Q.1

Which of the following food is a rich source of Vitamin B12?

1. Citrus fruits
2.
3. Whole grains
4. Diary Products
5. Leafy vegetables

Answer:

C

Sol:

Vitamin B12 is crucial for the formation of red blood cells and the prevention of anemia.

It helps maintain healthy nerve cells and is essential for DNA synthesis.

Dairy products, meat, fish, and eggs are excellent sources of Vitamin B12, making it harder to obtain from a vegan diet without supplements.

Q.2

Which vitamin is crucial for blood clotting and is found in leafy green vegetables?

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

Answer:

B

Sol:

Vitamin K is essential for the synthesis of proteins required for blood coagulation, preventing excessive bleeding.

It is found in high amounts in leafy green vegetables such as spinach, kale, and broccoli.

Vitamin K also plays a role in bone health by aiding the binding of calcium in bones.

Q.3

What is the recommended daily intake of Vitamin D for an average adult?

1. 10-15 micrograms
2. 20-25 micrograms
3. 30-35 micrograms
4. 40-45 micrograms

Answer:

A

Sol:

Vitamin D is vital for calcium absorption, which is necessary for maintaining healthy bones and teeth.

Adequate Vitamin D levels help prevent diseases such as rickets in children and osteomalacia in adults.

Sunlight is a natural source of Vitamin D, and during insufficient sun exposure, dietary intake becomes crucial.

Q.4

Which vitamin is known for preventing night blindness and supporting overall eye health?

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

Answer:

C

Sol:

Vitamin A is crucial for the production of rhodopsin, a protein in the eyes that allows for night vision.

A deficiency in Vitamin A can lead to night blindness and other vision problems, including xerophthalmia, a condition that can cause dry eyes and damage the cornea.

Besides carrots, Vitamin A is also found in foods like sweet potatoes, spinach, and liver, which help in maintaining overall eye health and vision.

Q.5

Which disease is caused by a deficiency of Vitamin C?

1. Ricket
2. Scurvy
3. Beriberi
4. Pellagra

Answer:

B

Sol:

Scurvy is characterized by symptoms such as bleeding gums, bruising, joint pain, and fatigue.

Vitamin C is essential for the synthesis of collagen, a protein that helps maintain the integrity of connective tissues

Prolonged deficiency of Vitamin C leads to weakening of the immune system, making the body more susceptible to infections.

Q.1

Which staining technique is primarily used to differentiate bacterial species into Gram-positive and Gram-negative?

1. Acid-fast stain
2. Gram stain
3. Endospore stain
4. Negative stain

Answer:

B

Sol:

Gram stain is developed by Hans Christian Gram, this method distinguishes bacteria based on their cell wall structure.

process: It involves staining with crystal violet dye, followed by iodine, alcohol decolorization, and a counterstain (safranin or fuchsine).

Outcome: Gram-positive bacteria retain the violet dye (appear purple) due to their thick peptidoglycan layer, while Gram-negative bacteria do not (appear pink/red) due to their thinner cell walls and outer membrane.

Q.2

Which of the following microorganisms is known to produce antibiotics?

1. Escherichia coli
2. Bacillus anthracis
3. Streptomyces
4. Clostridium botulinum

Answer:

C

Sol:

Streptomyces genus of actinobacteria is notable for its ability to produce a wide range of antibiotics.

Streptomyces species are the source of many clinically important antibiotics, such as streptomycin, tetracycline, and erythromycin.

Q.3

What is the main causative agent of foodborne botulism?

1. Clostridium perfringens
2. Clostridium botulinum
3. Bacillus cereus

4. Vibrio cholerae

Answer:

B

Sol:

1. **Clostridium botulinum**: This bacterium produces a potent neurotoxin that causes botulism, a serious paralytic illness.
2. **Symptoms**: Symptoms include blurred vision, muscle weakness, and difficulty swallowing. Without treatment, it can be fatal.
3. **Sources**: Foodborne botulism is often linked to improperly canned or preserved foods, where the bacteria can grow in anaerobic conditions.

Q.4

Which chemical is often used to adulterate milk and artificially increase its protein content?

