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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2014/2015**

COURSE NAME : FOOD PACKAGING AND  
DISTRIBUTION  
COURSE CODE : BNK 30503  
PROGRAMME : BNK  
EXAMINATION DATE : DECEMBER 2014/JANUARY 2015  
DURATION : 2 HOURS 30 MINUTES  
INSTRUCTION : ANSWER **FOUR (4)** QUESTIONS  
ONLY.

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

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**Q1** “Packaging” has been defined as a coordinated system of preparing goods for transport, distribution, storage, retailing and end-use.

- (a) Define the term “preparing goods for transport”.  
(3 marks)
- (b) Give the importance of packaging in the society and economy.  
(4 marks)
- (c) Outline **THREE (3)** functions of packaging materials that purposely to prevent or reduces product damage and food spoilage.  
(6 marks)
- (d) Discuss how the physical environment, ambient environment and human environment individually affect the internal environment of the primary package. Support your answer with an example or diagram.  
(12 marks)

**Q2** A shelf life study is an objective, methodical means to determine how long a food product can reasonably be expected to keep for, without any appreciable change in quality.

- (a) List **THREE (3)** factors for controlling shelf life.  
(3 marks)
- (b) As shown in Figure Q2 (b), elaborate factors affecting product’s shelf life by considering the intrinsic factors.  
(10 marks)
- (c) Physical changes affecting shelf life can be brought directly by physical damage or by physico-chemical processes testing. Refer to Figure Q2 (c), explain the importance of the above testing.  
(12 marks)

**Q3** Packing foods by modified atmosphere packaging (MAP) can offer extended shelf life and improved product presentation in a convenient container, making the product more attractive to the retail customer.

- (a) List **THREE (3)** types of Modified Atmosphere Packaging (MAP) gases.  
(3 marks)
- (b) Distinguish **THREE (3)** differences between Thermo-forming/chamber machines (vacuum with gas flushing) and vertical and horizontal form, fill and seal machines.  
(7 marks)
- (c) Discuss the principles of Modified Atmosphere Packaging (MAP) for fresh meat.  
(15 marks)

**Q4** Migration is a sub microscopic food package interaction involving the movement of chemical compounds in the direction from the package to the food.

- (a) Distinguish between Overall Migration (OM) and Specific Migration (SM) for plastic packaging. Give an example to support your answer.  
(4 marks)
- (b) Explain the reason of adding additives such as plasticizer and mineral hydrocarbon for plastic packaging.  
(6 marks)
- (c) Adhesive used to seal packaging can also be a source of migrating constituents. List **FIVE (5)** types of adhesive.  
(5 marks)
- (d) Summarize the principles of monitoring migration methods supported with an example.  
(10 marks)

**Q5** Protection is an important function in packaging to prevent spoilage and distribution damage. The protection afforded by alternative packages can be evaluated and compared in laboratory and field tests.

- (a) Define the main purpose of distribution performance testing. (3 marks)
- (b) Pallet had been using widely as tertiary packaging in warehouse or while distribution. Give **TWO (2)** reason with an example the important of pallet. (4 marks)
- (c) Recognize **THREE (3)** types of distribution hazard that may occur during transportation from warehouse to retailer. Support your answer with a product example. (6 marks)
- (d) Company XYZ from Kuala Lumpur ordered 1 tone of mango from Company 123 in Perlis. Suggest and explain the best package for that mango that can reduce the distribution hazard that will affect the quality of product during delivery. (12 marks)

- END OF QUESTION -

