(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

MAIN EXAMINATIONS
MAIN CAMPUS

FOURTH YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOTECHNOLOGY

COURSE CODE: SBT 422
COURSE TITLE: MICROBIAL METABOLITES

DATE: THURSDAY, 13TH APRIL 2023 **TIME: 3:00 – 5:00 P.M.**

INSTRUCTIONS TO CANDIDATES

SECTION A: ANSWER **ALL** QUESTIONS
SECTION B: ANSWER **ANY TWO** QUESTIONS

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

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

SECTION A: SHORT ANSWER QUESTIONS [40 MARKS]

1. With specific examples, explain how a bacterium uses an electrochemical gradient to generate ATP. [5 Marks]
2. Define bioprocess as used in the production of Ampicillin and describe three downstream processes used in the purification of the Ampicillin antibiotic at the industrial scale. [5 Marks]
3. State the importance of metabolic regulation [5 Marks]
4. Differentiate between primary and secondary microbial metabolites. [5 Marks]
5. Highlight five pathways utilized by microorganisms in acquiring energy.[5 Marks]
6. Explain why secondary metabolites are not useful to microorganisms during growth.
7. Highlight five points to consider in secondary screening of an industrially important microorganism. [5 Marks]
8. Describe two methods of producing recombinant therapeutic proteins. [5 Marks]

SECTION B: ESSAY QUESTIONS [30 MARKS]

9. Describe the methods used to improve the metabolic capacities of microorganism for biotechnological applications. [15 Marks]
10. Studying the biosynthetic pathways in microbial metabolism has become very necessary in biopharmaceutical processes. Justify the statement. [15 Marks]
11. Elucidate the steps of downstream processing of a microbial metabolite. [15 Marks]