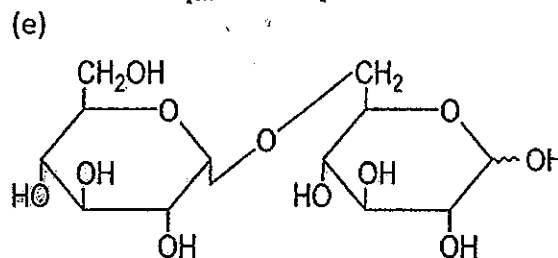
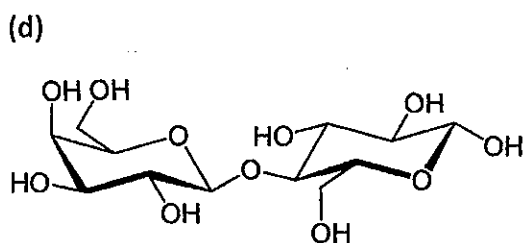
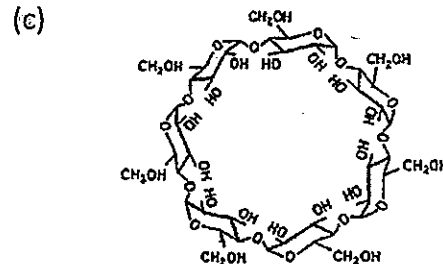
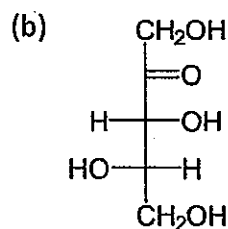
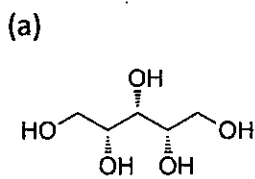


**Part A (50%):**

1. (1) Please define the "moisture content (MC)", "water activity ( $a_w$ )" and "Glass transition temperature ( $T_g$ )"? (9%)
  - (2) Please draw the plots of MC,  $a_w$ , and  $T_g$  verse time while drying the mango flesh by using a tray drier, respectively. (6%)
  - (3) How to minimize or prevent the mango flesh from browning during the drying process? (5%)
  - (4) What kind of packaging material(s) and technique will you choose for keeping dried mango quality during storage? Why? (5%)
2. (1) Please define "reducing sugar" and "sugar alcohol". (5%)
  - (2) Please give the name of each carbohydrate, in addition, please classify if the carbohydrate is a reducing sugar or sugar alcohol. If it is a reducing sugar, please circle the reducing end. (10%)



3. (1) What are the limited amino acid(s) and anti-nutritional factors/toxic substances commonly found in legumes and cereals, respectively? (5%)
- (2) How to improve the protein quality of cereal and soy products for vegetarians? (2%)
- (3) How to reduce the anti-nutritional factors/toxic substances when utilizing the legumes and cereals in foods? (3%)

**Part B (50%):**

1. What is considered a high-quality protein? And describe in brief the assay(s) for evaluating protein quality. (15%)
2. Why the absorption in the UV region at around 234 nm could be used as an indicator for judging the quality of edible oils. Describe the reasons. (8%)
3. Describe the principle of microwave heating. (8%)
4. Describe the reason why temperature fluctuation causes the quality loss of food products during the frozen storage period. (12%)
5. Draw the chemical structures of the following items. (7%, in total)
  - (a) Aspartame (Methyl L- $\alpha$ -aspartyl-L-phenylalaninate) (3%)
  - (b) Monosodium Glutamate (2%)
  - (c) Pentane (2%)