

**CONFIDENTIAL**



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2017/2018**

**COURSE NAME : MICROBIOLOGY**  
**COURSE CODE : BWD 10203**  
**PROGRAMME CODE : BWD**  
**EXAMINATION DATE : DECEMBER 2017/JANUARY 2018**  
**DURATION : 3 HOURS**  
**INSTRUCTION : ANSWER ALL QUESTIONS**

**THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES**

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- Q1** Louis Pasteur had discovered that yeast facilitates the fermentation process by fermenting sugars to alcohol.
- (a) List **TWO (2)** types of microbial growth condition in fermentation process. (2 marks)
  - (b) Explain the process of fermentation. (6 marks)
  - (c) Describe the role of bacteria in the process of fermentation. (12 marks)
- Q2** In living cells, enzymes serve as biological catalysts.
- (a) Define “enzyme-substrate complex”. (2 marks)
  - (b) Describe the concept of enzyme specificity and efficiency. (6 marks)
  - (a) Discuss **THREE (3)** factors that can affect the enzymes reactions. (12 marks)
- Q3** Certain species of bacteria are capable of growing at extreme temperature that would certainly hinder the survival of almost all eukaryotic organisms.
- (a) Illustrate and describe the effect of temperature on the growth of microbes. (8 marks)
  - (b) Analyze the growth of *Bacillus cereus* that may be present in the rice as shown in **Figure Q3(b)**. (12 marks)
- Q4** Physical and chemical elements are the crucial requirements for microbial growth.
- (a) Tabulate **THREE (3)** types of heating methods and their mechanism action for controlling microbial growth. (10 marks)
  - (b) Discuss how the salted fish, honey and sweetened milk can be preserved longer compared to fresh products. (10 marks)

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**Q5** Despite causing spoilage in food, microbial metabolism also acts as preservative, destroys many pathogenic microbes and toxins and in some cases adds nutritional value in the form of vitamins and other nutrients.

- (a) Classify foods that have the potential of spoilage. Give **ONE (1)** example for each classification to justify your answer. (10 marks)
  
- (b) Suggest and discuss the mechanism of **TWO (2)** types of natural and chemical preservatives to control the growth of microorganisms in food. (10 marks)

**-END OF QUESTIONS-**

**TERRIKA**

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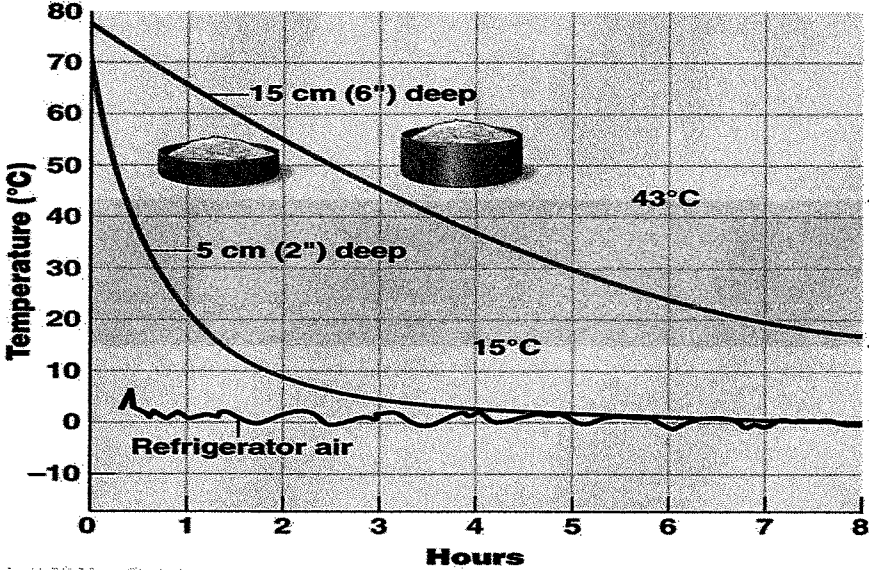


Figure Q3 (b)

TERBUKA

SIKSI & JEN. TERBUKA DAN  
KEMERDEKAAN BERKUALITAS  
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