

Weekly Free PDF for Food Safety Officer Exam – Set 5

Q.1

The causative agent of neurotoxicity is found in :

1. rice
2. grass pea
3. wheat
4. rye

Answer:

B

Sol:

The causative agent of neurotoxicity is found in *Lathyrus sativus*, also known as the grass pea or chickling pea. This legume contains a neurotoxic amino acid called beta-N-oxalyl-L-alpha,beta-diaminopropionic acid (ODAP), also known as BOAA, which can cause paralysis and other neurological symptoms when consumed in large quantities

Q.2

Which of the following diseases is caused by heavy metal poisoning in plants?

1. Chlorosis
2. Blight
3. Cadmium Toxicity
4. Rust

Answer:

C

Sol:

The cadmium toxicity in plants is caused by the absorption of cadmium, a heavy metal, from contaminated soil or water. This can lead to various symptoms in plants, including stunted growth, chlorosis (yellowing of leaves), and necrosis (death of plant tissues). Heavy metal toxicity, like cadmium toxicity, can severely impact plant health and productivity.

Q.3

What is the recommended moisture content to prevent aflatoxin in stored grains?

1. Below 12 %
2. Above 12%
3. Below 5%
4. Above 25%

Answer:

A

Sol:

To prevent aflatoxin contamination in stored grains, it is recommended to keep the moisture content below 12-13%. Maintaining low moisture levels helps inhibit the growth of aflatoxin-producing fungi, such as *Aspergillus* species, ensuring the grains remain safe for consumption

Q.4

Ergotism can be prevented by removing infested grains using:

1. 10% salt water
2. 20% salt water
3. Boiling water
4. Fresh water

Answer:

B

Sol:

Ergotism, which is caused by the consumption of grains contaminated with the toxic alkaloids produced by the *Claviceps purpurea* fungus, can be prevented by removing ergot-infected grains. One effective method for doing this is by using a solution of 20% salt water. The ergot-infected grains tend to float due to their lower density, allowing them to be easily separated and discarded, thus reducing the risk of ergotism.

Q.5

What is the most potent mycotoxin produced by Aspergillus species that affects food grains?

1. Aflatoxin B1
2. Ochractoxin A
3. Citrinin
4. None of these

Answer:

A

Sol:

The most potent mycotoxin produced by Aspergillus species is aflatoxin. Aflatoxins are highly toxic and can contaminate a variety of food crops, including cereals, nuts, and spices¹. They are known for their strong carcinogenic properties, particularly affecting the liver

Q.1

Which of the following is a primary benefit of using modified atmosphere packaging (MAP) for fresh produce?

1. Enhances flavor
2. Reduces spoilage by controlling gas composition
3. Increases water content
4. Adds nutritional value

Answer:

B

Sol:

Modified Atmosphere Packaging (MAP) involves altering the atmosphere inside the packaging to slow down the ripening and spoilage of fresh produce. By controlling the levels of oxygen, carbon dioxide, and nitrogen, MAP extends the shelf life and maintains the quality of the produce.

Q.2

Which mycotoxin, commonly found in cereals and grains, is most closely associated with increased risk of liver cancer?

1. Zearalenone
2. Fumonisin B1

3. Ochratoxin A
4. Aflatoxin B1

Answer:

D

Sol:

Aflatoxin B1, produced by *Aspergillus* species, is a potent mycotoxin commonly found in cereals and grains. It is highly carcinogenic and has been closely linked to an increased risk of liver cancer, particularly in populations with high dietary exposure

Q.3

Which of the following cereal grain is the most globally prominent , alongside wheat?

1. Barley
2. Rey
3. Millet
4. Rice

Answer:

D

Sol:

The most prominent cereal grain globally, alongside wheat, is **rice**. Rice and wheat are staple foods for a large portion of the world's population and are key contributors to global food security.

Q.4

Which class of wheat protein is soluble in 70-90% alcohol?

1. Gliadins
2. Albumins
3. Globulin
4. None of these

Answer:

A

Sol:

The class of wheat protein that is soluble in 70-90% alcohol is gliadin. Gliadin is a type of prolamin protein found in wheat and is one of the components of gluten, along with glutenin. Its solubility in alcohol is a key characteristic that differentiates it from other proteins found in wheat.

Q.5

Which protein fraction in cereals is referred to as " zein " in maize?

