CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

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

FOST 461: PACKAGING, STORAGE AND DISTRIBUTION OF FOODS

STREAMS: BSC (FOST) Y4S1 TIME: 2 HOURS

DAY/DATE: FRIDAY 26/03/2021 11.30 A.M. – 1.30 P.M.

INSTRUCTIONS: Answer all questions in section A and any other TWO questions in section B

SECTION A

1. (i) Describe three methods used to sterilize aseptic food package materials [3 marks]

(ii) A food stored in a PET jar with a wall thickness of 0.1 cm and a surface area of 400cm^2 becomes rancid if it absorbs 3cm^3 of oxygen. The O_2 permeability coefficient of PET is 1.2 x 10^{-15} $cm^3 \cdot cm \cdot cm^{-2} s^{-1} \cdot pa^{-1}$. The oxygen vapor pressure inside the container (Pi) was 0 Pa and outside the container (Po) was 21278 Pa. Calculate the shelf life of this product?

[3 marks]

(iii) Explain the role of food packaging with respect to protection/preservation function. [6 marks]

2. State the types of metals used in food packaging materials and their general properties. [6 marks]

3. Describe aseptic packaging and explain its advantages over traditional thermal sterilization. [6 marks]

4. Active packaging is an important and rapidly growing areas. Describe this type of

food packaging. [6 marks]

SECTION B

5. (a) Giving examples, categorize and describe four types of food packaging systems. [12 marks]

(b) Discuss the environmental and health concern of food industry with respect food packaging materials. Give recommendations to address these concerns. [8 marks]

6. (a) Describe the different types of paper used in food packaging applications [12 marks]

(b) Define the term glass and explain its advantages and its disadvantages as a food packaging material. [8 marks]

7. (a) Discuss the additives used in manufacture of plastics intended as food packaging materials. [10 marks]

(b) List and explain the steps in forming a three piece can. [10 marks]
