UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015

COURSE NAME	:	PRINCIPLES OF PACKAGING
COURSE CODE	:	BNK 20103
PROGRAM	:	2 BNK
EXAMINATION DATE	:	JUNE 2015 / JULY 2015
DURATION	:	2 HOURS AND 30 MINUTES
INSTRUCTION	:	ANSWER **FOUR(4)** QUESTIONS ONLY

THIS QUESTION PAPER CONSISTS OF **EIGHT (8)** PAGES

Q1 (a) What are the **TWO (2)** major divisions within the packaging industry? Name **TWO (2)** subcategories in each major division.

(6 marks)

(b) Explain the levels of packaging:
(i) primary packaging
(ii) secondary packaging
(iii) tertiary packaging

(9 marks)

(c) **FIGURE Q1 (c)** shows the packaging design relationship to show the interactions between these factors. Relate how the elements packaging design are integrated each other.

(10 marks)

Q2 (a) Give a definition of packaging.

(3 marks)

(b) State **FOUR (4)** main functions of packaging. Evaluate these functions related in the packaging of a bar of chocolate wrapped in plain aluminum foil, twelve bars packed in a printed display box and six display boxes packed in a corrugated outer case.

(10 marks)

(c) As a packaging engineer in health product company, namely vitamins, you are asked to improve the design of packaging as shown in **FIGURE Q2 (c)**. Employ factors to be improved for package system for the bottle of vitamins related to packaging concept, customer satisfaction and industrial needs related to packaging materials, products and design.

(12 marks)

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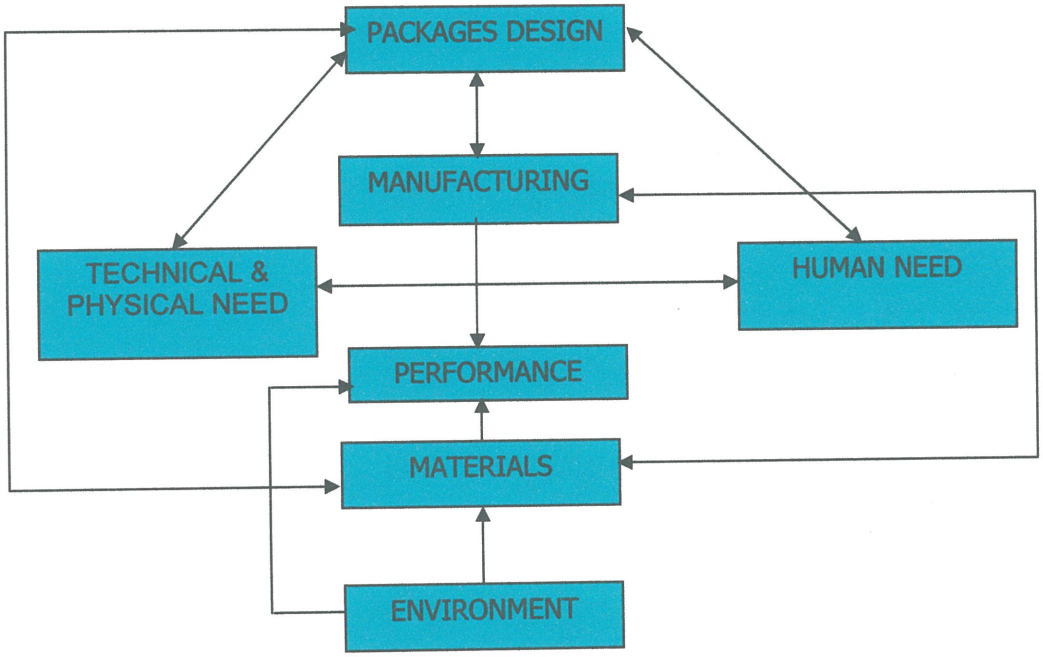

FIGURE Q1 (c) : Package Design Relationship

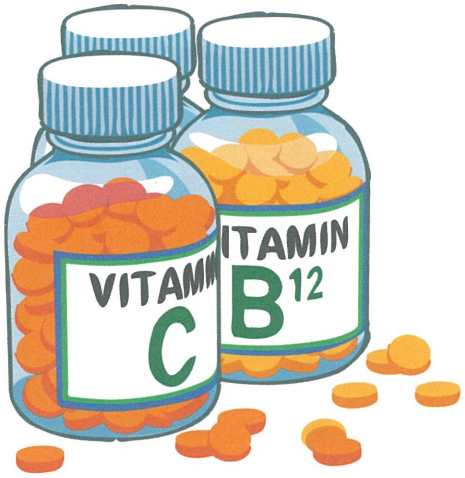

FIGURE Q2 (c)

Q3 (a) State the purpose of using cushion on packaging system and list **TWO (2)** characteristics of cushion materials.

(4 marks)

(b) Explain the following spoilage mechanisms to fruit and vegetables and how packaging can help to prevent each type:

(i) mechanical damage
(ii) moisture loss
(iii) heat damage
(iv) cold damage.

(8 marks)

(c) **FIGURE Q3 (c)** shows a mother's choice margarine. Identify and then discuss in detail at least **FIVE (5)** physical distribution environments for the product. Then suggest **ONE (1)** suitable distribution and storage system for the product from manufacturing until retailing.

(13 marks)

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FIGURE Q3 (c)

Q4 (a) Name **SIX (6)** ways of extending the natural shelf life of foods.

(6 marks)

(b) Propose which plastic would you recommend for the following? Give reasons for your choice.

(i) A clear bottle, having good rigidity and resistance to the passage of oxygen.
(ii) A flexible bottle for dispensing powders.
(iii) The coating of paper or a plastic film with high permeability to moisture vapour and gases in order to give a material having a low permeability.
(iv) A bottle crate where resistance to long periods of stacking is required.
(v) A film to be used to boil in the bag packaging.

(10 marks)

(c) You have been asked, as a packaging technologist, by a new start up company to propose suitable packaging for a range of biscuits they intend to launch in the Selangor market. The range will include sweet, semi-sweet, shortbread, crisp bread, cream fill, chocolate sandwich and chocolate enrobed varieties. Discuss briefly what food spoilage and other considerations you would include in selecting the most appropriate packaging material and suggest a suitable common packaging type.

(9 marks)

Q5 (a) List **SIX (6)** steps method in packaging design to determine the package performance.

(6 marks)

b) Discuss extensively based on the physical and chemical properties on how to protect the product sensitivity during distribution.

(9 marks)

(c) Analyze the special precautions that are taken in your plant for the storage of hazardous chemicals.

(10 marks)

Q6 (a) Apply the concept of marketing mix:

(i) product
(ii) price
(iii) promotion
(iv) place

(10 marks)

(b) Tutti Frutti Frozen Yogurt was founded upon the ideas of providing high-quality, healthy frozen yogurt, and giving control back to our customers through a modern self-serve concept. Tutti Frutti Frozen Yogurt has developed over 100 flavors and recipes for both naturally "tart" and traditional "creamy" flavors Its packaging design is used worldwide for product market. From **FIGURE Q6 (b)(i)** and **Q6 (b)(ii)** discuss the relationship between the poster and the colourful cup in the aspect of marketing and packaging functions.

(15 marks)

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FIGURE Q6 (b)(i)

FIGURE Q6 (b)(ii)

Tutti Frutti Frozen Yogurt

-END OF QUESTION-