

Jean Inman Registered Dietitian (RD) Domain 1 Practice Exam (Sample)

Study Guide



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SAMPLE

Questions

SAMPLE

- 1. The tartness of fruits and vegetables is due to:**
 - A. Flavones**
 - B. Chlorophyll**
 - C. Anthoxanthins**
 - D. Tannins**
- 2. Which fat has the highest smoke point suitable for frying?**
 - A. 300 'F**
 - B. 325 'F**
 - C. 375 'F**
 - D. 400 'F**
- 3. A food is bacteria-safe if it is:**
 - A. Neutral and moist**
 - B. Neutral and dry**
 - C. Acidic and dry**
 - D. Acidic and moist**
- 4. What is the most effective way to increase the incidence and duration of breast-feeding among clients receiving prenatal care?**
 - A. Post breastfeeding posters in the waiting rooms**
 - B. Conduct prenatal breast-feeding classes**
 - C. Show breast-feeding videotapes in the waiting room**
 - D. Implement a breast-feeding peer counselor program**
- 5. Which food type has a higher risk of contamination with E. coli?**
 - A. Processed meats**
 - B. Raw vegetables**
 - C. Ground meats**
 - D. Cooked poultry**

- 6. What is the best type of flour for making cakes?**
- A. Graham flour**
 - B. All-purpose flour**
 - C. Whole wheat flour**
 - D. Durum wheat flour**
- 7. Why does fat produce more calories than carbohydrates?**
- A. Fat has more carbon and hydrogen in relation to oxygen**
 - B. Fat has less carbon and hydrogen in relation to oxygen**
 - C. Fat is a larger molecule**
 - D. Fat is a smaller molecule**
- 8. Which vitamin is primarily involved in blood coagulation?**
- A. Vitamin A**
 - B. Vitamin B12**
 - C. Vitamin K**
 - D. Vitamin C**
- 9. How many cups of product does a #10 can typically hold?**
- A. 10**
 - B. 13**
 - C. 12**
 - D. 5**
- 10. What is the formula for producing the active form of vitamin D?**
- A. Vitamin D3 converting into 7-dehydrocholesterol**
 - B. Ergosterol converting into calciferol**
 - C. Cholesterol converting into calciferol**
 - D. 7-dehydrocholesterol converting into cholecalciferol**

Answers

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1. D
2. D
3. C
4. D
5. C
6. B
7. A
8. C
9. B
10. D

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Explanations

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1. The tartness of fruits and vegetables is due to:

- A. Flavones**
- B. Chlorophyll**
- C. Anthoxanthins**
- D. Tannins**

The correct response involves understanding the compounds associated with the flavors of fruits and vegetables. Tannins are polyphenolic compounds found in many plants and are responsible for astringency and tartness in various fruits. These compounds can contribute a sour or bitter flavor to certain fruits and vegetables, enhancing the overall taste profile, particularly in unripe fruits. Flavones, chlorophyll, and anthoxanthins have different roles and characteristics. Flavones are a type of flavonoid and are more associated with coloration rather than tartness. Chlorophyll is the green pigment in plants responsible for photosynthesis, but it does not contribute to the tart flavor. Anthoxanthins also influence the color of fruits and vegetables—offering a range of white to yellow hues—yet they are not primarily related to the tartness experienced in taste. Tannins are thus correctly identified as the compounds that impart a level of tartness, which helps to explain the flavor of many varieties of fruits and vegetables.

2. Which fat has the highest smoke point suitable for frying?

- A. 300 °F**
- B. 325 °F**
- C. 375 °F**
- D. 400 °F**

Choosing the fat with the highest smoke point is essential for frying because a higher smoke point allows for cooking at higher temperatures without the fat breaking down and producing smoke or harmful compounds. Fats with higher smoke points are more stable during the frying process, making them ideal for high-temperature cooking methods like frying. The fat that has the highest smoke point, which is suitable for frying, typically reaches approximately 400°F and higher, allowing for efficient cooking without burning. This smoke point is significantly above those of other commonly used fats, making it the best choice for achieving crispy and well-cooked fried foods. Understanding the smoke point of different fats is crucial in culinary practices, especially in frying applications, as it directly impacts both the safety and quality of the food being prepared.

