CRAWFORD UNIVERSITY

COLLEGE OF NATURAL AND APPLIED SCIENCES
DEPARTMENT OF EARTH AND PHYSICAL SCIENCE
INDUSTRIAL CHEMISTRY UNIT
RAIN SEMESTER EXAMINATION 2016/2017 SESSION

COURSE CODE: ICH 426
COURSE TITLE: BREWING SCIENCE AND TECHNOLOGY
TIME ALLOWED: 2 HOURS 2 UNITS
DATE: JUNE, 2017
INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS.

1. (a) What are the problems you may likely encounter in wine production?
   (b) In addition to CO_2 and ethanol, mention the other minor products of beer fermentation.
   (c) What are the symptoms of abnormal fermentation?

2. (a) List all the steps that are involved in wine production.
   (b) Distinguish between "red" and "white" wine mentioning in particular;
   (i) The types of grapes,
   (ii) Aging.
   (c) Mention the four major points in controlling quality in brewery.

3. (a) Explain the term 'Quality control in Brewery'.
   (b) List the key elements of a HACCP SYSTEM?
   (c) List the types of alcoholic beverages you know.

4. (a)What is referred to as wine stability?
   (b) What are the three (3) main instability problems in wine?
   (c) Distinguish between batch and continuous fermentation in beer production
   (d) What are the factors affecting fermentation in beer production?

5. (i) Discuss briefly the processes involved in malolactic and alcoholic fermentations in wine production, mentioning in particular:
   (a) The starting materials
   (b) Microorganism responsible for the two type of fermentations,
   (c) Enzyme system.

6. (a) List all the steps involved in the brewing of beer
   (b) Distinguished between "top" and "bottom" fermentation in brewing of beer mentioning in particular:
   (i) The specie of yeast employed
   (ii) The type of fermentation vessel employed.
   (iii) The type of beer produced in each case.
   (c) Describe the contributions of the following scientist to the development of brewing;
   (i) Louis Pasteur
   (ii) Anton Van Leewenhoek (1632-1723)