1. Formaldehyde
2. Boric acid
3. Benzoic acid
4. Melamine

Answer:

D

Sol:

Melamine industrial chemical is sometimes illegally added to milk to falsely boost its protein content.

Melamine can cause kidney stones and renal failure, particularly in infants and young children.

Methods like high-performance liquid chromatography (HPLC) can detect melamine in food products.

Q.5

What is the primary purpose of using a selective medium in microbiology?

1. To grow only specific types of microorganisms
2. To identify viruses

3. To kill all microorganisms
4. To sterilize the medium

Answer:

A

Sol:

1. **Selective Medium**: This type of medium contains substances that inhibit the growth of some microorganisms while allowing others to grow.
2. **Use**: It is used to isolate specific bacteria from a mixed culture by encouraging the growth of desired organisms and suppressing others.
3. **Examples**: MacConkey agar (selects for Gram-negative bacteria) and Mannitol Salt agar (selects for Staphylococcus species).

Q.1

Sauces must have a minimum acidity level of ____ as per FSS standards.

1. 1.2%
2. 4.2%
3. 3.2%
4. 2.2%

Answer:

A

Sol:

According to the Food Safety and Standards (FSS) regulations, sauces must have a minimum acidity level of 1.0%.

This acidity level helps ensure the preservation and safety of the sauces, preventing the growth of harmful microorganisms.

Q.2

Which chutney preparation method is common in TN?

1. Thuvayal
2. Thogayal
3. Both a and b
4. None of these

Answer:

C

Sol:

In Tamil Nadu, thogayal and thuvayal are popular chutney preparation methods. These chutneys are thicker and coarser than typical chutneys, often made using a variety of ingredients including coconut, lentils, spices, and herbs.

- **Thogayal**: Typically includes roasted ingredients like lentils (urad dal or chana dal), red chilies, tamarind, and sometimes coconut. It's ground to a coarse paste and usually served with rice.
- **Thuvayal**: Similar to thogayal, but the ingredients are often raw or lightly sautéed, giving it a slightly different texture and flavor profile.

Q.3

What is the minimum fruit content (by weight) required in chutney according to FSS rules?

1. 30%
2. 75%
3. 50 %
4. 10%

Answer:

C

Sol:

According to the Food Safety and Standards (FSS) regulations, the minimum fruit content in chutney should be 50% by weight.

This means that at least half of the chutney's weight must come from fruits

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Q.4

What is the key microorganism involved in the fermentation of sauerkraut?

1. Yeast
2. Lactobacillus
3. Fungi
4. Molds

Answer:

B

Sol:

The key microorganism involved in the fermentation of sauerkraut is Lactobacillus.

This beneficial bacterium thrives in the salty environment created during the pickling process and converts sugars in the cabbage into lactic acid.

This lactic acid not only preserves the cabbage but also gives sauerkraut its distinctive tangy flavor.

Q.5

In which state of India is Roti pacchadi a traditional type of chutney is famous?

1. Tamil Nadu
2. Andhra Pradesh
3. Kerala
4. Karnataka

Answer:

B

Sol:

Roti Pacchadi, a traditional type of chutney, is particularly famous in the state of Andhra Pradesh in India. It's a beloved accompaniment to many meals, adding a burst of flavor and spice to dishes.

Q.1

Which of the following bacteria is most commonly associated with spoilage in milk?

1. Lactobacillus
2. Streptococcus
3. Pseudomonas
4. None of these

Answer:

C

Sol:

Pseudomonas species are psychrotrophic bacteria.

They can grow at low temperatures and are commonly associated with spoilage in refrigerated milk.

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

Q.2

What is the primary reason for grading milk at the point of collection?

1. To assess the fat content
2. To ensure the milk meets safety and quality standards
3. To measure the volume of milk
4. None of these

Answer:

B

Sol:

Grading milk at the point of collection ensures that it meets safety and quality standards

It helps in maintaining consumer safety and product consistency.

Q.3

Pasteurization of milk involves heating it to a specific temperature for a certain period of time. What is the primary purpose of pasteurization?

