

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**YEAR TWO SECOND SEMESTER EXAMINATIONS
(Main Examination)**

BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

COURSE CODE: AFT 202

COURSE TITLE: FATS AND OILS TECHNOLOGY

DATE: 26TH APRIL, 2022

TIME: 8.00-10.00AM

Instructions: This paper consists of 5 questions
Answer question 1 and any other 3 questions
Ensure your answers are clearly and logically written
All line diagrams drawn should be clear and clearly labelled

MMUST observes ZERO tolerance to examination cheating

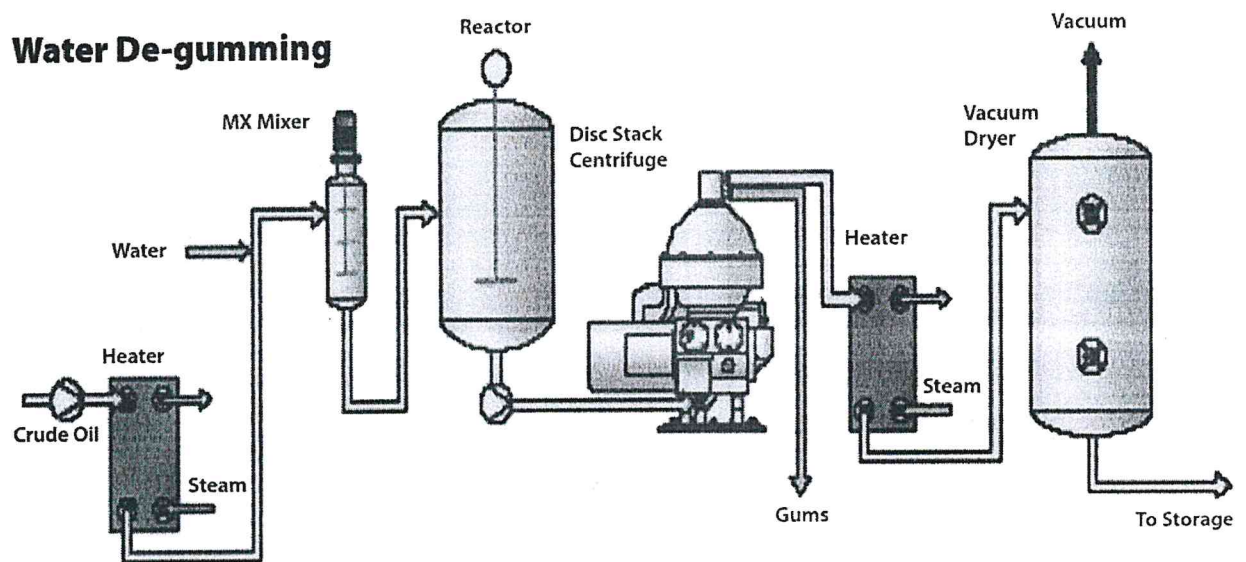
This paper consists of TWO printed pages. Please Turn Over

SECTION A
Question One (25 marks)

- (a) Distinguish between
- i. Tocopherols and tocotrienols
 - ii. Saturated and unsaturated fatty acids
 - iii. Hydratable and non-hydratable phospholipids
 - iv. Autoxidation and photooxidation
 - v. Winterization and fractionation
- (5 marks)**
- (b) Outline the method of test and the importance of the following tests for edible oils
- i. Iodine value
 - ii. Peroxide value
 - iii. Refinery loss
 - iv. Polymerized triglycerides
- (4 marks)**
- (c) Briefly discuss the objectives and final product quality of oil refining
- (5 marks)**
- (d) Differentiate between mechanical oil pressing and solvent oil extraction
- (3 marks)**
- (e) Briefly describe the process of
- i. Fat crystallisation
 - ii. Bleaching
- (4 marks)**
- (f) State the quality parameters that should be used by an edible oil processing facility to track the criteria of consumer acceptability of their
- i. Liquid oil
 - ii. Packaged shortening
- (4 marks)**

SECTION B
Question Two (15 marks)

- (a) The flowchart below illustrates a process within edible oil processing
- i. Identify and briefly describe the process
 - ii. State the critical control points in the process
- (8 marks)**



- (b) The quality control supervisor at Mafuta edible oil refineries has noticed that the free fatty acid (FFA) content and peroxide value of received oil are rising rapidly during storage. Specify the reasons behind this occurrence, and hence give recommendations on remedial measures. **(7 marks)**

Question Three (15 marks)

- (a) As a reception manager in charge of receiving oil at an edible oil processing facility, outline the parameters that you would inspect to ensure that the oil is worthy of reception **(5 marks)**
- (b) With the aid of a diagram, outline the components of a batch deodorization unit **(5 marks)**
- (c) State and briefly discuss the different ways in which oil undergoes degradation **(5 marks)**

Question Four (15 marks)

- (a) Discuss the factors that contribute to Degradation and Variation (D&V) Losses within an edible oil processing facility, hence outline how these losses can be managed **(15 marks)**

Question Five (15 marks)

- (a) Define hydrogenation, state its objectives hence show the components of a typical batch hydrogenation system **(8 marks)**
- (b) By stating the principle of operation, differentiate between physical and chemical refining **(7 marks)**

