



FACULTY OF SCIENCE

DEPARTMENT OF BIOTECHNOLOGY AND FOOD TECHNOLOGY **BACCALAUREUS TECHNOLOGIAE IN FOOD TECHNOLOGY**

MODULE FTN1BF4
 FOOD TECHNOLOGY IV
CAMPUS DFC

SUPPLEMENTARY EXAMINATION 2019

DATE: 10/01/2020

SESSION: 08:00-11:00

ASSESSOR(S)

DR E KAYITESI

INTERNAL MODERATOR

DR AO ADEBO

EXTERNAL MODERATOR

DR O.C WOKADALA

DURATION **3 HOURS**

MARKS 177
 100% 175

INSTRUCTIONS TO CANDIDATES:

1. Answer all the questions in the examination answer book provided.
2. Questions may be answered in any order, but subsections of questions must be answered together.
3. Marks will be deducted for untidy and illegible handwriting.
4. Good luck!

QUESTION 1

- 1.1 Differentiate between complete and incomplete protein and explain how combining two or more incomplete proteins creates a complete protein. (10)
- 1.2 Describe foaming properties of food protein and explain the factors that affect foam formation and stability. (10)
- 1.3 State at least 8 uses of gelatin in the food industry. (7)

[27]

QUESTION 2

- 2.1 Define and explain each of the following characteristics of food lipids.
 - (a) Plasticity (4)
 - (b) Hydrogenation (4)
 - (c) Rancidity (3)
- 2.2 Describe the 3 steps involved in lipid oxidation of foods. (6)
- 2.3 State the factors that contribute to development of lipid oxidation in foods. (8)

[25]

QUESTION 3

- 3.1 Differentiate between amylopectin and amylose, and discuss how they affect thickening abilities of starch. (10)
- 3.2 Hydrocolloids have a wide array of functional properties and are used as significant food additives to perform specific purposes. Briefly describe the properties and advantages of using Carboxymethyl cellulose (CMC), Microcrystalline cellulose (MCC) and low methoxyl pectin in food systems. (15)

[25]

QUESTION 4

- 4.1 Define / explain each of the following terms:
- a) Thermal conductivity (2)
 - b) Dielectric constant (2)
 - c) Dielectric loss factor (2)
- 4.2 Briefly discuss the effects of water content and temperature on dielectric properties (dielectric constant and loss factor) of foods. (9)
- 4.3 Describe the two mechanisms in which microwave energy is absorbed to process food. (10)
- [25]**
-

QUESTION 5

- 5.1 Write notes on the design, principles of operation, advantages and limitation of a single screw extruder. Make use of a diagram to illustrate your answer. (15)
- 5.2 State the advantages of extrusion cooking over traditional production of instant vegetable sauces (10)
- [25]**
-

QUESTION 6

- 6.1 State the importance of blanching of vegetables prior to freezing and name 2 enzymes that are used as indicators for successful blanching. (10)
- 6.3 The effect of frying on food quality involves understanding how heating affects cooking oil, which in turn influences the quality of the food. Describe how prolonged heating of oils at the high temperatures used in frying affect the quality of fried foods. (15)
- [25]**
-

QUESTION 7

7.1 Explain the mechanism in which each of the following non-thermal processing technologies preserve food:

a) Irradiation (7)

b) Pulsed electric fields (PEF) (7)

7.2 Describe and differentiate between the 3 forms/categories of ionizing radiation used in food. (6)

7.3 State the advantages of the application of nanotechnology in food packaging compared to conventional polymer packaging materials. (5)

[25]
