

**Part A (50%):**

1. Please give a suitable drying method when you are going to produce the following dried food products. Please provide the principle of and the reasons why the specific drying method was chosen. (4% each, 16% in total)
  - (a) Milk powder for infant formula
  - (b) Dried cranberry snack
  - (c) Rice flour for instant breakfast cereal drink
  - (d) Dried tofu for instant miso soup
  
2. Please define (a) modified atmosphere packaging, (b) controlled atmosphere packaging, (c) active packaging, and (d) intelligent/smart packaging. Please give one practical example for each type of packaging. (3% each, 12% in total)
  
3. Many carbohydrate derivatives are modified from saccharides and are widely used in food products. Please draw the chemical structure of the following compound and provide its potential applications. (3% each, 15% in total)
  - (a) sucralose (4,1',6'-trichlorogalactosucrose)
  - (b) xylitol
  - (c)  $\beta$ -cyclodextrin
  - (d) OLESTRA
  - (e) Span®60 (Sorbitan monostearate)
  
4. Wheat dough rheology is very important in bread-making and its eating quality. (7% in total)
  - (a) Please describe the amino acid composition, structure, and function of wheat gluten proteins that contribute to the dough properties. (4%)
  - (b) How does Extensography (麵團拉伸儀) predict the rheology of dough during fermentation? (3%)

**Part B (50%):**

1. Wheat protein can be recovered by kneading the flour pastes with running tap water but soybean protein cannot. Describe the reasons. (10%)
  
2. Both virgin camellia oil (苦茶油) and virgin olive oil (橄欖油) belong to high-oleic edible oils. However, they differ significantly from each other in oil stability. What is the stability of an oil? And describe possible causes of the aforementioned issue. (15%)
  
3. How do you determine the total phenolic content of a botanical extract? Describe the principle of measurement and the calculation for the determination of the total phenolic content in your plant extract samples. (10%)
  
4. Draw the chemical structures of the following items. (3% each, 15% in total)
  - (a) Ethanol
  - (b) Valine
  - (c) Pyruvate
  - (d) Lactic acid
  - (e) Citric acid

試題隨卷繳回