

PAPER II



**TECHNICAL UNIVERSITY OF MOMBASA**

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**Faculty of applied and Health Sciences**  
DEPARTMENT OF PURE AND APPLIED SCIENCES

**UNIVERSITY EXAMINATION FOR:**

DIPLOMA IN FOOD TECHNOLOGY AND QUALITY ASSURANCE

**YEAR 2 SEMESTER 1**

AFS 2209: FERMENTATION AND BIOTECHNOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: DECEMBER 2024 SERIES**

**TIME: 2 HOURS**

**DATE: DECEMBER 2024**

- a) Explain the contribution made by Louis Pasteur in modern day fermentation (4 marks)
- b) Give **TWO** examples of each of the following substrates use in industrial fermentation;
- i. Carbon sources (2 marks)
  - ii. Nitrogen sources (2 marks)
- c) Outline **FOUR** useful microorganisms in the food industry (4 marks)
- d) State **FOUR** factors that determine effective operation of a fermenter (4 marks)
- e) List **FOUR** reasons for using microorganisms in fermentation (4 marks)
- f) Outline **SIX** factors that affect the choice of fermentation raw materials (6 marks)
- g) State **FOUR** characteristics of culture inoculum used in fermentation (4 marks)

**Question TWO**

Describe the following fermentation systems

- i. Batch Fermentation (6 marks)

**ii. Continuous Fermentation (4 marks)**

**iii. Fed batch Fermentation (5 marks)**

**Question THREE**

Discuss the **FIVE** major operations in biotechnological processes (15 marks)

**Question FOUR**

Discuss **FOUR** applications of Biotechnology in modern day (15 marks)

**Question FIVE**

Discuss lactic acid fermentation (15 marks)