



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

**MAIN CAMPUS
SPECIAL/SUPPLEMENTARY EXAMINATIONS**

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

THIRD YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE INDUSTRIAL CHEMISTRY**

COURSE CODE: SBI 364

COURSE TITLE: INDUSTRIAL BIOTECHNOLOGY

DATE: 03/08/2022

TIME: 2.00 PM – 4.00PM

INSTRUCTIONS TO CANDIDATES

Answer ALL questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over. 

1. Industrial Biotechnology
- a. Is referred to as grey or white biotechnology? Explain (5Mks)
- b. Is founded on the characteristics that govern the function and growth of microbes. Explain this statement. (5Mks)
- c. Also classically referred to Industrial microbiology, as an industrial process has a historical perspective? Discuss using examples where necessary. (5Mks)
- d. Is driven by Fermentation processes which plays an important role in the production of essential commodities in industries. Using Illustrations where necessary, describe a Typical fermentation process (10Mks)
- e. Plays an important role in the production of secondary metabolites. Briefly explain the production of Kojic acid (5 Mks)
2. The growth of microbes
- a. follows a specific pattern. Using an illustration show the growth pattern of microbes in a closed system (4Mks)
- b. in a continuous culture follow a certain pattern. Illustrate and compare the growth of same microbe in a semi-continuous culture and state the advantages/disadvantage of each of the two processes over the other. (6 Mks)
3. Write short notes on:
- a. The difference between septic and aseptic fermentation (5Mks)
- b. The essence of growing large quantities of cells (5Mks)
- c. Citric use in industries as an acidulant (5Mks)

4. An investor wants to set up a pilot facility for production of yoghurt. He consults a Scientist and need advice on media formulation and inocula development. With your knowledge on the essential components required for production of Beer, advice the investor putting into perspective all the important fctors for a smooth establishment of the facility. (15 Mks)