UNIVERSITY OF FORT HARE

APPLIED MICROBIOLOGY AND BIOTECHNOLOGY

MIC322

DEGREE EXAMINATIONS

NOVEMBER

2024

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Time: 3 HOURS

Subject: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY

Marks: 100

This paper consists of 2 pages including the cover page

Internal Examiners

Mr N Ntozonke

External Examiners

Prof E Green

INSTRUCTIONS

Answer all questions.

Question 1 **[25 marks]**

1. Industrial microbiology and biotechnology is a multidisciplinary subject. Discuss its relevance in the following sectors and give at least one (1) example of a value-added product from each sector.

a) Energy sector
b) Agricultural sector
c) Medicine and Pharma sector
d) Food industry
e) Chemical industry [25 marks]

Question 2 **[25 marks]**

1.1 Discuss contentious issues in biotechnology under the following headings.

a. Moral
b. Environmental
c. Politics
d. Economy

[10 marks]

1.2 Mention and discuss four major classes of preservation procedures

[15 marks]

Question 3 **[25 marks]**

3.1 Inoculum development is an importance step in industrial microbiology. Describe the process under the following headings

Stock culture reactivation
Multi staging
Media
Sterilization
Agitation
Quality control

[18 marks]

3.2. State two relevance of inoculum development in the beverage sector of industrial microbiology.

[7 mark]

Question 4 **[25 marks]**

4.1 Briefly describe the following terms as it applies to industrial microbiology:

a. Shake-flask fermentation
b. Solid state fermentation
c. Continuous fermentation

[15 marks]

4.2 State any five (5) advantages of solid-state fermentation you know.

[10 marks]