1. To reduce fat content
2. To improve taste
3. To kill pathogenic micro organisms
4. None of these

Answer:

C

Sol:

Pasteurization is a critical process designed to kill harmful microorganisms such as E. coli, Salmonella, and Listeria, which can cause serious illnesses.

By heating milk to a specific temperature and holding it for a set time, pasteurization also reduces the number of spoilage organisms, thereby extending the milk's shelf life.

Q.4

What does HTST stand for in the context of pasteurization?

1. High Temperature Short Time
2. High Treatment Short Time
3. High Temperature Standard Time
4. High Treatment Standard Time

Answer:

A

Sol:

HTST (High Temperature Short Time)

HTST pasteurization involves rapidly heating milk to 72°C (161°F) for at least 15 seconds, followed by immediate cooling.

This method is efficient and effective, preserving the milk's nutritional and sensory qualities while ensuring safety.

Q.5

Which process is used to separate cream from milk?

1. Fermentation

2. Homogenization

3. Centrifugation
4. Pasteurization

Answer:

C

Sol:

Centrifugation is a mechanical process that uses centrifugal force to separate cream from milk based on their different densities.

The lighter fat globules rise to the top, forming cream, which can then be skimmed off.

Q.1

What is the primary function of salt in pickling?

1. To decrease shelf life
2. To prevent fermentation
3. To add color
4. None of these

Answer:

B

Sol:

Salt plays several crucial roles in the pickling process:

1. Preservation: By creating a high-salinity environment, salt inhibits the growth of harmful bacteria and pathogens, thus extending the shelf life of the pickled food.
2. Fermentation: In brined pickles, salt promotes the growth of beneficial bacteria like Lactobacillus, which produce lactic acid. This acid helps in preserving the food and adds to the characteristic tangy flavor.
3. Texture: Salt helps draw out moisture from the food, which can enhance the crispness and firmness of vegetables, making them more enjoyable to eat.
4. Flavor Enhancement: Salt not only preserves but also enhances the natural flavors of the food. It complements the spices and other ingredients used in the pickling process.
5. Inhibiting Enzymes: Salt slows down the activity of enzymes that can cause spoilage, further preserving the food.

Q.2

Why should vinegar not come in contact with iron during pickling?

1. It increases shelf life
2. It has no impact
3. It blackens the pickle
4. None of these

Answer:

C

Sol:

Vinegar should not come into contact with iron during pickling because iron can react with the acetic acid in vinegar. This reaction can cause several issues:

1. Metallic Taste: The reaction between iron and vinegar can impart a metallic taste to the pickles, which can be unpleasant.
2. Discoloration: The reaction can also cause discoloration of the food, giving the pickles an unappealing appearance.
3. Toxic Compounds: More importantly, the reaction can potentially produce toxic compounds that are unsafe to consume.

Q.3

Which of the following oils is commonly used in oil-based pickles?

1. Mustard oil
2. Olive oil
3. Corn oil
4. Coconut oil

Answer:

A

Sol:

In oil-based pickles, mustard oil is commonly used, especially in Indian pickling recipes.

Its strong, pungent flavor complements the spices and enhances the overall taste of the pickles.

Additionally, mustard oil has antimicrobial properties, which helps in preserving the pickles for a longer duration.

Q.4

What is the common ingredient used in pickling for its preservation properties?

1. Sugar
2. Vinegar
3. Honey
4. None of these

Answer:

B

Sol:

The most common ingredient used in pickling for its preservation properties is vinegar.

Vinegar, which is acidic, creates an environment that inhibits the growth of harmful bacteria.

This acidity is what allows pickled foods to last much longer than they would otherwise.

In addition to vinegar, salt is also frequently used in pickling, especially in brine pickling.

Salt helps to draw moisture out of the food and creates a salty brine that further prevents the growth of bacteria.

Q.5

What is the main purpose of pickling?

1. To decrease flavor
2. To increase shelf life by preserving food
3. To make sweeter
4. None of these

Answer:

B

Sol:

The primary goal of pickling is to extend the shelf life

of food by preserving it.

Pickling involves immersing food in an acidic solution, usually vinegar, or fermenting it in salt water brine.

This acidic environment inhibits the growth of bacteria, yeasts, and molds that would typically spoil the food.

