

CHUKA



UNIVERSITY

SUPPLEMENTARY / SPECIAL EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF BACHELOR DEGREE IN
ANIMAL SCIENCE**

FOST 345: EDIBLE FATS AND OILS

STREAMS:

TIME: 2 HOURS

DAY/DATE: MONDAY 16/11/2020

2.30 P.M - 4.30 P.M.

INSTRUCTIONS:

SECTION A (30 MARKS) ANSWER ALL QUESTIONS

1. a. Draw the structure of fat showing the location of tri-hydric alcohol and fatty acids. (5 Marks)
- b. Explain the functional properties of fats and oils. (5 Marks)
2. a. The double bond is a reactive part of a fat leading to many deteriorative reactions. Explain some of the reactions likely to be facilitated by the double bond. (5 Marks)
- b. Describe oil refining. (1 Mark)
- c. Discuss the side reactions taking place during hydrogenation of oils (4 Marks)
3. In seed oil extraction, solvent extraction is a critical step. Explain the factors to be considered in choosing a solvent in oil extraction. (5 Marks)
4. a. Margarine a commercial products from vegetable oils is slightly different from butter. Explain these differences (3 Marks)

b. Emulsifiers are important as emulsion stabilizers. Draw the structure and name any one common emulsifier in the food industry. (2 marks)

SECTION B – ANSWER ANY TWO QUESTIONS (40 MARKS)

5. a. By use of a diagram, explain the differences between the following fatty acids; Unsaturated fatty acids, Mono-unsaturated fatty acid and Poly-unsaturated fatty acids (6 Marks)
- b. Many fats and oils contain palmitoleic fatty acid. Its formula is **C16:1 n-7**. Given the formula draw its structure showing the position and number of double bonds. (4 Marks)
- c. An auger is used in extraction of oils from nuts. By use of a diagram explain how it works. (10 Marks)
6. a. Explain the procedures in extraction of animal fats using the wet rendering method (10 Marks)
- b. Explain sources of animal fats (5 Marks)
- c. Discuss sources of oils from plant origin. (5 Marks)
7. a. Explain by use of a diagram the extraction of oil and lecithin from soybean (10 Marks)
- b. Explain the steps in oil refining detailing their main aim (8 Marks)
- c. Explain two methods of separation of fats with different densities. (2 Marks)
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