UNIVERSITY OF JOHANNESBURG

FACULTY OF SCIENCE

DEPARTMENT OF FOOD TECHNOLOGY
NATIONAL DIPLOMA IN FOOD TECHNOLOGY
NATIONAL DIPLOMA IN BIOTECHNOLOGY

MODULE: **FTN3BFM**
FOOD MICROBIOLOGY III
CAMPUS: **DFC**

NOVEMBER EXAMINATION

DATE: 19/ 11/ 2016 **TIME: 08:00 AM – 11:00**

ASSESSORS **DR B C DLAMINI**

INTERNAL MODERATOR **MS D METCALFE**

EXTERNAL MODERATOR **DR F TABIT**

DURATION: 3 HOURS **TOTAL MARKS: 120**

NUMBER OF PAGES: 4

INSTRUCTIONS:

1. Answer ALL questions.
2. Ensure your student number appears on all material you submit.
3. Questions may be answered in any sequence but **sub-sections must be answered together.**
4. Hand in examination paper and aswer sheet together

QUESTION 1

Food preservation is one of the oldest technologies used by humans to prevent food from spoiling. Discuss the following preservation techniques and explain how they prevent microbial growth.

a) Sterilization (10)

b) Salting (10)

(20)

QUESTION 2

a) Historically it was thought that the acidity of fresh apple cider (ph<4.0) was protective, but it is now known that some *Escherichia coli* strains can survive in apple cider and cause disease. Discuss the mechanisms of survival by *E. coli* at low pH.

(10)

b) Discuss the inhibitory effects of carbon dioxide on foodborne microorganism (4)

c) Industrial fermentations involve the use of starter cultures. Explain the importance of starter cultures and discuss four (4) roles of starter cultures during fermentation.

(10)

[24]

QUESTION 3

a) Briefly discuss the spoilage of the following food products with respect to product characteristics and microorganisms associated with their spoilage.

i) Ground/ minced meat (7)

ii) Soft cheese (7)

b) What chemical preservatives can be used to control the growth of pathogenic microorganism in the above foods? Briefly discuss their mechanisms too. (5)

[19]

QUESTION 4

a) Foodborne illnesses may occur in a few hours or after a few days. Give the reason for this and cite causal microorganisms as an example. (8)

b) Write short notes on the following foodborne pathogens in terms of the following: pathogen characteristics, pathogenesis, the type of food they are often association with and their control in food

i) *Salmonella* (8)

ii) *Clostridium perfringens* (8)

iii) *Listeria monocytogenes* (8)

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QUESTION 5

A flow diagram of the manufacture of fermented sausage is shown in Appendix A. From the diagram, develop a HACCP plan for the sausage manufacture using the following headings: Step; Hazard; Preventative Measure; CCP; Critical Limits; Monitoring; Corrective action

[25]

TOTAL MARKS: 120

APPENDIX A

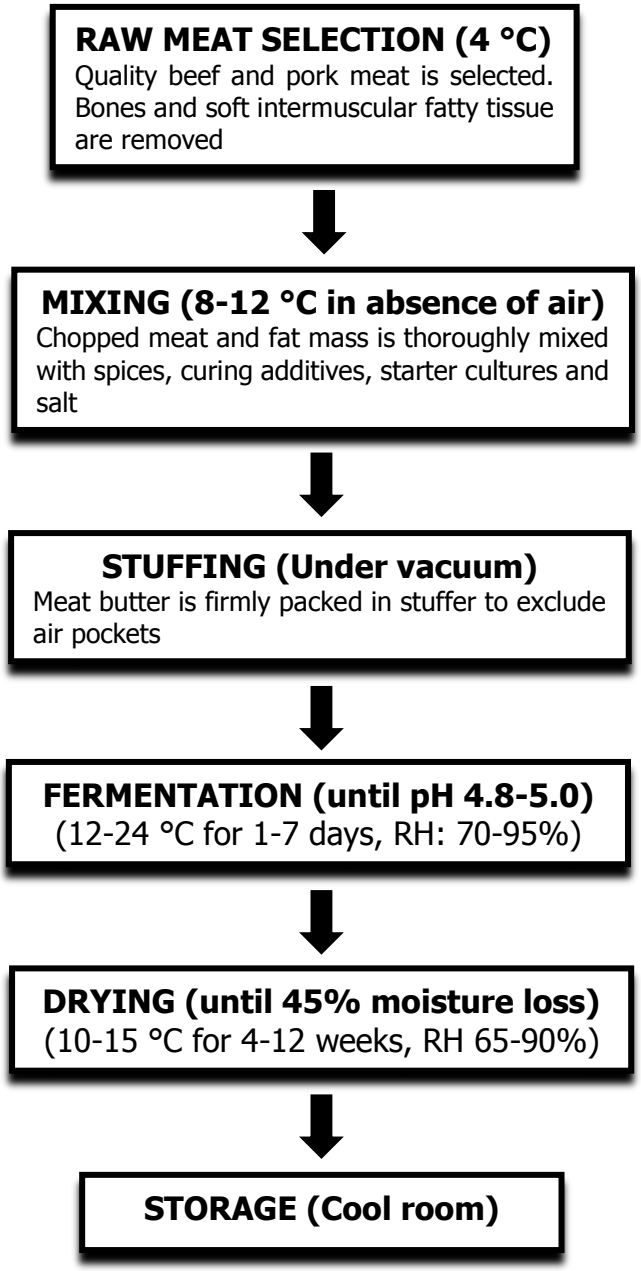

Figure 1. Flow diagram of the processing of dry fermented sausage