1. Prolamins
2. Albumins
3. Globulins
4. Glutelins

Answer:

A

Sol:

The protein fraction in maize (corn) that is referred to as zein belongs to the class of prolamin proteins. Zein is the major storage protein in maize and is used in various industrial applications due to its unique properties.

Q.1

Which type of butter is generally made on a farm and may have a sour flavor due to the high acid content of the cream?

1. Creamery Butter
2. Dairy Butter
3. Fresh Butter
4. None of these

Answer:

B

Sol:

(option b) Dairy butter, also known as cultured butter, is made from fermented cream, which gives it that distinct sour flavor due to the high acid content.

Cultured butter is rich in nutrients. It contains:

- **Healthy fats:** Like other butter, it has beneficial fatty acids.
- **Probiotics:** Due to the fermentation process, it can have live cultures that are good for digestion.
- **Vitamins:** It's a source of vitamins like A, D, and K2.

Q.2

Temperature in which cold storage butter is kept:

1. 18°C
2. 28°C
3. -18°C
4. -28°C

Answer:

C

Sol:

Keeping butter in cold storage at around -18°C (-0.4°F) is essential for several reasons:

1. **Preservation of Quality:** Low temperatures slow down the rate of spoilage and prevent the growth of bacteria, mold, and yeast. This ensures the butter maintains its freshness and quality over a longer period.
2. **Texture and Consistency:** At -18°C, butter retains its solid state, making it easy to handle and use. It prevents the butter from becoming too soft or liquid, which can affect its texture and usability.
3. **Flavor Retention:** The cold storage temperature helps preserve the natural flavor and aroma of the butter. This is particularly important for high-quality and specialty butters that have distinctive tastes.
4. **Extended Shelf Life:** Storing butter at this temperature significantly extends its shelf life. It allows for bulk storage and transportation without compromising the butter's quality, making it economically beneficial for producers and suppliers.
5. **Prevention of Oxidation:** Butter contains fats that can oxidize and turn rancid when exposed to warmer temperatures. Cold storage at -18°C minimizes this risk and keeps the butter safe for consumption.

Q.3

The acidity of the churned cream should not exceed ____ % in case of sweet cream butter.

1. 16
2. 1.6
3. 0.16
4. 16.16

Answer:

C

Sol:

When making sweet cream butter, controlling the acidity level of the churned cream is crucial. Sweet cream butter is known for its mild, fresh flavor, which is achieved by using cream with low acidity. If the acidity level exceeds 0.16%, it can lead to a tangy or sour taste, which is undesirable in sweet cream butter. why this is important:

- **Flavor:** Lower acidity helps maintain the sweet and mild flavor of the butter.
- **Texture:** High acidity can affect the texture of the butter, making it less smooth and creamy.
- **Shelf Life:** Proper acidity levels help in ensuring the butter remains fresh for a longer period.

So, by keeping the acidity of the churned cream below 0.16%, you get that delightful, smooth, and mild-flavored butter that's perfect for spreading on bread or cooking.

Q.4

The real butter flavor is the speciality of :

1. Unripened cream butter
2. Ripened cream butter
3. both a and b
4. None of these

Answer:

B

Sol:

Ripened cream butter, also known as cultured butter, does have a distinctive and rich flavor due to the fermentation process the cream undergoes before being churned into butter. This fermentation gives it a tangy, complex taste that many people find more flavorful compared to regular sweet cream butter.

Q.5

According to FSSAI (2011) , what type of emulsion characterizes butter?

1. oil in water
2. water in oil
3. solid in gas
4. none of these

Answer:

B

Sol:

According to the Food Safety and Standards Authority of India (FSSAI) 2011 regulations, butter is characterized as a water-in-oil emulsion.

This means that it consists of tiny droplets of water dispersed throughout a continuous phase of oil.

Q.1

What is the primary reason for chilling meat after slaughter?

1. To enhance its flavor
2. To extend its shelf-life
3. To improve its color
4. None of these

Answer:

B

Sol:
Chilling meat after slaughter is crucial to slow down bacterial growth and enzymatic activity, which helps in extending the shelf-life of the meat. This process also helps in maintaining the meat's quality and safety.

Q.2

Which of the following diseases can be transmitted to humans through the consumption of undercooked meat?

