

1ST SEM. 2019/20

UNIVERSITY OF ESWATINI



FINAL EXAMINATION PAPER

PROGRAMME: BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION, AND
TECHNOLOGY
BACHELOR OF SCIENCE IN CONSUMER SCIENCE
BACHELOR OF SCIENCE IN CONSUMER SCIENCE EDUCATION

COURSE CODE: FNS205

TITLE OF PAPER: FOOD SCIENCE

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2)
QUESTIONS.

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE CHIEF
INVIGILATOR.**

QUESTION 1 (COMPULSORY)

- (a) Choose the correct answer and write it on your answer sheet in capital letters e.g.
1B. There is only ONE correct answer.

1. The _____ is present in whole grain products but is missing in white flour.
 - a. Germ
 - b. Endosperm
 - c. Bran
 - d. a and c
 - e. All of the above

2. _____ is a specialty syrup prepared by the same three steps as corn syrups, it is hydrolyzed, refined, and concentrated.
 - a. Honey syrup
 - b. Glucose syrup
 - c. Fructose syrup
 - d. High-fructose corn syrup
 - e. b and c

3. Natural food products can be engineered to become functional foods by _____ specific components to reach a concentration more likely to express health benefits.
 - a. Leveling
 - b. Decreasing
 - c. Increasing
 - d. b and c
 - e. None of the above

4. To be labeled as fat-free, a product must have _____ of fat or less per serving.
 - a. 3g
 - b. 0.5g
 - c. 0.3g
 - d. b and c
 - e. All of the above

5. _____ is a temporary emulsion, i.e. unstable emulsion that separates fairly soon after formation.
 - a. Ranch dressing
 - b. French dressing
 - c. Mayonnaise dressing
 - d. All of the above
 - e. All of the above

6. The sequence of AAs joined by peptide bonds form the _____ of a protein.
- Chain
 - Side chain
 - Backbone
 - Function
 - None of the above
7. In addition to the R-group, the basic structure of an amino acid contains:
- An amino, hydroxyl, and carboxyl group
 - A carboxyl, hydrogen atom, and hydroxyl group
 - An amino, carboxyl, and methyl group
 - A hydrogen atom, amino, and carboxyl group
 - b and d
8. _____ substances are found universally in the primary cell wall and intercellular layers in plants.
- Gum
 - Pectin
 - Sugar
 - a and b
 - All of the above
9. Reactions of fats/oils may cause rancidity. Rancidity could occur due to:
- Hydrolysis, oxidation
 - Oxidation, enzymatic reactions
 - Enzymatic reactions, autoxidation
 - a only
 - All of the above
10. _____ contains straight chains and branched chains of glucose that can be broken down to produce energy.
- Glycogen
 - Starch
 - and b
 - Cellulose
 - All of the above

(10x1=10 Marks)

(b) Differentiate between the following terms and give examples for each:

- i. Oil-in water vs water-in oil emulsion
- ii. Hydrolytic vs oxidative rancidity
- iii. Reduced vs low-fat spreads

(3x4=12 Marks)

(c) Mixing together eggs, flour, sugar, water and other ingredients to make dough, then baking that dough in an oven, can seem like a simple yet magical process. Discuss **two (2)** chemical changes that take place when the dough is heated in the oven during baking.

(2x5=10 Marks)

(d) The word functional food is a concept rather than a well-defined group of food products, the EU consensus proposed a working definition (FUFOSE).

- i. What is this definition?
- ii. Discuss the main aspects of this working definition.

(2x4=8 Marks)

[TOTAL MARKS=40]

QUESTION 2

(a) Proteins are used in different processes during food production. Discuss five (5) functions of proteins in foods.

(5x2=10 Marks)

(b) Discuss five (5) factors that affect nutritional quality of vegetables and legumes.

(5x4=20 Marks)

[TOTAL MARKS=30]

QUESTION 3

(a) Fill in the correct word(s)/phrase (s). Write your answer on the answer sheet. DO NOT write the whole sentence/phrase. e.g. a) i. Excess fat, obesity

- i. If water is the continuous phase, the emulsion is said to be _____ emulsion, whereas if oil is the continuous phase, the emulsion is termed a _____ emulsion.
- ii. _____ are foods that may provide _____ beyond basic nutrition.
- iii. _____ is the hard, outer coating of the grain kernel included in _____ products but is missing in white flour.
- iv. When fruits rich in pectic substances are boiled, the _____ hydrolyses to form a juice that _____ in the presence of sufficient sugar and acid.
- v. Fats in foods are usually triglycerides, esters which contains _____ and _____.

(5x2=10 Marks)

(b) Discuss in detail five (5) functions of carbohydrates.

(5x4=20 Marks)

[TOTAL MARKS=30]

QUESTION 4

- (a) An emulsion is formed when oil, water, and an emulsifier are mixed together.
- i. Describe a stable emulsion, oil-in-water, and water-in-oil emulsions. Give examples to support your answer.
 - ii. Describe the steps involved in the formation of a stable oil-in-water emulsion.

(2x10=20 Marks)

- (b) Write short notes on the following:
- i. Protein quality
 - ii. Monosaccharides

(2x5=10 Marks)

[TOTAL MARKS=30]