UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAM	:	BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY YEAR IV
COURSE CODE	:	FSNT 406
TITLE OF PAPER	:	FERMENTATION TECHNOLOGY
TIME ALLOWED	:	TWO (2) HOURS
INSTRUCTIONS	:	ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS.

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QUESTION 1 (COMPULSORY)

(a) Describe solid state and submerged fermentation and discuss their differences. **(15 Marks)**

(b) Discuss the different modes of operations and feed strategies of a fed-batch fermenter (reactor). **(15 Marks)**

(c) Explain bulk cultures and direct-to-vat cultures. **(10 Marks)**

[TOTAL MARKS = 40]

QUESTION 2

(a) Explain the following: **(4×4 = 16 Marks)**

i. Upstream processes
ii. Growth-associated products
iii. Specific growth rate
iv. keeving

(b) With the help of a flowchart describe the process of red and white winemaking. **(14 Marks)**

[TOTAL MARKS = 30]

QUESTION 3

(a) Give **eight (8)** desirable properties of wine cultures. **(12 Marks)**

(b) Explain the difficulty of using starter culture in sauerkraut processing. **(8 Marks)**

(c) Describe the steps in yoghurt processing (use flowcharts). **(10 Marks)**

[TOTAL MARKS = 30]

QUESTION 4

(a) Discuss the *Orlean* and *Trickling Generator* processes. **(14 Marks)**

(b) State the functions performed by meat starter cultures. **(10 Marks)**

(c) What possible actions could be taken to minimize syneresis problems in cheese making? **(6 Marks)**

[TOTAL MARKS = 30]