



CRAWFORD UNIVERSITY
FAITH CITY, IGBESA, OGUN STATE

2021/2022 HARMATTAN EXAMINATIONS

COLLEGE: NATURAL AND APPLIED SCIENCES

DEPARTMENT: BIOLOGICAL SCIENCES

PROGRAMME: MICROBIOLOGY

COURSE TITLE: INDUSTRIAL MICROBIOLOGY.

INSTRUCTION: ANSWER ANY FIVE QUESTIONS

COURSE CODE: MCB 423

COURSE UNIT: 3

TIME ALLOWED: 2 ¹/₂ HRS

1. a. Define the term industrial microbiology? (2mks)
b. List any four (4) properties of a useful industrial microorganism (4mks)
c. List and explain any three (3) classes of microbial products (6mks)
2. a. What do you understand by the term "brewing"? (2mks)
b. Briefly discuss the major ingredients of beer and their roles in beer production. (4mks)
c. Describe any three (3) steps involved in the brewing process. (6mks)
3. Discuss extensively on the biosynthesis of citric and lactic acids (12mks)
4. a. What is enzyme immobilization? (2mks)
b. Describe the microbial growth curve with the aid of a diagram. (2mks)
c. Write extensively on any four immobilization techniques. (8mks)
5. a. What are bioreactors? (2mks)
b. Write extensively on primary and secondary metabolites (4mks)
c. Write short notes on the following:
i. Design of fermentors ii. Size of fermentors iii. Types of fermentors (6mks)
6. Write an essay on the microbial production of wine. (12mks)
7. a. Define the concept 'strain improvement'. (2mks)
b. List and discuss any four (4) methods of strain improvement. (8mks)
c. List four targets of strain improvement technique. (2mks)