2. **Preservation:** It helps extend the shelf life of food products by inhibiting oxidative reactions that can cause rancidity, discoloration, and loss of flavor.
3. **Stabilizing Emulsions:** EDTA is often used to stabilize emulsions in products like salad dressings and sauces, ensuring they remain uniformly mixed.
4. **Color Retention:** By binding to metal ions that can cause discoloration, EDTA helps maintain the color of food products, making them more visually appealing.

Q.1

What is the primary sugar found in milk?

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

Answer:

C

Sol:

Lactose is the primary sugar found in milk, giving it its sweet taste. Lactose is broken down by the enzyme lactase in the human body. Lactose intolerance occurs when the body lacks sufficient lactase. It provides a source of energy and aids in calcium absorption.

Q.2

Rennin is also known as _____

1. chymosin
2. kylomysin
3. khailomysin
4. chemosin

Answer:

A

Sol:

Rennin, also known as chymosin, is an enzyme used to coagulate milk, forming curds and whey.

1. **Source:** Rennin is traditionally sourced from the stomach lining of calves.
2. **Alternative:** Microbial and plant-based rennet are also used as substitutes.
3. **Process:** It helps convert caseinogen into insoluble casein, leading to curd formation.

Q.3

Which enzyme is commonly used in the cheese-making process to coagulate milk?

1. Rennin
2. Lipase
3. Catalase

4. Amylase

Answer:

A

Sol:

Rennin, also known as chymosin, is an enzyme used to coagulate milk, forming curds and whey.

1. **Source:** Rennin is traditionally sourced from the stomach lining of calves.
2. **Alternative:** Microbial and plant-based rennet are also used as substitutes.
3. **Process:** It helps convert caseinogen into insoluble casein, leading to curd formation.

Q.4

What is the main protein found in cow's milk?

1. Albumin
2. Casein
3. Globulin
4. Lactalbumin

Answer:

B

Sol:

Casein is the main protein found in cow's milk, accounting for about 80% of the total protein content. Casein is a high-quality protein, providing all essential amino acids. so it has major nutritional value

Q.5

Which of the following processes is used to increase the shelf life of milk by killing harmful microorganisms?

1. Homogenization
2. Pasteurization
3. Fermentation
4. Churning

Answer:

B

Sol:

Pasteurization is the process of heating milk to a specific temperature for a set period to kill harmful microorganisms without affecting the nutritional quality.

Common pasteurization methods include HTST (High-Temperature Short Time) and UHT (Ultra-High Temperature).

This process significantly reduces the risk of milk-borne diseases

Pasteurized milk has a longer shelf life compared to raw milk.

Q.6

Which carotenoid is most abundant in cow's milk?

1. β -Carotene
2. Lycopene
3. Zeaxanthin
4. Astaxanthin

Answer:

A

Sol:

β -Carotene is the most abundant carotenoid in cow's milk, contributing to its color and nutritional value.

1. It gives cow's milk a slight yellowish tint.
2. β -Carotene is a precursor of Vitamin A, essential for vision and immune function.
3. The β -Carotene content in milk is influenced by the cow's diet, particularly the intake of fresh forage.

Q.7

Lactic acid is commonly used in cheese making for :

1. Flavor enhancement
2. Color retention
3. pH control
4. Preservation

Answer:

C

Sol:

Lactic acid helps in lowering the pH of the milk, aiding in the coagulation process and ensuring proper fermentation. Lactic acid is produced naturally during the fermentation of lactose by lactic acid bacteria. Lactic acid bacteria improve the gut health of consumers by promoting beneficial intestinal flora.

Q.8

The carotenoid content of cow's milk:

1. up to 50 $\mu\text{g}/100\text{ mL}$
2. up to 0.50 $\mu\text{g}/100\text{ mL}$
3. up to 5 50 $\mu\text{g}/100\text{ mL}$
4. none of these

Answer:

A

Sol:

Carotenoids in milk not only contribute to its nutritional value but also to its color and potential health benefits for consumers

The carotenoid content of cow's milk primarily consists of **β -carotene** and **lutein**

β -Carotene is the most abundant carotenoid in cow's milk

Q.9

Which of the following is not a phospholipid present in milk?

1. Lecithin
2. Biotin
3. cephalin
4. none of these

Answer:

B

Sol:

cephalin (also known as phosphatidylethanolamine) is a type of phospholipid. Cephalin is an essential component of biological membranes, playing a critical role in cell structure and function.

Phosphatidylcholine (Lecithin):

- This is a major component of the milk fat globule membrane.
- It plays a crucial role in the structural integrity and fluidity of cell membranes.
- Lecithin is also a common emulsifier in various food products.

Q.10

_____ is highly sensitive to oxidative changes giving rise to metallic flavors of milk:

1. phospholipids.
2. biotin
3. both a and b
4. none of these

Answer:

A

Sol:

The component in milk that is highly sensitive to oxidative changes and can give rise to metallic flavors is **phospholipids**. When these lipids oxidize, they can create off-flavors, including metallic or cardboard-like tastes. It's important in the dairy industry to control oxidation to maintain the quality and flavor of milk and milk products. Antioxidants are often used to prevent these unwanted flavor changes.

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.
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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.