3. A food is bacteria-safe if it is:

- A. Neutral and moist**
- B. Neutral and dry**
- C. Acidic and dry**
- D. Acidic and moist**

The understanding of food safety in relation to bacteria involves the concepts of pH and moisture levels. Foods that are neutral and moist or acidic and moist typically provide an environment conducive to bacterial growth. However, foods that are dry and have an acidic pH are less likely to support the growth of bacteria. Bacteria thrive in environments where there is sufficient moisture and in neutral pH conditions. High moisture levels combined with a neutral pH (around 6.0 - 7.0) offer ideal conditions for bacteria to proliferate. Conversely, an acidic environment, usually characterized by a pH below 4.6, can inhibit the growth of many bacteria. When considering the dry aspect, a dry food product generally lacks the moisture necessary for bacteria to grow, making it more resistant to bacterial contamination, especially when combined with an acidic pH. Acidity, combined with low moisture (as seen in foods like dried fruit or certain cured meats), creates a hostile environment for bacteria, making it safer from a microbiological standpoint. Thus, an acidic and dry environment significantly reduces the risk of bacterial growth, which is why this combination is recognized as bacteria-safe.

4. What is the most effective way to increase the incidence and duration of breast-feeding among clients receiving prenatal care?

- A. Post breastfeeding posters in the waiting rooms**
- B. Conduct prenatal breast-feeding classes**
- C. Show breast-feeding videotapes in the waiting room**
- D. Implement a breast-feeding peer counselor program**

The most effective approach to increase both the incidence and duration of breastfeeding among clients receiving prenatal care is the implementation of a breastfeeding peer counselor program. This method is particularly impactful because it fosters a supportive and relatable environment for expectant mothers. Peer counselors typically have personal experiences with breastfeeding and can offer practical advice, emotional support, and encouragement, creating a trusting relationship. This peer-to-peer dynamic can help address concerns, dispel myths, and provide tailored guidance that resonates with the mothers' unique situations and challenges. Such programs can significantly enhance prenatal education and confidence in breastfeeding, leading to higher initiation and continuation rates. Other methods, while beneficial in promoting breastfeeding awareness, may not have the same level of direct personal impact. For example, posting breastfeeding posters or showing videotapes can disseminate information but lack the interactive support that mothers may need. Conducting prenatal classes provides education but may not foster the same level of ongoing connection and practical support that a peer counselor program can deliver. Thus, the peer counselor program stands out for its effectiveness in addressing both the psychological and informational needs of breastfeeding mothers.

5. Which food type has a higher risk of contamination with E. coli?

- A. Processed meats**
- B. Raw vegetables**
- C. Ground meats**
- D. Cooked poultry**

Ground meats carry a higher risk of contamination with E. coli due to several factors related to their processing and preparation. When meat is ground, bacteria present on the surface can be mixed throughout the entire product. Unlike whole cuts of meat, which can be cooked in a way that eliminates surface bacteria, ground meat requires thorough cooking to ensure any bacteria, including E. coli, are destroyed throughout the product. Specifically, E. coli is often found in the intestines of animals, and when meat is ground, there is a higher chance of contamination as any bacteria on the exterior can be mixed with the meat. Additionally, ground beef is a common vehicle for E. coli outbreaks in foodborne illnesses, as improper handling and cooking practices can significantly increase the risk of infection. In contrast, while raw vegetables can be contaminated with E. coli, they are typically less of a risk when they are properly washed and prepared. Cooked poultry and processed meats also undergo handling and cooking processes that typically reduce the risk of pathogens, whereas ground meats require more stringent cooking temperatures to ensure safety.

