



**CRAWFORD UNIVERSITY**  
COLLEGE OF NATURAL AND APPLIED SCIENCES  
DEPARTMENT OF EARTH AND PHYSICAL SCIENCE  
INDUSTRIAL CHEMISTRY UNIT  
RAIN SEMESTER EXAMINATION 2012/2013 SESSION

**COURSE CODE:** ICH 426

**COURSE TITLE:** BREWING SCIENCE AND TECHNOLOGY

**TIME ALLOWED:** 2 HOUR

2 UNITS

**DATE:** JUNE, 2013

**INSTRUCTIONS:** ANSWER ANY FOUR (4) QUESTIONS.

1. (a) What is wine instability?  
(b) What are the three (3) main instability problems?  
(c) Distinguish between batch and continuous fermentation in beer production.  
(d) What are the factors affecting fermentation in beer production.
- 2 (a) What are the key elements of approach to integration to all various technical standard systems in a brewing factory?  
(b) What is wine analysis?  
(c) What type of wine is referred to as dry wine?  
(d) What are the problems you may likely encounter in wine production.
- 3 (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 types of beer produce in each case.  
  
(c) Describe the contributions of the following scientist to the development of brewing;  
(i) Louis Pasteur.  
(ii) Antoine Van Leewenhoek (1632-1723).  
  
(d) Describe in detail, the process of fermentation.
- 4 (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.  
(d) In addition to CO<sub>2</sub> and ethanol, mention the other minor products of beer fermentation.
5. (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.  
(d) What are the symptoms of abnormal fermentation?