



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

DEGREE IN ENVIRONMENTAL HEALTH AND FOOD
SCIENCE

FINAL EXAMINATION PAPER 2021

TITLE OF PAPER : FERMENTED FOODS

COURSE CODE : EHS 423

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 main importance of Actinobacteria phylum in fermented foods [5 Marks]
- (c) What are the main differences between initiation and primary vegetable fermentation phases? [19 Marks]
- Total [25 Marks]**

QUESTION TWO

- (a) Briefly discuss the role of vitamins in microbial metabolism of substrates [12 Marks]
- (b) What are the main differences between substrate level phosphorylation and oxidative phosphorylation? [5 Marks]
- (c) What are the main difference between catabolism and anabolism? [8 Marks]
- Total [25 Marks]**

QUESTION THREE

- (a) What are the main microorganisms under category acetic acid bacteria commonly used in industry for manufacture of vinegar? [6 Marks]
- (b) What are the characteristics of these acetic acid bacteria used in vinegar manufacture? [6 Marks]
- (c) What is the role of sulfur compounds in fermented foods? [5 Marks]
- (d) One of the ingredients used in manufacture of fermented sausages is sugar. Sugar is added at varying rates. What are the effects of adding sugars at higher rates? [4 Marks]
- (e) What is the role of protein component of wheat in bread fermentation? [4 Marks]
- Total [25 Marks]**

QUESTION FOUR

- (a) Write short accounts of any five (5) listed ingredients/components in bread making,
- (i) Sugars [2 Marks]
- (ii) Enzymes [2 Marks]
- (iii) Fat [2 Marks]
- (iv) Yeast nutrients [2 Marks]
- (v) Vitamins [2 Marks]
- (vi) Dough improvers [2 Marks]
- (vii) Biological preservatives [2 Marks]
- (viii) Emulsifiers [2 Marks]
- (ix) Gluten [2 Marks]
- (b.) What are the factors that influence growth of *Sacharomyces cerevisiae* during fermentation of bread? [5 Marks]
- (f) How would you differentiate hanging fermentation from sluggish fermentation? [10 Marks]
- Total [25 marks]**

QUESTION FIVE

- (a) Briefly outline the roles of different constituents of grape juice play in wine fermentation. **20 Marks]**
- (b) What are the roles of bacteria in wine fermentation? **[5 Marks]**
- Total [25 Marks]**