



NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Sciences
Department of Pure and Applied Sciences
2021_2 EXAMINATIONS

COURSE CODE: BIO416

COURSE TITLE: INDUSTRIAL MICROBIOLOGY

CREDIT: 3 units

TIME ALLOWED: 2½ Hours

INTRUCTION: Answer question ONE (1) and any other FOUR (4) questions

- 1a. As an industrial microbiologist, explain the term “fermentation. (2marks)
 - b. Why is the medium used for growing microorganism critical in industrial processes? (4mks)
 - c. Account for the peculiar nature of industrial microbiology. (8marks).
 - d. You have just been employed by a Brewing industry with good quality control laboratory as an industrial microbiologist, give a detailed description of what your roles should be in the industry (8mks).
- 2a. What do you understand by the term “endosperm modification” in malting? (2mks)
 - b. Discuss how you can improve strains of microorganism for industrial use? (10 marks)
- 3a. Explain the reasons why governments set up patent laws? (2mks)
 - b. Discuss the concept of Protein evolution and the strategies involved in the achievement of novel metabolic capabilities in organisms (10marks)
- 4a. A test tube contains 9ml distilled water(d/w). 1g of soil is added to that test tube and the soil is allowed to settle down. Now, 1ml of that stock solution is taken and transferred to the 2nd test tube containing 9ml of distilled water. The process is repeated several times until the requirement is met;
 - i. What is this dilution called? ii. What is it used for? (2marks)
 - b. In combinatorial biology, the transfer and expression of genes between different organisms can give rise to novel metabolic processes and products. In tabular form, indicate the microorganisms and the combinatorial process used in the development of the following products:
 - i. 1, 3 – propanediol production ii. Xylitol production iii. Cephalosporin precursor synthesis
 - iv. Creatininase v. Pediocin (10 marks)
5. Differentiate between the natural wine and fortified wine (12marks)
6. Write comprehensively on the early development of fermenter (12 marks)