



**CRAWFORD UNIVERSITY**  
**COLLEGE OF NATURAL AND APPLIED SCIENCES**  
**DEPARTMENT OF INDUSTRIAL CHEMISTRY**  
**HARMATTAN EXAMINATION 2018/2019**

**COURSE CODE: ICH 335**

**COURSE TITLE: ELEMENTS OF FOOD ANALYSIS**

**UNITS: 2**

**TIME ALLOWED: 2HRS**

**DATE: FEBRUARY, 2019**

**INSTRUCTIONS: ANSWER ANY THREE (3) QUESTIONS.**

- 1(I) List the physical methods employed in determining carbohydrates concentration in foods. Describe at least two of these methods.
- (II) Your laboratory just received several sample containers of peas to analyze for moisture content. There is a visible condensate on the inside of the container. What is your procedure to obtain accurate result?
- (III) You ~~must~~ have at least 100mg of ash from a cereal grain. Assuming 2.5% ash on average, how many grams of the grains should be weighed for ashing.

- 2(I) With the aid of a table, give a concise approach to food preservation
- (II) Explain briefly the following terms; canning, irradiation and freeze drying
- (III) A dehydrated precooked bean was analyzed for crude protein content in duplicate using kjeldahl method. The following data were recorded;
 

Moisture content.....	8%
Weight of sample 1.....	1.015g
Weight of sample 2.....	1.025g
Normality of HCl used for titration.....	0.1142N
HCl used for sample 1.....	22.0ml
HCl used for sample 2.....	22.5ml
HCl used for reagent blank.....	0.2ml

 Calculate crude protein content on both wet and dry weight basis of the bean, assuming bean protein contains 17.5% nitrogen.

- 3(I) Describe the evaporation methods of moisture content.
- (II) Describe wet ashing in the laboratory.
- (III) A 20ml protein fraction recovered from a column chromatography was analyzed for protein. The following data were the means of a duplicate using BSA standard

BSA (mg/ml)	Mean Absorbance at 562nm
0.2	0.25
0.4	0.53
0.6	0.74
0.8	0.95
1.0	1.15

The average absorbance of a 1ml sample was 0.44. Calculate protein concentration (mg/ml) and total quantity of this column fraction.

- 4(I) Define Nutritional disease and state the nutritional diseases commonly associated with Protein, Carbohydrate and fat in the body
- (II) Explain the effect of Vitamin K, B and C in the body
- (III) As an analyst, you are given a sample of condensed soup to analyze to determine if it is reduced to the correct concentration. By gravimetric means, you find that the concentration is 26.54% solids. The company standard reads 28.63%. If the starting volume were 1000 gallons at 8.67% solids and the weight is 5.5pounds per gallon, how much more water must be removed?

5(I) What is food poisoning? List the methods of detection of food pathogens?.

(II) Describe the type of food poisoning you know.

(III) You have the following gravimetric results

Weight of dried pan and glass disc.....1.0376g

Weight of pan and liquid sample.....4.6274g

Weight of pan and dried sample.....1.7321g

What was the moisture content of the sample and what is the percent solid?

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