



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
Department of Environmental Health Science

DEGREE IN ENVIRONMENTAL HEALTH AND FOOD
SCIENCE

FINAL EXAMINATION PAPER 2017

TITLE OF PAPER : FERMENTED FOODS

COURSE CODE : EHM 424

DURATION : 2 HOURS

MARKS : 100

INSTRUCTIONS :

- : READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
- : ANSWER **ANY FOUR** QUESTIONS.
- : EACH QUESTION **CARRIES 25** MARKS.
- : WRITE NEATLY & CLEARLY
- :
- : BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED
BY THE INVIGILATOR.**

QUESTION ONE

- (a) Define fermentation. [1 Mark]
- (b) Briefly discuss how fermenting foods help to extend the shelf life of products. [4 Marks]
- (c) If pH of fermented product is 3.7, 4.7 or 2.7 calculate the distribution coefficients of lactic acid (pK value of lactic acid = 3.7). [9 Marks]
- (d) At what pH is lactic acid most effective? [1 Mark]
- (e) Briefly discuss *Lactobacillus* spp. that are relevant to traditionally fermented Swazi foods. [10 Marks]

Total [25 Marks]

QUESTION TWO

- (a) What are the desirable properties of starter cultures in meat, dairy, bread, wine and beer? [13 Marks]
- (b) Discuss how the use of starter culture ensures that products are manufactured on a timely and predictable schedule, with consistent and repeatable product qualities. [12 Marks]

Total [25 Marks]

QUESTION THREE

- (a) What are the roles of Sulphur, vitamin C and thiocyanates in fermented vegetables? [3 Marks]
- (b) What is the general representative microflora of vegetables before start of fermentation? [12 Marks]
- (c) How would you differentiate hanging fermentation from sluggish fermentation? [10 Marks]

Total [25 Marks]

QUESTION FOUR

- (a) Briefly discuss the properties of any six bacteria used in meat fermentation. [15 Marks]
- (b) What role does protein play in bread fermentation? [10 Marks]

Total [25 marks]

QUESTION FIVE

- (a) Discuss the primary phase in beer fermentation and how it impacts on quality of beer. [20 Marks]
- (b) What role do bacteria play in wine fermentation? [5 Marks]

Total [25 Marks]