



2ND SEM. 2012/13

PAGE 1 OF 3
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**

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

QUESTION 1 (COMPULSORY)

- (a) What is food packaging? (2 Marks)
- (b) Explain **three (3)** functions of food packaging. (6 Marks)
- (c) Discuss the **four (4)** main causes of food deterioration during storage or transportation and how food packaging can slow down or prevent each cause. (8 Marks)
- (d) Give **two (2)** advantages and **one (1)** disadvantage of the following packaging materials:-
i. Tin plate
ii. Glass
iii. Paper and paperboard (9 Marks)
- (e) What are the **three (3)** different types of closures for glass and plastic containers? (3 Marks)
- (f) Explain how the following films are made:-
i. Coated film
ii. Laminated film
iii. Coextrude film (6 Marks)
- (g) Explain the following terms:-
i. Modified atmosphere packaging
ii. Controlled atmosphere packaging
iii. Active packaging (6 Marks)

[TOTAL MARKS = 40]**QUESTION 2**

- (a) Explain the process for manufacturing 3 piece cans and ends. (10 Marks)
- (b) Discuss the composition of glass and how narrow neck and wide neck glass packaging are manufactured. (12 Marks)
- (c) What would be the function of ethylene vinyl alcohol (EVOH), polyimide (nylon) and high-density polyethylene (HDPE) in a laminated film? (4 Marks)
- (d) It is not the task of an in-transit refrigeration unit to cool product. Explain **four (4)** functions of an in-transit refrigeration unit. (4 marks)

[TOTAL MARKS = 30]

QUESTION 3

- (a) Explain the following manufacturing processes for rigid and semi-rigid plastic containers:-
i. Thermoforming
ii. Injection blow moulding
iii. Blow moulding
(9 Marks)
- (b) State the **three (3)** rules which packers should comply with as set out in the Packer's rules.
(6 Marks)
- (c) List **six (6)** mandatory information that should appear on the label of pre-packed foods.
(6 Marks)
- (d) Describe the following types of shipping containers:
i. Dry container
ii. Insulated container
iii. Reefer container
(9 Marks)

[TOTAL MARKS = 30]

QUESTION 4

- (a) Explain the use of the E-mark.
(5 Marks)
- (b) Explain the draw-and-redraw (DRD) process for manufacturing 2 piece cans.
(5 Marks)
- (c) Discuss the properties and application of the following packaging materials:-
i. Polystyrene
ii. Polyethylene terephthalate (PET)
(10 Marks)
- (d) Discuss expandable refrigerants for maintaining temperature of perishable food items in aircraft.
(10 Marks)

[TOTAL MARKS = 30]