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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022

COURSE NAME : MILK AND DAIRY PRODUCT
TECHNOLOGY

COURSE CODE : BWD 32003

PROGRAMME CODE : BWD

EXAMINATION DATE : JANUARY / FEBRUARY 2022

DURATION : 3 HOURS

INSTRUCTION : 1. ANSWER ALL QUESTIONS.
2. THIS FINAL EXAMINATION IS AN
**ONLINE ASSESSMENT AND
CONDUCTED VIA OPEN BOOK.**

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

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Q1 Nutrients that contained in milk are essential for human health and development.

- (a) Identify **ONE (1)** factor that influence the functional properties of milk and explain your answer. (2 marks)
- (b) Density is defined as an object's mass divided by it's volume. Some of factors influence milk density. Describe the factors. (4 marks)
- (c) Titratable acidity is the amount of alkali required to bring the pH to neutrality. It is used to determine bacterial growth and to test the security of milk. Construct a simple titratable acidity experiment of a milk product. (4 marks)
- (d) Fats and oils are composed of molecules known as triglycerides. Ali Maju Sdn Bhd is planning to manufacture fat and oil based food products. Compare and analyze between fat and oil by using your knowledge in order to help Ali Maju Sdn Bhd making the right manufacturing decision. (10 marks)

Q2 Clarification, separation and standardization are three important processing methods in dairy industry.

- (a) Describe briefly **TWO (2)** methods of clarification. (4 marks)
- (b) Lala Milk Sdn Bhd has the capability to separate 10500 kg of milk containing 3.0% butterfat in each processing batch. If they assume there are no significant losses of fat in the cream separator, calculate the expected weight and percentage of cream containing 45.0% butterfat obtained. (4 marks)
- (c) Due to a reduction in the amount of raw milk received in October, Lala Milk Sdn Bhd was only able to get 550 kg of cream in each processing batch. Determine the percentage of butterfat in the skim milk generated by their company for that batch. (6 marks)
- (d) Lala Milk Sdn Bhd planned to manufacture milk powder which contains 4.5% fat. However, due to problem in **Q2(c)**, the company decided to buy cream from other supplier. Calculate the quantity and percentage of cream should be bought to mix with skim milk in **Q2(c)**. (6 marks)



- Q3** (a) Shelf life is a key factor in producing quality milk. Identify the factors to increase the shelf life of pasteurized milk. (4 marks)
- (b) Different types of milks have different nutritional benefits and go through different processing steps. Differentiate reconstituted and recombined milk. (4 marks)
- (c) Dutchmommy Sdn Bhd processed and marketed fluid milks through various steps and standards to preserve its quality. However, there was a flaw in the pasteurized milk that was produced, and it did not fulfill a standard. Analyzed the possible causes of failure during the manufacturing process flow. (6 marks)
- (d) As a food technology graduate student, you're interested in starting a milk production company that can create higher-quality milk than what's currently available on the market. Illustrate the processes that will be used in the manufacture of milk and explain the significance of the specified processing steps. (6 marks)
- Q4** Khasyaf has a big milk factory. On his farm, he has roughly 5000 cows that produce a million tonnes of milk. He milks the cow every day in order to provide fresh, high-quality milk in enormous quantities. Before the raw milk is transferred to the factory, Khasyaf will ensure that the milking activities are carried out in a hygiene control.
- (a) Explain in details the potential factors that affect milk quality during transportation from farm to factory. (10 marks)
- (b) Khasyaf Milk Laboratory has been conducted an organoleptic test by looking at raw milk received from the farm and he suspected that the raw milk was of poor quality because the pH was below 2. As a result, he decided to simply discard the entire batch of raw milk. Discuss your answer based on Khasyaf's decision. (10 marks)
- Q5** The Star on 16 October 2017 reported that Milk Malaysia Sdn. Bhd. recalls Marigold HL Milk product from market due to the quality of milk are affected by bacterial contamination.
- (a) Based on above statement, outline **THREE (3)** importance of the HACCP in milk dairy production plants. (6 marks)
- (b) Identify the control point/critical control point in milk dairy production and discuss a hazard analysis together with the control measures in **Q5(a)**. (14 marks)

-END OF QUESTIONS-