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2ND SEM. 2016/17

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FSNT 408 (M)

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

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QUESTION 1 (COMPULSORY)

- (a) Define packaging and explain **five (5)** functions of food packaging. (12 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) Explain **one (1)** major strength and **two (2)** weaknesses of the following single films:-

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

(9 Marks)

- (d) Differentiate between modified atmosphere packaging (MAP) and controlled atmosphere packaging (CAP) giving **one (1)** application example in each case :-

(4 Marks)

[TOTAL MARKS = 40]

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QUESTION 2

- (a) What is active packaging? Explain and give an example of its application under gas, moisture and microbial control in food?
(13 Marks)
- (b) Explain the process for manufacturing the following glass packaging:
i. Glass bottle for beer
ii. Glass jar for marmalade jam
(10 Marks)
- (c) Explain how laminated films are manufactured.
(7 Marks)
- [TOTAL MARKS = 30]

QUESTION 3

- (a) Explain the following manufacturing processes for rigid and semi-rigid plastic containers:-
i. Thermoforming
ii. Injection moulding
iii. Stretch blow moulding
(10 Marks)
- (b) Describe the following types of shipping containers: Give a food product example that could be shipped in each type of container.
i. Dry container
ii. Insulated container
iii. Reefer container
(9 Marks)
- (c) Explain **three (3)** functions of an in-transit refrigeration unit.
(6 Marks)
- (d) Explain the function of the additives, pigments and resin in paper manufacturing.
(5 Marks)
- [TOTAL MARKS = 30]

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QUESTION 4

- (a) Name and explain the following processes for manufacturing the following 2 piece cans:-

- i. Carbonated soft drink cans
- ii. Jam cans

(14 Marks)

- (b) Discuss a process for manufacturing paper from cellulose fibre derived from wood chips.

(8 Marks)

- (c) Explain how the following product characteristics affect logistic costs:-

- i. Volume to weight ratio
- ii. Value to weight ratio

(8 Marks)

[TOTAL MARKS = 30]
