

[Part A] 50%

1. Please define a reducing sugar, and give one example (with name and ring structure) for each mon-, di- and trisaccharides. (8%)
2. Draw a typical Brabender or Rapid Visco-analyzer (RVA) amylogram (with the appropriate axis labels) for a starch and describe what is happening at each stage. (6%)
3. What property(s) does xanthan gum, carboxymethyl cellulose and starch phosphate monoesters have in common that contributes to their ability to increase viscosity? (6%)
4. What are the differences between Celiac disease and wheat allergy, and how to treat the people with these symptoms? (6%)
5. List three (3) characteristics of a food that can be affected by changes in water activity and explain why and how these effects occur. (6%)
6. Please describe the constant rate drying period and falling rate period of a drying curve. Suggest (3) ways to increase the rate of evaporation and explain how each works? (8%)
7. Please compare the differences in the principle and purposes of dry wheat milling and wet wheat milling processes. What types of final products could be obtained from these two processes. (10%)

[Part B] 50%

8. What is a zwitterionic molecule? How to prove that glycine (an amino acid) is a zwitterion at the physiological environment. (10%)
9. The following terms are usually used to estimating for lipid oxidation of an oily sample. Give the principle of each, and explain why they can be employed for the detection.
(a) 232 nm & 268 nm (b) TBARS value (c) peroxide value (10%)
10. Describe that how to evaluate the nutritional quality of a protein. (10%)
11. Describe the following glossaries used in food processing. (Explain the principle, definition or purpose). (20%, 5% each)
(1) Ostwald ripening (2) Thermal death time curve
(3) High-hydrostatic pressure treatment (4) Food irradiation

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