



NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
DEPARTMENT OF BIOLOGICAL SCIENCES
2024 1 EXAMINATION

COURSE CODE: BIO 416

COURSE TITLE: INDUSTRIAL MICROBIOLOGY

CREDIT: 3 Units

TIME ALLOWED: 3 Hours

INSTRUCTION: Answer Question ONE (1) and any other THREE (3) Questions

1. (a) Enumerate five (5) desirable characteristics of Lactic Acid bacteria (LAB) as industrial microorganisms. **(5 marks)**
(b) Mention and describe five (5) main components of a typical prokaryotic and eukaryotic cell. **(5 marks)**
(c) Highlight the desirable characteristics of an industrially and biotechnologically important microorganism. **(8 marks)**
(d) Discuss culture storage in liquid nitrogen with emphasis on the advantages and disadvantages. **(7 marks)**
2. (a) State six (6) properties of a suitable antiforming agent. **(6 marks)**
(b) Describe the three (3) methods of mashing in beer production. **(9 marks)**
3. (a) Explain nutrient requirements in microbial media formulation. **(8 marks)**
(b) Define scaling up. **(2 marks)**
(c) Outline the five (5) major groups of commercially important fermentation products. **(5 marks)**
4. (a) Describe the process involved in production of whisky, gin and vodka. **(6 marks)**
(b) State the criteria for the choice of raw materials in media formulation for industrial microbiology. **(6 marks)**
(c) Draw a flow diagram of cheese production. **(3 marks)**
5. (a) In tabular form, state six (6) industrially improved products, the microorganisms and the production processes used. **(9 marks)**
(b) In tabular form, List four (4) fermented foods, the raw materials and the fermenting microorganisms involved in their production. **(6 marks)**
6. (a) Describe Ogi preparation with emphasis on microbiology of the process. **(6 marks)**
(b) Write short notes on fermentor. **(5 marks)**
(c) Mention four (4) government agencies responsible for Intellectual property rights in Nigeria. **(4 marks)**