

1. Write your answers on the **answer booklet** and clearly mark the corresponding question number in the front of them. No point will be given for anything written in the question sheets, but you may use the blank space for notes or scratch work.
2. All answers must be written **in English**. No point will be given if you write your answers in languages other than English.
3. **Do not** mark anything, such as name, phone number, entrance exam admit card number, etc., which may show or mean your recognition on the answer booklet. Violation of this rule will be considered cheating and treated accordingly.

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國立屏東科技大學 102 學年度 碩士班暨碩士在職專班 招生考試
食品科學國際碩士學位學程
食品科學概論(含食品加工、食品化學、食品微生物)試題

6. Elastic substance that forms a mesh-like structure in the dough:
【A】 Starch 【B】 Gluten
【C】 Yeast 【D】 Salt
【E】 Soda
7. Antioxidants used to cure or preserve foods like ham, hot dogs, or lunch meats:
【A】 Nitrate 【B】 Sulfite
【C】 Vitamin C 【D】 Vitamin E
【E】 Lactic acid
8. A standard system specifies the requirements for any organism in the food supplying chain to ensure that it provides food of a consistently high quality to consumers:
【A】 Hygiene control 【B】 Quality control
【C】 ISO 22000 【D】 ISO 9001
【E】 Sensory assessment
9. A process used to remove free fatty acids in freshly extracted crude soy oil:
【A】 Lyophilization 【B】 Filtration
【C】 Concentration 【D】 Saponification
【E】 Lipolysis
10. High temperature disrupts the bonds within the amylose and amylopectin fractions in starch granules and allows water and other molecules to hydrogen bond with the exposed hydroxyl groups of the glucose polymers:
【A】 Denaturation 【B】 Caramelization
【C】 Solubilization 【D】 Hydroxylation
【E】 Gelatinization
11. Agar contact method used in a laboratory experiment to determine the sanitary condition of food contact equipment:
【A】 Con-Tac-It 【B】 Membrane swab kit
【C】 RODAC 【D】 Swab rinse
【E】 None of above
12. Chemical used to neutralize chlorine in water prior to microbiological testing:
【A】 Sodium azide 【B】 Sodium thioglycolate
【C】 Sodium thiosulfate 【D】 Sodium sulfite
【E】 Tween 80

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13. Species used to determine time-temperature requirements for processing canned foods with pH above 4.5:
- 【A】 *Bacillus stearothermophilus* 【B】 *Escherichia coli* O157:H7
【C】 *Clostridium botulinum* 【D】 *Clostridium sporogenes*
【E】 *Staphylococcus aureus*
14. Species responsible for conversion of malic acid to lactic acid during red wine fermentation:
- 【A】 *Acinetobacter calcoaceticus*
【B】 *Leuconostoc oeni*
【C】 *Propionibacterium freudenreichii* subsp. *shermanii*
【D】 *Pseudomonas fluorescens*
【E】 *Serratia marcescens*
15. Gram-positive rod that is an intercellular parasite
- 【A】 *Listeria monocytogenes* 【B】 *Clostridium botulinum* Type A
【C】 *Clostridium botulinum* Type E 【D】 *Yersinia enterocolitica*
【E】 *Salmonella enteritidis*

II. Fill-in-the-blank questions: 10 questions; 3 points per question. Fill in the blanks with appropriate and necessary answer(s).

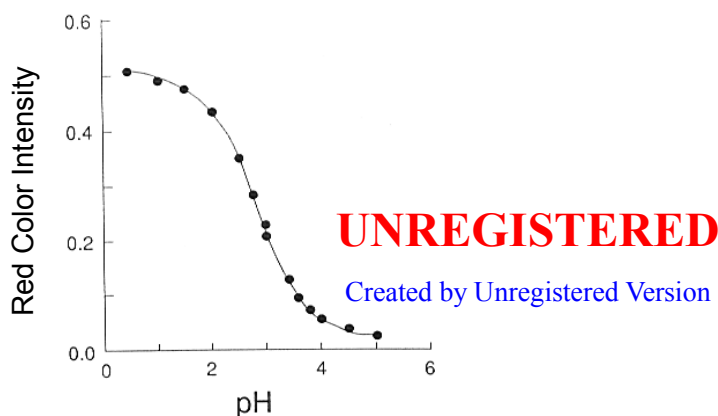
1. An α -amino acid consists of an α -carbon atom covalently attached to a _____ atom, an _____ group, a _____ group, and a side-chain R group.
2. Thiobarbituric acid test is one of the most widely used tests for evaluating the extent of _____
3. The hydrogen bond involves the interaction of a hydrogen atom that is covalently attached to an electronegative atom, such as _____, _____, or _____.
4. During the curing process, certain compounds are responsible for the stable pink color of cured meat products. They are _____ and _____.
5. β -Amylase releases _____ sequentially from the nonreducing end of amylose. It also attacks the nonreducing ends of amylopectin, but cannot cleave the _____ linkages.
6. The scientific name of microorganisms has two part, which are _____ and _____.

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7. Three methods used for quantitation of microorganisms: _____, _____, and _____.
8. Two natural inhibitors in eggs may adversely affect microbial growth: _____ and _____.
9. Theoretically, one hexose molecule will produce two molecules of lactate through _____ pathway(s).
10. Cells of *Clostridium botulinum* are sensitive to low pH $\leq$ _____, low $A_w \leq$ _____, and moderately high salt $\geq$ _____%.

III. Short Answer Questions: 4 questions; 10 points for each question. Write your answers clearly and legibly. Cross out any errors you make; crossed-out work will not be scored. Diagrams may be used to supplement clarification, but diagrams alone will not suffice.

1. Define foodborne intoxication, infection, and toxicoinfection, and give two examples for each.
2. The following graph shows the intensity of the red color in cranberries as a function of pH. What is the pK of the important pigment in cranberries? Why?



3. To keep potato chips crisp you want to store them at as low an A_w as possible - why might you not want to store too low?

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4. Briefly define/explain the meaning of the following terms and provide a food example of each.

- (1) Retrogradation
- (2) Tempering
- (3) Metal chelator
- (4) Enzymatic browning
- (5) Mallard reaction

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