1. Rabies
2. Toxoplasmosis
3. Tuberculosis
4. All of the above

Answer:

D

Sol:
All of the listed diseases can be transmitted to humans through the consumption of undercooked meat, especially when the meat is contaminated by infected animals.

- **Rabies** can be transmitted through consumption of infected animal tissues, though it's rare.
 - **Toxoplasmosis**, caused by the parasite *Toxoplasma gondii*, can be contracted by consuming undercooked pork, lamb, or venison.
 - **Tuberculosis (TB)** can be transmitted via consumption of raw or undercooked meat from infected animals.
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Q.3

What is the significance of "marbling" in meat quality?

1. It refers to the fat deposits within the muscle tissue, improving flavor and tenderness
2. It indicates the age of the animal
3. It refers to the color of the meat
4. It refers to the water content in the meat

Answer:

A

Sol:
1. Marbling" refers to the small streaks or flecks of fat within the muscle tissue of meat, and it is a key indicator of meat quality. The fat in marbled meat improves flavor and tenderness because fat acts as a flavor carrier and provides a softer texture. Marbling is often associated with higher-quality beef, like that found in prime cuts.
2. Marbling does not directly indicate the age of the animal (b), the color of the meat (c), or the water content (d), although fat content may influence the appearance and moisture retention of meat.

Q.4

Which of the following methods is commonly used to preserve meat and prevent bacterial growth?

1. Smoking
2. Freezing
3. Canning
4. All of the above

Answer:

D

Sol:

All of the methods listed (smoking, freezing, and canning) are commonly used to preserve meat and prevent bacterial growth.

- **Smoking** imparts flavor and helps dry out the meat, creating an environment less favorable for bacterial growth.
- **Freezing** slows down bacterial growth by lowering the temperature, though it does not kill all pathogens.
- **Canning** involves sealing meat in airtight containers and heating it to destroy bacteria and enzymes, ensuring long-term preservation.

Q.5

Which of the following is the primary purpose of meat inspection in veterinary science?

1. To determine the fat content of meat
2. To ensure meat is free from diseases and contaminants
3. To enhance the flavor of meat products
4. None of these

Answer:

B

Sol:

Meat inspection in veterinary science is primarily focused on ensuring that meat products are safe for human consumption. This involves checking for diseases like tuberculosis, brucellosis, and other pathogens that can be transmitted from animals to humans. Meat inspection also includes assessing the hygiene of meat processing plants to prevent contamination with harmful bacteria (e.g., Salmonella, E. coli)

While fat content, flavor, and shelf life are important for meat quality, these are not the main goals of veterinary inspection.

Q.1

When should the appearance of each milk can be observed at the Milk Plant / Dairy?

1. after the odor test
2. before the odor test
3. during the unloading process
4. none of these

Answer:

A

Sol:

After the odour test, the appearance of milk in each can should be observed immediately. Look for any floating extraneous matters, off-colour, or partially churned milk. These observations help ensure the milk's quality before it

moves on to the next stages of processing.

Q.2

Which of the following contaminants is highly undesirable in milk received at the dairy?

1. antibiotics
2. vitamins
3. natural sugar
4. None of these

Answer:

A

Sol:

Antibiotics are indeed a highly undesirable contaminant in milk received at the dairy. Their presence can pose significant health risks to consumers, including allergic reactions and antibiotic resistance. It also interferes with the fermentation processes in dairy production, affecting the quality and safety of dairy products. Dairy farmers are therefore required to follow strict regulations to ensure that milk is free of antibiotics before it reaches consumers. It's a critical aspect of maintaining the integrity and safety of our dairy supply.

Q.3

Which of the following is the primary purpose of milk filtration in dairy processing?

1. To reduce the fat content
2. To remove large physical impurities
3. To decrease the milk shelf life
4. None of these

Answer:

B

Sol:

Filtration is an essential process in milk processing primarily aimed at removing large physical impurities like dirt, hair, and other debris that may be present in milk when it is collected from cows. This process ensures that the milk is clean and safe for further processing. Although milk filtration may also indirectly improve the appearance and quality of milk, its main purpose is to remove large particles before the milk undergoes further treatments like pasteurization and homogenization.

- Milk filtration is often the first step in the dairy processing chain.
- It helps ensure that no physical contaminants reach the consumer.
- Filtration does not impact the fat content or homogenization of milk.
- The filtration process is typically done using fine mesh filters or specialized filtration units.
- Clean milk with reduced physical impurities is essential for producing high-quality dairy products.