Q.1

Which muscle is generally considered tender in comparison to others?

1. Biceps femoris
2. Semitendinosus
3. Psoas major
4. Longissimus dorsi

Answer:

C

Sol:

The Psoas major muscle is generally considered the most tender compared to the others listed. This muscle is part of the tenderloin, which is known for its tenderness due to its location in the animal's body. The Psoas major is a low-activity muscle, meaning it doesn't get much exercise, resulting in less tough connective tissue and more tenderness.

Here's a bit more about the muscles you mentioned:

- Biceps femoris: This is part of the round or hamstring, which is a more active muscle and tends to be tougher.
- Semitendinosus: Also part of the round, this muscle is used for movement and is therefore less tender.
- Psoas major: Found along the spine, forming part of the tenderloin or filet mignon, it's very tender because it does very little work.
- Longissimus dorsi: Known as the loin or ribeye, this muscle is tender but still less so compared to the Psoas major.

Q.2

Which factor is not a pre-slaughter factor affecting tenderness of meat?

1. Species
2. Age
3. Bread
4. Sex

Answer:

C

Sol:

Breed is not a pre-slaughter factor affecting the tenderness of meat.

Factors such as species, age, sex , health etc are the pre-slaughter factor affecting tenderness of meat

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Q.3

Which type of meat typically has a coarser texture compared to others?

1. lamb
2. Beef
3. Chicken
4. Turkey

Answer:

B

Sol:

beef generally has a coarser texture compared to meats like pork and veal.

This is primarily due to the muscle structure and the age of the animal.

Beef from older cattle tends to have more developed muscle fibers and connective tissue, resulting in a tougher, coarser texture.

Proper cooking techniques, such as slow-cooking or marinating, can help tenderize these meats and enhance their flavors

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Q.4

What does marbling in meat refers to?

1. Firmness of meat
2. Intramuscular fat of meat
3. Texture of bones of meat
4. None of these

Answer:

C

Sol:

Marbling in meat refers to the streaks and flecks of fat that are interspersed within the lean muscle tissue. This intramuscular fat appears as a network of white lines and contributes significantly to the meat's flavor, juiciness, and tenderness. Here are some key points about marbling:

The fat in marbling carries flavor compounds, which enhance the overall taste of the meat.

Marbled fat melts during cooking, basting the meat internally and keeping it moist.

The fat within the muscle fibers helps to create a more tender texture, making the meat easier to chew.

Marbling is often used as a quality indicator in grading systems, such as the USDA beef grading system, where higher levels of marbling are associated with higher-quality cuts of meat.

Q.5

Which meat is generally more tender than beef?

1. Pork
2. Chicken
3. Lamb
4. Turkey

Answer:

A

Sol:

pork is generally more tender than beef. The muscle fibers in pork are finer and less tough compared to beef, which contributes to its tenderness. Additionally, pork typically has more marbling (intramuscular fat), which helps keep the meat moist and tender during cooking.

Q.1

What is the main difference between ghee and clarified butter?

1. Ghee is salted
2. Ghee has a higher water content
3. Ghee is cooked longer for a nutty flavor
4. None of these

Answer:

C

Sol:

Ghee is a type of clarified butter that is cooked longer than regular clarified butter, allowing the milk solids to caramelize and impart a nutty flavor. This process also removes almost all the water, resulting in a shelf-stable product that is used extensively in Indian cooking.

Q.2

Malai, a dairy product, is essentially a type of what?

1. Yogurt
2. Cream
3. Butter
4. Cheese

Answer:

B

Sol:

Malai is a type of clotted cream that forms on the surface of boiled milk as it cools. It is rich in fat and is used in various Indian dishes, both sweet and savory, adding a luxurious texture and flavor.

Q.3

Which acid is commonly used to coagulate milk for making paneer?

1. Acetic acid
2. Citric acid
3. Hydrochloric acid
4. Lactic acid

Answer:

B

Sol:

Citric acid - ascorbic acid

Citric acid, found in lemon juice, is commonly used to coagulate milk in the production of paneer.

When added to hot milk, citric acid causes the milk proteins (casein) to coagulate, forming curds.

