※ 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. You have been using a flour 'fortified' with vital gluten for breadmaking. The bread is satisfactory when made on a high-speed mixer but less so when you use a low-speed mixer. What is 'vital gluten' and how to produce it commercially? Can you explain why we get different results when we change mixers? (8 %)
2. Leavening is a term used to indicate a source of gas, which causes a dough or batter to rise or spring. Please list the major types of leavening in bakery products and their applications. (9%)
3. Please define (a) modified atmosphere packaging, (b) controlled atmosphere packaging, and (c) active packaging. Please give one example for each type of packaging. (9%)
4. List, and describe, each component in the equation used to define water activity. List three (3) ways of a food that can be affected by changes in water activity and explain why and how these effects occur. (9%)
5. Describe two ways that emulsifiers can contribute to emulsion stability (o/w or w/o). However, how is the emulsifier work on the antistaling effect of starchy foods during storage and how the emulsifier help improving cake volume? (9%)
6. Please briefly list the applications of following enzymes in food industry. (6%)
   (1) β-galactosidase
   (2) Lipoxygenase
   (3) Invertase

Part B (50%)

7. Draw and explain the characteristic curve of time-temperature data during food freezing (monitoring at the thermal center of a food). (10%)
8. List the basic elements of a mechanical refrigerator, and give a detailed description for the refrigerant circulating between the elements. (8%)
9. List the basic elements of a microwave heater, and give the principle of microwave heating. (6%)
10. Describe the process of soy sauce manufacturing, and explain in words what occurs in the main stages. (8%)
11. Explain the following terms. (3% each, total 18%)
    (a) D value　(b) latent heat　(c) Ultra High Temperature processing
    (d) blanching　(e) semi-moist food　(f) drip loss