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University Examinations 2013/2014

THIRD YEAR, FIRST SEMESTER EXAMINATIONS FOR DEGREE OF BACHELOR OF
SCIENCE IN FOOD TECHNOLOGY

AND

THIRD YEAR, FIRST SEMESTER EXAMINATIONS FOR DEGREE OF BACHELOR OF
SCIENCE IN FOOD SCIENCE AND NUTRITION

AFS 2303: INSTRUMENTAL METHODS IN FOOD ANALYSIS

DATE: APRIL 2014

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Define the following: (10 Marks)
- (i) Food analysis
 - (ii) Chromatography
 - (iii) Mobile phase
 - (iv) Electromagnetic spectrum
 - (v) Beer's law
- (b) Classify chromatographic methods based on the phases involved. (5 Marks)
- (c) Comment on the light sources used in spectrophotometers. (5 Marks)
- (d) List five criteria used for selecting an appropriate technique for food analysis. (5 Marks)
- (e) List the advantages and disadvantages of polarimetry. (5 Marks)

QUESTION TWO – (15 MARKS)

- (a) Highlight the principle and application in each of the following: (15 Marks)
- (i) Flame photometry
 - (ii) Atomic absorption spectrophotometry
 - (iii) Electrophoresis
- (b) Briefly explain the advantages of instrumental methods over chemical methods. (5 Marks)

QUESTION THREE – (20 MARKS)

- (a) Draw a simple schematic diagram to show the layout of spectrophotometer. (5 Marks)
- (b) Distinguish between single beam and double beam spectrophotometers. (6 Marks)
- (c) Briefly explain the limitations of flame photometry. (9 Marks)

QUESTION FOUR – (20 MARKS)

- (a) Distinguish between ascending and descending paper chromatography. (5 Marks)
- (b) Briefly explain the advantages and disadvantages of using reciprocating pumps in a HPLC system. (5 Marks)
- (c) Explain the following: (10 Marks)
- (i) Adsorption chromatography
 - (ii) Partition chromatography

QUESTION FIVE – (20 MARKS)

- (a) Discuss four reasons for analyzing foods. (10 Marks)
- (b) Distinguish between the following: (10 Marks)
- (i) Gel electrophoresis and capillary electrophoresis
 - (ii) Gas chromatography and liquid chromatography