6. What is the best type of flour for making cakes?

- A. Graham flour**
- B. All-purpose flour**
- C. Whole wheat flour**
- D. Durum wheat flour**

All-purpose flour is considered the best type of flour for making cakes due to its balanced protein content, which typically ranges from 10% to 12%. This moderate protein level provides the right amount of gluten formation needed for a tender and fluffy cake texture. It is versatile and can be used in a variety of baking applications, making it the go-to choice for many recipes. In contrast, graham flour has a coarser texture and higher fiber content, which can result in denser baked goods more suitable for items like graham crackers or whole grain products rather than light cakes. Whole wheat flour contains more bran and germ, adding nutritional value but potentially leading to a heavier and denser cake instead of the light and airy result desired in many cake recipes. Durum wheat flour is primarily used for making pasta due to its high protein content and gluten strength, which is not ideal for cakes where a more delicate crumb is preferred. Thus, all-purpose flour is the optimal choice for achieving the right cake consistency and structure, making it the preferred option among bakers.

7. Why does fat produce more calories than carbohydrates?

- A. Fat has more carbon and hydrogen in relation to oxygen**
- B. Fat has less carbon and hydrogen in relation to oxygen**
- C. Fat is a larger molecule**
- D. Fat is a smaller molecule**

Fat produces more calories than carbohydrates primarily because fat molecules contain a higher proportion of carbon and hydrogen atoms in relation to oxygen. This molecular composition allows for more energy to be released during the metabolic process of oxidation. When fat is metabolized, it goes through a process that breaks it down to release usable energy; due to its structure, fat can yield more ATP (the energy currency of the cell) compared to carbohydrates. Fat, being a more energy-dense macronutrient, has more bonds that can be broken during metabolism, which contributes to its higher caloric value—about 9 calories per gram compared to carbohydrates, which provide approximately 4 calories per gram. This is crucial in understanding why dietary fats are an important energy source, especially in contexts where energy density matters, such as in weight management and athletic performance. The molecular size of fat, while larger than carbohydrates, is not the primary reason for the difference in caloric content. Rather, it is the chemical composition that is fundamentally responsible for the difference in energy yield.

8. Which vitamin is primarily involved in blood coagulation?

- A. Vitamin A**
- B. Vitamin B12**
- C. Vitamin K**
- D. Vitamin C**

Vitamin K plays a crucial role in the process of blood coagulation, which is the body's mechanism for stopping bleeding. It is essential for the synthesis of certain proteins that are necessary for blood clotting, specifically prothrombin, which is a precursor to thrombin that is needed for the formation of blood clots. Without adequate vitamin K, the body cannot produce these clotting factors effectively, leading to an increased risk of excessive bleeding. In contrast, vitamin A is primarily involved in vision, immune function, and skin health, while vitamin B12 is essential for red blood cell formation and neurological function. Vitamin C, known for its role in collagen synthesis and antioxidant properties, does not participate in the coagulation process. Thus, vitamin K is uniquely positioned as the vitamin directly associated with achieving proper blood clotting, making it the correct answer to the question.

9. How many cups of product does a #10 can typically hold?

- A. 10
- B. 13**
- C. 12
- D. 5

A #10 can typically holds about 12 to 13 cups of product, making the correct answer 12. This size can is commonly used in food service settings and is designated by its volume capacity; it's known to be large enough to accommodate bulk items, which is why it's favored in institutional kitchens and catering services. The capacity allows for efficient storage and portioning of larger quantities of ingredients, helping to streamline food preparation processes. Understanding the volume capacity of different can sizes is crucial for dietitians and food service professionals when planning meals and managing inventory effectively.

10. What is the formula for producing the active form of vitamin D?

- A. Vitamin D3 converting into 7-dehydrocholesterol
- B. Ergosterol converting into calciferol
- C. Cholesterol converting into calciferol
- D. 7-dehydrocholesterol converting into cholecalciferol**

The process of producing the active form of vitamin D starts with 7-dehydrocholesterol, a compound found in the skin. When exposed to ultraviolet (UV) radiation from sunlight, 7-dehydrocholesterol undergoes a conversion to cholecalciferol, which is also known as vitamin D3. This transformation is a key step in vitamin D synthesis, as cholecalciferol is then further processed in the liver and kidneys to produce the biologically active form, calcitriol (1,25-dihydroxyvitamin D). Understanding this, the correct option highlights the initial step in the synthesis of vitamin D from its precursors present in the skin, demonstrating the importance of sunlight exposure for vitamin D production. This process is crucial for maintaining proper calcium and phosphorus balance in the body and plays a significant role in bone health and immune function.