Q.4

2. Canning
3. Pasteurization
4. Irradiation

Answer:

B

Sol:

Canning is a method of preserving fish (and other foods) by sealing it in airtight containers and then heating it to kill microorganisms and deactivate enzymes that can cause spoilage.

This process makes it possible to store fish for long periods without refrigeration.

Freezing and pasteurization also preserve fish, but canning is particularly effective for non-refrigerated storage.

Q.5

Which of the following is the main advantage of using vacuum packaging for meat preservation?

1. It prevents freezer burn
2. It prevents microbial growth
3. It increases the shelf life of frozen products
4. It prevents enzymatic activity

Answer:

C

Sol:

Vacuum packaging removes air from the packaging, which helps prevent freezer burn, reduce oxidation, and limit microbial growth, thus extending the shelf life of meat.

While it doesn't eliminate microbial growth entirely, it significantly slows it down, especially when combined with freezing.

Vacuum packaging is especially useful for maintaining the quality of frozen meat.

.1

What are antioxidants?

1. Substances that promote oxidation
2. Substances that inhibit oxidation
3. Substances that produce free radicals
4. Substances that damage DNA

Answer:

B

Sol:

Antioxidants are molecules that inhibit the oxidation of other molecules by donating electrons to free radicals, thereby neutralizing them and preventing cellular damage.

Q.2

How do free radicals affect proteins?

1. By enhancing their function
2. By causing protein denaturation

3. By increasing protein synthesis
4. By stabilizing protein structure

Answer:

B

Sol:

Free radicals can react with protein side chains, leading to the oxidation of amino acids, particularly those containing sulfur (like cysteine) or aromatic rings (like tyrosine).

This can result in the loss of protein function, cross-linking, and aggregation, which are common features in neurodegenerative diseases like Alzheimer's and Parkinson's.

Oxidatively modified proteins are often targeted for degradation by the proteasome system, but excessive damage can overwhelm this system, leading to the accumulation of dysfunctional proteins.

Q.3

Which process involves the oxidative damage of carbohydrates by free radicals?

1. Glycation
2. Fermentation
3. Peroxidation
4. Polymerization

Answer:

A

Sol:

Glycation is the non-enzymatic reaction between reducing sugars and amino groups in proteins, lipids, or nucleic acids, leading to the formation of advanced glycation end-products (AGEs).

Free radicals can accelerate glycation, contributing to aging and chronic diseases like diabetes. AGEs can cross-link proteins, affecting their structure and function, and interact with receptors on cells (RAGE), triggering inflammatory responses that exacerbate tissue damage

Q.4

In nucleic acids, which base is most susceptible to damage by free radicals?

1. Adenine
2. Thymine
3. Cytosine
4. Guanine

Answer:

D

Sol:

Guanine is particularly susceptible to oxidation by free radicals, forming 8-oxoguanine, which can mis pair with adenine during DNA replication, leading to mutations.

Q.5

Which of the following diseases is strongly linked to oxidative stress caused by free radicals?

1. Osteoporosis
2. Hypertension
3. Alzheimer's disease
4. Hyperthyroidism

- Tempeh is made from fermented soybeans and is a staple in Indonesian cuisine.
- Tofu is made from soy milk and is not fermented.
- Soy sauce is a liquid condiment, while miso is a paste, both used in various dishes.
- Fermentation of tempeh enhances its nutritional profile and digestibility.

Q.4

The process of converting sugars into alcohol during beer production is called:

1. Distillation
2. Fermentation
3. Malting
4. Brewing

Answer:

B

Sol:

- Fermentation involves yeast converting sugars into alcohol and carbon dioxide.
- Distillation is a process used in making spirits, not beer.
- Malting is the germination of grains to prepare them for brewing.
- Brewing encompasses the entire beer-making process, but fermentation specifically refers to alcohol production.

Q.5

Which type of wine is typically made from red grapes but does not have extended contact with the grape skins?

1. Red wine
2. White wine
3. Rose wine
4. Sparkling wine

Answer:

C

Sol:

- Correct answer is C. Rose wine
- Rose wine is made by allowing limited contact between grape juice and skins, giving it a pink hue.
- Red wine is fermented with skins for a longer duration.
- White wine is usually made from white grapes, with minimal skin contact.
- Sparkling wine can be made from various types of grapes and involves carbonation.