



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.

Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411

Fax: 064-30321

Website: www.must.ac.ke Email: info@mucst.ac.ke

University Examinations 2015/2016

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

AFT 3475: FATS AND OILS TECHNOLOGY

DATE: NOVEMBER 2015

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) Distinguish the following terms:
- (i) Isomerization and polymerization.
 - (ii) HDL and LDL.
 - (iii) Tallow and lard.
 - (iv) Emulsifier and emulsion.
 - (v) Deodorization and degumming. (5 Marks)
- b) (i) Define hydrolysis of lipids and state the necessary conditions for it to take place. (3 Marks)
- (ii) Using a diagram describe interesterification of lipids. (3 Marks)
- (iii) Mention any four methods used to prevent excessive absorption fat in foods. (2 Marks)
- c) (i) Discuss the effect of structure on the physical properties of lipids. (3 Marks)
- (ii) Mention any three promoters of oxidative rancidity. (3 Marks)
- (iii) Describe smoke points at mention any two methods of maintaining it. (3 Marks)

- d) (i) Explain the functions of fats/oils in foods. (3 Marks)
- (ii) List any three antioxidant alternatives used in the preservation of fats and oils. (3 Marks)
- (iii) Differentiate between essential and non-essential fatty acids based on the position of double bonds. (2 Marks)

QUESTION TWO (20 MARKS)

- a) Tests for lipid oxidation may be used to determine the quality of lipids or estimate shelflife. Describe any five lipid oxidation indicator tests. (10 Marks)
- b) Fish oil is very high in fatty acids which have been implicated for a number of health benefits. Using a flow chart, describe the extraction of edible oil fish from oil. (10 Marks)

QUESTION THREE (20 MARKS)

- (a) After graduating with a Bsc. Degree in Food Science and Technology, Justus chose to start a food company dealing with extraction of edible oil from sunflower seeds. Starting from the seeds describe the process to be followed to get a bland edible oil. (10 Marks)
- (b) Stepwise, describe rendering. (10 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the classification of fatty acids and illustrate the formation of a triglyceride. (10 Marks)
- b) Among the three macronutrients, lipids yield the most energy. State the amount of energy provided by lipids and explain why lipids are not utilized as the preferred source of fuel in the body. (10 Marks)