



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

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

**MAIN EXAMINATIONS
MAIN CAMPUS**

FIRST YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
MASTER OF SCIENCE IN MICROBIOLOGY**

COURSE CODE: SMB 822

COURSE TITLE: BIOPROCESS AND BIOEXPLORATIONS

DATE: WEDNESDAY, 20TH APRIL 2022 TIME: 9:00 – 12:00 P.M.

INSTRUCTIONS TO CANDIDATES

Answer **ANY FOUR** questions. Each Question Carries 15 Marks.

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating.

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

SMB 822: BIOPROCESS AND BIOEXPLORATIONS

1. As a microbiologist in an upcoming pharmaceutical manufacturing plant, you are expected to advice on the suitable fermentation equipment to be used in fermentation of an antibiotic product. With suitable examples, discuss the factors to consider in the design of that fermenter. [15 marks]
2. Strain improvement in the production of a recombinant protein is an essential step in the bioprocess. Discuss at least three methods that can be applied in that process. [15 marks]
3. Cite and discuss the applications of biosensors in fermentation technology in the production of a named industrial biopharmaceutical product [15 marks]
4. The search for a novel natural product from the less explored habitats has become an inevitable exercise. Elucidate the steps used by scientists in carrying out this exercise.[15 marks]
5. Discuss the milestones in the development of bioprocess technology. [15 marks]