BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF BIOLOGICAL SCIENCES
BScBZH
INDUSTRIAL MICROBIOLOGY (BZM400)

EXAMINATION
2 HOURS (100 MARKS)

INSTRUCTIONS
Answer FOUR questions. You MUST answer QUESTION 1 (Section A) and any THREE questions from Section B. Each question carries 25 MARKS. Where a question contains subdivisions, the mark value of each subdivision is given in brackets. Illustrate your answers where appropriate with large, clearly labelled diagrams. You should not spend more than thirty minutes on each question.

SECTION A (COMPULSORY)

1. (a) Describe the steps taken when isolating and screening for an antibiotic producing microorganism. (10 marks)

   (b) Describe techniques one would use to increase the yield of the desired antibiotic. (15 marks)

SECTION B

2. (a) Describe, with examples, the THREE types of food spoilage. (15 marks)

   (b) Discuss the temperature –based methods that can be employed in food preservation. (10 marks)

3. A student engineered a novel microorganism for use in the pharmaceutical industry.

   (a) Outline the steps the student would need to follow to obtain a patent here in Zimbabwe. (10 marks)

   (b) Describe the benefits or advantages of a patent. (5 marks)

   (c) Discuss the circumstances under which a patent application may be turned down. (10 marks)

4. Describe the importance and uses of microorganisms in industry.

5. (a) Describe the different groups of microorganisms according to their responses to the following environmental factors:

(i) pH. (6 marks)

(ii) Temperature. (8 marks)

(iii) Oxygen concentration. (6 marks)

(b) Describe stages of growth of microorganisms in batch culture. (5 marks)

6. Describe and contrast the processes of wine and beer production.

END OF EXAMINATION QUESTION PAPER