



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
(TAKE HOME)
SEMESTER I
SESSION 2020/2021**

COURSE NAME : OIL AND FAT TECHNOLOGY
COURSE CODE : BWD 30503
PROGRAMME CODE : BWD
EXAMINATION DATE : JANUARY / FEBRUARY 2021
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS
OPEN BOOK EXAMINATION

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THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

Q1 Triglyceride is the main component in natural oil and fat.

(a) Name **ONE (1)** example of common fatty acid as stated below:
(Different name of fatty acid should be given for each question)

- (i) Saturated fatty acid
- (ii) Mono-unsaturated fatty acid
- (iii) Polyunsaturated fatty acid
- (iv) Essential omega 3 fatty acid
- (v) Conditional omega-3 fatty acid
- (vi) Essential omega-6 fatty acid

(6 marks)

(b) By choosing **FOUR (4)** types of fatty acids in **Q1(a)**, write their abbreviated form showing the location of unsaturated carbon.

(4 marks)

(c) Draw **THREE (3)** structures of triglycerides which contain fatty acids in **Q1(a)** and might arranged in space as stated below:

(i) alpha form

(5 marks)

(ii) double chain-length form

(5 marks)

(iii) triple chain-length form

(5 marks)

Q2 Fats and oil are important ingredients in a variety of food products. They commonly provide specific functional properties to the products.

(a) Explain the water in oil emulsion by using suitable oil/fat -based food product.
(Please include drawing in your explanation)

(5 marks)

(b) By choosing **FOUR (4)** types of food products, discuss the functional properties of fats and/or oil given to the products.

(20 marks)

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- Q3** Rancidity can occur in many products or ingredients during storage. It affects taste, odor, and can have an impact on the nutritive value.
- (a) Name **FIVE (5)** types of rancidity that can occur in oil and/or fat -based products. (5 marks)
 - (b) Explain briefly **FIVE (5)** factors that affects rancidity of oil and/or fat -based products. (10 marks)
 - (c) Select appropriate technology could be used to prevent rancidity of oil and/or fat -based products. Discuss your answer. (10 marks)
- Q4** The production of margarine involves three basic steps that are emulsification, crystallization and plasticization.
- (a) Define margarine according Food Regulation 1985. (4 marks)
 - (b) Identify **TWO (2)** types of crystal usually formed in margarine. (2 marks)
 - (c) Table-grade margarine is made from selected oils and fats which may use several types of oil in the formulations which involve appropriate technology.
 - (i) Select **THREE (3)** types of technology that could be used in the oil formulations. (3 marks)
 - (ii) Based on your answer in **Q4(c)(i)**, discuss the advantages and/or disadvantages of each technology. (15 marks)
 - (iii) Determine **ONE (1)** type of packaging size suitable for package table-grade margarine. (1 marks)

-END OF QUESTIONS -

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