



2<sup>nd</sup> SEM. 2018/19

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**UNIVERSITY OF ESWATINI  
FINAL EXAMINATION PAPER**

**PROGRAMME** : **BACHELOR OF SCIENCE IN FOOD  
SCIENCE, NUTRITION AND TECHNOLOGY  
YEAR IV**

**COURSE CODE** : **FSNT 406/FNS404**

**TITLE OF PAPER** : **FERMENTATION TECHNOLOGY**

**TIME ALLOWED** : **TWO (2) HOURS**

**INSTRUCTIONS** : **ANSWER QUESTION ONE (1) AND ANY  
OTHER TWO (2) QUESTIONS.**

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY  
THE CHIEF INVIGILATOR**

**QUESTION 1 (COMPULSORY)**

- a) Describe the ways to induce or initiate food fermentation and state the merits and limitations of each method. (18 Marks)
- b) Explain in detail, the superiority of fed batch fermentation in culture production. (12 Marks)
- c) Explain the significance of shortening the lag phase in food fermentation. (10 Marks)

**[TOTAL MARKS = 40]****QUESTION 2**

- (a) Explain the following: (4x5 = 20 Marks)
- i. Malolactic Fermentation
  - ii. Up stream processes (give three examples)
  - iii. Growth associated
  - iv. Air lift fermenter (use sketch)
- (b) Identify the use of Sulfudioxide in alcoholic fermentation. (10 Marks)

**[TOTAL MARKS = 30]****QUESTION 3**

- (a) Describe the following processes in fermentation of wine: (10 Marks)
- (i) Blending
  - (ii) Aging and Maturation
- (b) Discuss the fermentation of cider and perry using process flow chart (10 Marks)
- (c) Describe the manufacturing of fermented pickles. (10 Marks)

**TOTAL MARKS = 30]****QUESTION 4**

- (a) Describe vinegar manufacturing principles (10 Marks)
- (b) Describe the syneresis phenomena in fermented dairy products and state the remedies to overcome the phenomenon (12 Marks)
- (c) State the function of SO<sub>2</sub> in wine fermentation. (8 Marks)

**[TOTAL MARKS = 30]**