

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN  
FOOD SCIENCE AND TECHNOLOGY**

**FOST 345: EDIBLE FATS AND OILS TECHNOLOGY**

**STREAMS: BSC. FOST Y3S2**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 08/04/2020**

**8.30 A.M. – 10.30 A.M.**

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**INSTRUCTIONS:**

- Answer ALL questions in section A and any two questions in section B.

**SECTION A (30 MARKS: ANSWER ALL QUESTIONS)**

1. Explain the difference between an oil and a fat. (2 marks)
2. Double bond as a property of unsaturated fat is the reactive part. Explain the processes which causes these reactions? (5 marks)
3. Explain two methods a Food Scientist can use to;
  - (a) Make oils hard
  - (b) Make fats soft
  - (c) Produce oil/fat mixture of appropriate softness (3 marks)
4. Explain 2 characteristic differences between these pair of fats and oils
  - (a) Land animal fat and marine fat
  - (b) Seed and fruit coat oils
  - (c) Non-drying oils and drying oils
5. Explain the various methods of separating a fat and oil mixture of different melting and freezing characteristics. (6 marks)
6. (a) Extraction of oil can be different forms. Explain these methods. (6 marks)

- (b) An Auger is common in oil seed screening before extraction is done. By use of a diagram, explain how an Auger works. (5 marks)

**SECTION B (40 MARKS) ANSWER ANY TWO QUESTIONS**

7. (a) Name and explain the four processes which are carried out in vegetable seed oils during the process of refining. (8 marks)
- (b) What is hydrogenation of fats and oils. (2 marks)
- (c) By use of a diagram show how a hydrogenation unit works. (8 marks)
- (d) Name 4 side reactions taking place during hydrogenation. (2 marks)
8. (a) Emulsifiers are electrical dipolar materials which help to hold water and fat in a stable emulsion. State 2 most naturally occurring phospholipids and show their chemical structure
- (b) Describe synthesis of emulsifiers and the controls to be considered. (10 marks)
- (c) In ice cream manufacture, state the ingredients/components giving their percentages quantity. (6 marks)
9. (a) State some of the products made from fats and oils. (5 marks)
- (b) Differentiate between butter and margarine. (5 marks)
- (c) Explain the procedure for margarine manufacture. (10 marks)
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