



NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
JULY, 2017 EXAMINATION

COURSE CODE: BIO 416

COURSE TITLE: INDUSTRIAL MICROBIOLOGY

CREDIT: 3 units

TIME ALLOWED: 2½ Hours

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

1. (a) Define the term mutation (2marks)
(b) List the **four** properties of antifoams (4 marks)
(c) In a tabular form, describe the estimates of the percent 'cultured' microorganisms in various environments (6 marks)
(d) Describe the **two** types of plate techniques (10 marks)
2. (a) Enumerate the **any four (4)** operations to be performed to achieve and maintain aseptic condition during fermentation (2 marks)
(b) Distinguish between top fermented yeast and bottom fermented yeast (2 marks)
(c) Outline **any 8** factors to be considered for the designing and construction of a fermenter (8 marks)
3. (a) Give a detailed description of the technology for producing a genetically engineered bacterium (6 marks)
(b) Write **short notes** on the following stages of viral replication:
 - i. Production of hybrid DNA molecule (3 marks)
 - ii. Incorporation of hybrid DNA into host cell (3 marks)
4. (a) Define Industrial Microbiology (2 marks)
(b) In a tabular form, describe **any five (5)** methods used to preserve cultures of interest for Industrial Microbiology and Biotechnology (10 marks)
5. (a) Enumerate the health benefits of probiotics (2 marks)
(b) Outline any **four (4)** steps in production of Spirit. (4 marks)
(c) Account for the process of cheese production. (6 marks)
6. Give a detailed description of the three procedures of storing cultures. (12 marks)