

[Part A] 50%

1. Please answer the following questions related to the corn milling. (10% in total)
 - (a) Please describe the principal procedures of dry corn milling and wet corn milling. (6%)
 - (b) What types of final products could be obtained from dry and wet corn milling, respectively. (4%)
2. Please describe the hysteresis of moisture sorption isotherm of a food during dehydration and rehydration process and explain the causes of this phenomenon. (8%)
3. Please draw the Haworth formula (projections) of following carbohydrates. Are they reducing sugars? (12%, 3% for each)
 - (a) Cellobiose
 - (b) Sucrose
 - (c) Sorbitol
 - (d) Xylose
4. Please describe the chemical properties/chemical structures of followings. (20%, 4% for each)
 - (a) Raffinose and Stachyose
 - (b) Caramalization and Maillard reaction
 - (c) Myoglobin and Hemoglobin
 - (d) Locus bean gum and Guar gum
 - (e) Gelatinization and Retrogradation of starch

[Part B] 50%

1. The analysis of an oil sample gives saponification value of 180 mg KOH/g oil. Calculate (a) the average molecular weight of fatty acid of the sample oil. (b) How many NaOH (in gram) would be consumed at least if the sample oil 100 g was saponified completely. (c) If the aforementioned sample oil with an acid value of 20 mg KOH/g oi, please estimate the recovery of refined oil when the sample oil was carried out the oil refine processing. [molecular weight : K=39 ; Na=23] (15%, 5% for each)
2. (a) What is soy protein concentrate? (5%); (b) Describe in brief the basic principles of scientific based process about the soy protein concentrate manufacturing. (10%)
3. Draw a Soxhlet extractor and describe about how to use it for extraction. (10%)
4. Draw the chemical structure that is listed below. (10%)
 - (a) benzoic acid. (3%)
 - (b) isoamyl alcohol. (3%)
 - (c) glutamic acid. (4%)

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