

1. Regarding the materials for fruits and vegetables processing, please answer the following questions. (Total 15%)
  - (1) What are the different requirements that species of fruit and vegetable utilized for fresh consuming and for processing? (5%)
  - (2) Please describe what are the important factors of material quality that influencing the processing and its products? (6%)
  - (3) How the maturity (mature degree) of fruits and vegetables influences the processing and the product quality? (4%)
  
2. Riced Cauliflower (Total 20%)

A novel product called 'Riced Cauliflower', which is simply cauliflower pulsed in a food processor until it forms into granules that are about the size of rice, is frozen and packaged and following shipped. This product is popular by the people worldwide.

  - (1) Please design the processing procedure to manufacture the freezing Riced Cauliflower product. (10 %)
  - (2) According to the procedure of you give in the previous question, please describe the key control operations and their influences to obtained Riced Cauliflower with high quality. (10 %)
  
3. Low acid canned foods and thermal processing (Total 30%)
  - (1) What is the definition of low acid canned foods? (6 %)
  - (2) Please give at least two products of low acid canned foods. (4 %)
  - (3) How could we avoid *Clostridium botulinum* contamination and risk according to the anaerobe, mesophilic, pH-dependent and aqueous-like properties of this pathogen? (10 %)
  - (4) It was known that  $F = 10^{(250-T)/Z}$ . In case a low acid canned food has a  $F_0$  value of 6 mins at the conditions of 250°F (121.1°C),  $Z = 18^\circ\text{F}$ , how many times it will take in the conditions at (A) 268°F (131.1°C) and (B) 232°F (111.1°C), respectively, to achieve the same sterilization value? (10 %)
  
4. Please describe the processing procedure for orange juice concentrates and detail the major equipment and machines used for unit operations above. (20 %)
  
5. You are working in a fruit minimal processing factory and are assigned to develop a ready-to-eat combo box of fresh-cut salad vegetables which has a commercial shelf life of 72 h at least under low temperature refrigeration. Please discuss what kind of methods you could apply to achieve this goal? (15%)

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