These curds are then pressed to form paneer.

Q.4

Shrikhand is traditionally made by straining which type of dairy product?

1. Butter
2. Curd
3. Cream
4. None of these

Answer:

B

Sol:

Shrikhand is made by straining curd (yogurt) to remove whey, resulting in a thick, creamy product.

This strained yogurt is then mixed with sugar and flavorings such as cardamom, saffron, and nuts, creating a rich, sweet dessert.

Q.5

What is the main microorganism responsible for the fermentation of dahi?

1. Escherichia coli
2. Lactococcus lactis
3. Saccharomyces cerevisiae
4. Streptococcus thermophilus

Answer:

D

Sol:

Streptococcus thermophilus, in conjunction with Lactobacillus bulgaricus, is essential for the fermentation of dahi. These bacteria ferment lactose (milk sugar) into lactic acid, which lowers the pH, thickens the milk, and creates the tangy flavor characteristic of dahi

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Q.1

What does the chemical score measure in a protein ?

1. Fat content
2. Carbohydrate content
3. Amino acid composition
4. Fiber content

Answer:

C

Sol:

The chemical score measures the quality of a protein based on its amino acid composition. Specifically, it compares the essential amino acid profile of a protein to a reference protein, usually one that is considered to have an ideal or complete amino acid profile, such as egg protein or milk protein. The chemical score is determined by calculating the ratio of the amount of each essential amino acid in the test protein to the amount of that amino acid in the reference protein, and the lowest ratio among all the essential amino acids is taken as the chemical score.

This score helps in assessing the nutritional value of a protein, indicating how well the protein can meet human dietary needs for essential amino acids. A higher chemical score means that the protein is of higher quality and more effective in supporting growth and maintenance.

Q.2

The essential score of egg protein for any essential amino acid is considered to be:

1. 90
2. 80
3. 100
4. 110

Answer:

C

Sol:

The essential score of egg protein for any essential amino acid is considered to be **100**. This means that egg protein contains all the essential amino acids in the right proportions needed by the human body, making it an ideal reference protein. In other words, it has a complete amino acid profile that matches the body's requirements closely.

Q.3

What is the main factor influencing the chemical score of a protein source?

1. Amino acid profile
2. Water content
3. Fiber content
4. None of these

Answer:

A

Sol:

The main factor influencing the chemical score of a protein source is the amino acid profile particularly the levels of essential amino acids. The chemical score is determined by comparing the proportion of each essential amino acid in the protein source to that of a reference protein, such as egg protein, which is considered ideal. If a protein source has lower levels of one or more essential amino acids compared to the reference protein, its chemical score will be lower.

Q.4

A high Digestion Coefficient (DC) indicates:

1. Poor nutrient utilization
2. Better nutrient absorption
3. Low nutrient intake
4. None of these

Answer:

B

Sol:

A high Digestion Coefficient (DC) indicates better nutrient absorption. This means that the body can effectively break down the protein source, allowing for efficient uptake and utilization of its amino acids. High digestibility ensures that the nutrients are readily available for bodily functions, supporting growth, repair, and maintenance.

Q.5

Which application involves using the chemical score to identify nutritional deficiencies at a population level?

1. Food production
2. Food transportation
3. Population nutrition
4. None of these

Answer:

C

Sol:

Using the chemical score to identify nutritional deficiencies at a population level is particularly valuable in the field of **population nutrition**. This involves:

1. **Assessing Dietary Protein Quality**: By evaluating the amino acid profiles of various foods consumed by a population, nutritionists can identify if the diet lacks certain essential amino acids.
2. **Planning Nutrition Programs**: Governments and health organizations can use this data to design and implement programs aimed at improving the protein quality in diets, such as fortifying staple foods or encouraging the consumption of higher-quality protein sources.
3. **Addressing Malnutrition**: Identifying specific amino acid deficiencies helps in addressing malnutrition and improving overall health outcomes, particularly in vulnerable groups like children, pregnant women, and the elderly.
4. **Formulating Dietary Guidelines**: The chemical score data can guide the development of dietary guidelines and recommendations to ensure that the population receives balanced nutrition.