UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME	:	**BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY YEAR IV**
COURSE CODE	:	**FSNT 408**
TITLE OF PAPER	:	**FOOD PACKAGING & TRANSPORTATION**
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) Differentiate between shipping containers and retail containers. **(4 Marks)**

(b) Explain **five (5)** functions of food packaging. **(10 Marks)**

(c) Discuss **four (4)** climatic factors that can cause food deterioration during storage or transportation and how food packaging can slow down or prevent each cause. **(10 Marks)**

(d) Discuss the composition of glass. **(8 Marks)**

(e) Explain the following terms:-

i. Modified atmosphere packaging **(2 Marks)**
ii. Controlled atmosphere packaging **(2 Marks)**
iii. Active packaging **(4 Marks)**

[TOTAL MARKS = 40]

QUESTION 2

(a) What are the **two (2)** requirements for packages to qualify for the e-mark? **(2 Marks)**

(b) Explain the process for manufacturing narrow neck and wide neck glass packaging. **(10 Marks)**

(c) Give **One (1)** advantage and **two (2)** disadvantages of the following single films?

i. Low density polyethylene (LDPE) **(3 Marks)**
ii. Polyimide (nylon) **(3 Marks)**
iii. Ethylene vinyl alcohol (EVOH) **(3 Marks)**

(d) Explain how the following films are made:-

i. Aluminium coated film **(3 Marks)**
ii. Laminated film **(3 Marks)**
iii. Coextrude film **(3 Marks)**

[TOTAL MARKS = 30]

QUESTION 3

(a) Explain the following manufacturing processes for rigid and semi-rigid plastic containers:-

i. Extrusion blow moulding **(3 Marks)**
ii. Injection moulding **(3 Marks)**
iii. Stretch blow moulding **(4 Marks)**

(b) Describe the following types of shipping containers:-

i. Dry container **(3 Marks)**
ii. Insulated container **(3 Marks)**
iii. Reefer container **(3 Marks)**

(f) Explain **four (4)** functions of an in-transit refrigeration unit. **(8 Marks)**

(g) Explain the function of additives, pigments and resin in paper manufacturing. **(3 Marks)**

[TOTAL MARKS = 30]

QUESTION 4

(a) Explain the following processes for manufacturing 2 piece cans:-

i. Draw-and-redraw (DRD) **(5 Marks)**

ii. Draw-and-wall iron (DWI) **(5 Marks)**

(b) A manufacturer has produced 4800 units of 450 g canned peach slices in syrup. According to the sampling plan 6 units (n=6) must be sampled and the acceptance number is 1. The net weight results were as follows: 450, 440, 418, 460, 470, and 465 grams.

Nominal quantity in grams and millilitres	Tolerable negative error	
	As a %age of nominal quantity	g or ml
5 to 50	9	-
from 50 to 100	-	4.5
from 100 to 200	4.5	-
from 200 to 300	-	9
from 300 to 500	3	-
from 500 to 1,000	-	15
from 1,000 to 10,000	1.5	-
from 10,000 to 15,000	-	150
above 15,000	1	-

State each of the **three (3) packer's rules** and using the table above and by calculation demonstrate if each of the rules is satisfied or not.

(15 Marks)

(c) List **five (5)** mandatory information that should appear on the label of pre-packed foods. **(5 Marks)**

[TOTAL MARKS = 30]