

國立成功大學

114學年度碩士班招生考試試題

編 號： 229

系 所： 食品安全衛生暨風險管理研究所

科 目： 食品科學

日 期： 0211

節 次： 第 3 節

注 意： 1.不可使用計算機
2.請於答案卷(卡)作答，於
試題上作答，不予計分。

Multiple Choice Questions

Each question carries 4 marks. Select the most appropriate answer.

1. **What does water activity measure?**
 - A. The pH of a food product
 - B. The availability of free water for microbial growth
 - C. The total water content in food
 - D. The rate of water evaporation in food
2. **What is the Maillard reaction primarily responsible for?**
 - A. Preserving the nutritional content of food
 - B. The development of browning and flavor in cooked food
 - C. Preventing enzymatic browning in fruits
 - D. Reducing acrylamide formation in baked goods
3. **Why are polyunsaturated fats more prone to oxidation than saturated fats?**
 - A. They have a higher melting point.
 - B. They contain multiple double bonds that react with oxygen.
 - C. They lack double bonds, making them less stable.
 - D. They contain fewer hydrogen atoms.
4. **What causes enzymatic browning in fruits?**
 - A. Reaction between reducing sugars and amino acids
 - B. Reaction between polyphenol oxidase and oxygen
 - C. Degradation of pigments due to heat
 - D. Oxidation of fats and oils
5. **How can heavy metals like lead or mercury enter the food chain?**
 - A. Through airborne particles only
 - B. Through contaminated soil and water
 - C. From the use of antioxidants in food processing
 - D. During enzymatic browning reactions
6. **What is the primary role of antioxidants in food?**
 - A. To add flavor to processed foods
 - B. To enhance enzymatic activity
 - C. To prevent oxidation and spoilage
 - D. To increase water activity in food
7. **What is acrylamide, and how is it formed?**
 - A. A preservative used in canned foods
 - B. A potential carcinogen formed during high-temperature cooking of starchy foods
 - C. A compound that enhances the Maillard reaction
 - D. A nutrient lost during enzymatic browning

8. **What happens to proteins during denaturation?**
 - A. Proteins become more stable and retain their structure.
 - B. Proteins unfold and aggregate, altering food texture.
 - C. Proteins convert to fats and oils during cooking.
 - D. Proteins undergo oxidation and form free radicals.
9. **What are anthocyanins, and how do they respond to pH changes?**
 - A. Proteins that change texture in acidic conditions
 - B. Pigments that turn red in acidic, purple in neutral, and blue in alkaline conditions
 - C. Antioxidants that prevent browning in fruits
 - D. Enzymes that break down starch into sugars
10. **What is the primary function of emulsifiers in food systems?**
 - A. To stabilize emulsions by reducing surface tension between oil and water
 - B. To enhance the Maillard reaction during cooking
 - C. To act as a preservative by lowering water activity
 - D. To prevent oxidation and rancidity in fats

Short-Answer Questions

Each question carries 6 marks.

Provide precise answers as per the key below.

11. What is the significance of gluten in bread-making?
12. What is the role of pectin in jelly formation?
13. Why are vegetables blanched before freezing?
14. How does excessive heat affect vitamin C in food?
15. What is the function of nitrites in processed meats, and what is a potential concern?
16. How do prebiotics differ from probiotics?
17. What is the role of amylase in food processing?
18. What is the purpose of adding citric acid to canned vegetables?
19. What are trans fats, and why are they considered harmful?
20. How does protein denaturation affect food texture?