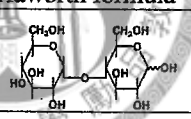
※ 注意：請於試卷上「非選擇題作答區」依序作答，並應註明作答之部份及題號。

Part A (50%)

1. List the items for the approximate analysis of foods, and briefly describe the principle for each item. (10 %)
2. Describe **(1)** the definition of water activity (*Aw*), and **(2)** the effect of *Aw* on food preservation. (8 %)
3. Draw the device of Soxhlet extractor for lipid extraction, and briefly explain the principle. (6%)
4. Your analysis of an oil simple gives the following results. What does each of these results tell you about the characteristic of the sample? Briefly describe the principle for each method used. (10%, 2% each)
   (a) large saponification value
   (b) low iodine value
   (c) high TBA number
   (d) high free fatty acid content
   (e) high oil stability index
5. Explain the following terms. (8%, 2% each)
   (a) Protein efficiency ratio　**(b)** Bradford method
   (c) Prebiotics　**(d)** climacteric fruit
6. Draw the chemical structures of the following compounds. (8%, 1% each)
   (a)xylitol　**(b)**ethyl paraben　**(c)**sodium methoxide　**(d)**cysteic acid
   (e)tyrosine　**(f)**dipeptide: Met-Ile　**(g)**lysinoalanine　**(h)**pyruvate

Part B (50%)

7. You have a highly processed extruded cereal product, which results in substantial interactions between the protein and starch in the food. Which fiber method would you use to analyze this product? Please describe the principle of the method you choose. (8 %)
8. Please finish the blanks in the following table by giving an example for each category. (16%)

Category	Name	Structure	Haworth formula	Occurrence
Disaccharide	Maltose	(O-α-D-Glc*p*(1→4)-D-Glc*p*)		Hydrolysized from starch by β-amylase
Sugar alcohol				
Nonreducing disaccharide				
Trisaccharide				
Tetrasaccharide				

※ 注意：
請作答 於試卷上
「非選擇題作答區」

9. List the structures and names of sugar derivatives, one sugar ester and one sugar halodeoxy derivatives. Please describe their applications in foods. (6 %)
10. Explain why some kernels or parts of cereal grains (e.g. wheat, corn) appear opaque or floury when a cut surface is viewed, whereas others appear glassy or vitreous. How are opacity and vitreousness related to hardness in cereals? (6 %)
11. Draw a typical amylogram by using a Brabender viscograph or Rapid visco analyzer (with the appropriate axis labels) for a starch and describe what is happening at each stage. Please draw a curve when α-amylase was added in the solution. (10%)
12. What property(s) does xanthan gum, carboxymethyl cellulose and starch phosphate monoesters have in common that contributes to their ability to increase viscosity? (4%)

試題隨卷繳回