

UNIVERSITY OF FORT HARE

APPLIED MICROBIOLOGY AND BIOTECHNOLOGY

MIC322

SUPPLEMENTARY EXAMINATIONS

JANUARY

2019

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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

Prof U Nwodo

External Examiners

Prof C Ateba

INSTRUCTIONS

Answer all questions.

Question 1 [25 marks]

1.1 Historical overview of Industrial Microbiology as is seen from 1670s to early 1860, A. van Leeuwenhoek, Lazaro Spallanzani, Theodore Schwann, C. Cagniard-Latour and Louis Pasteur played an important role. List their contributions. [15 Marks]

1.0 Discuss contentious issues in biotechnology under the following headings;
a. Moral
b. Environment
c. Politics and economics [10 Marks]

Question 2 [25 marks]

2.0 Lager beer is produced from barley however, sorghum seems a cheaper alternative. Hence, as an expert with industrial microbiological skills, describe the process of lager beer production using sorghum. [25 marks]

Question 3 [25 marks]

3.1 Inoculum development is an importance step in industrial microbiology. Describe the process under the following headings
a. Stock culture reactivation
b. Multi staging
c. Media
d. Sterilization
e. Agitation
f. 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 With the aid of a diagram an illustration, describe the sequence of steps in the production process in industrial microbiology. [15 Marks]

4.2 Describe the key variables to be considered in process development in solid-substrate fermentation. [10 Marks]