



NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
MARCH/APRIL 2016 EXAMINATION

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: BIO416
COURSE TITLE: INDUSTRIAL MICROBIOLOGY

TIME ALLOWED: 2 Hours
CREDIT UNIT: 2

INSTRUCTION: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER THREE QUESTIONS

1. (ai) Define Industrial Microbiology. (3 marks)
(a ii) State **Five(5)** criteria for media formulation. (5 marks)
(bi) Describe the two types of plate techniques. (10 marks)
(bii) Give an account for the process of cheese production. (7 marks)
2. Describe, in **details**, the **three(3)** procedures of storing cultures. (15 marks)
3. (a) What do you understand by the term probiotics? (3 marks)
(b) Distinguish between top fermented yeast and bottom fermented yeast. (4 marks)
(c) Outline **any eight(8)** factors to be considered for the designing and construction of a fermenter (8 marks)
4. (ai) What is the first task of an Industrial Microbiologist? (2 marks)
(a ii) Outline the **six (6)** operations performed to achieve and maintain aseptic condition during fermentation. (6 marks)
(b) With the aid of table, describe the estimates of the percent 'cultured' microorganisms in various environments. (7 marks)
5. (a) Give an account of the technology of producing of a genetically engineered bacterium. (7 marks)
(b) Write **short notes** on the following stages of viral replication:
 - i. *Production of hybrid DNA molecule* (4 marks)
 - ii. *Incorporation of hybrid DNA into host cell* (4 marks)
6. (a) List different types of media. (4 marks)
(b). In a tabular form, describe any **six (6)** methods used to preserve cultures of interest for Industrial Microbiology and Biotechnology. (12 marks)