



CRAWFORD UNIVERSITY
COLLEGE OF NATURAL AND APPLIED SCIENCES
DEPARTMENT OF INDUSTRIAL CHEMISTRY
HARMATTAN EXAMINATION 2013/2014

COURSE CODE: ICH 335

COURSE TITLE: ELEMENTS OF FOOD ANALYSIS

UNITS: 3

TIME ALLOWED: 2HRS

DATE: FEBRUARY, 2014

INSTRUCTIONS: ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS.

- 1(i) Describe the evaporation methods of moisture content
- (ii) Describe wet ashing in the laboratory. What are the advantages and disadvantages of wet ashing?
- (iii) To determine the fat content of semi moist food by the soxhlet method, the food was first vacuum oven dried. The moisture content of the product was 25%. The fat in the dried food was determined by soxhlet method. The fat content of the dried food was 13.5%. Calculate the fat content of the original semi moist product.
- (iv) Discuss the analysis of starch in processed food samples, including the steps for analyzing the resistant and difficult starch. [30marks]
- 2(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) 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. [20marks]
- 3(i) List the various techniques available in the determination of total lipid concentration in food sample.
- (ii) List the various types of solvent extraction system in lipid analysis. What are the criteria considered in choice of solvent use in fat analysis?
- (iii) Using suitable diagram, explain the mechanism of soxhlet apparatus in lipid analysis. [20marks]
- 4(i) With the aid of a table, give a concise approach to food preservation.
- (ii) Explain briefly the following terms; pasteurization, blanching freeze drying.
- (iii) List all the various method of protein determination under the following category; classical methods, UV-VIS spectroscopy and other instrumental techniques