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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2016/2017**

COURSE NAME : PLASTIC PACKAGING
COURSE CODE : BNK30403
PROGRAMME CODE : BNK
EXAMINATION DATE : DECEMBER 2016 / JANUARY 2017
DURATION : 3 HOURS
INSTRUCTION : ANSWERS **FOUR (4)** QUESTIONS ONLY

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THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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Q1 (a) Polymers can be divided into natural polymers and synthetic polymers. Differentiate between natural polymers and synthetic polymers.

(10 marks)

(b) Plastic materials display properties that are unique when compared to other materials. Compare the properties, applications and the potential recycle products that can be produced from the following plastic materials:

- (i) Polypropylene (PP)
- (ii) Polyvinyl Chloride(PVC)

(10 marks)

(c) Explain the benefits of using plastics in food packaging.

(5 marks)

Q2 (a) Flexible and rigid packaging have their own uniqueness to attract consumers. Differentiate between flexible and rigid packaging in term of definition, application and examples.

(10 marks)

(b) Outline the used of films in packaging industries.

(5 marks)

(c) Explain the following types of film coating:

- (i) Acrylic coatings
- (ii) PVdC coatings

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(10 marks)

- Q3** (a) The major step in the conversion of plastic resin into films or bottles, is to change the pellets from solid to liquid in an extruder. Illustrate the plastics conversion processes by using schematic diagram for these plastic manufacturing process:
- (i) Blow Film
 - (ii) Extrusion Blow Moulding
 - (iii) Injection Moulding
- (15 marks)

- (b) The understanding of the food service system is fundamental for providing the appropriate protection to the packaged product. Classify **TWO (2)** types of food service system in terms of definition, example and food processing continuum diagram.
- (10 marks)

- Q4** (a) A package provides protection, tampering resistance, and special physical, chemical, or biological needs. Different types of food required different types of package. Categorize **FIVE (5)** types of food packaging based on their application.
- (10 marks)

- (b) Dairy products are commonly found in European, Middle Eastern, South Asian, and Central Asian cuisines, but largely absent from East Asian and Southeast Asian cuisines. Give **FIVE (5)** examples of dairy products.
- (5 marks)

- (c) A production of cheese involve several steps. Sketch a diagram for the steps on how to produce cheese.
- (10 marks)

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Q5 (a) List **FIVE (5)** packaging requirements for fresh fish. (5 marks)

(b) Several methods are used to specify packaging of fresh fish to the consumers. Differentiate the following methods:
(i) Modified Atmosphere packaging
(ii) Vacuum Packaging (10 marks)

(c) Compare the application of plastics in cooked and process meat with the used of plastics for baked food. (10 marks)

Q6 (a) Differentiate these plastic waste managements:
(i) Incineration
(ii) Land Filling
(iii) Recycling (15 marks)

(b) Produce a new technology of a plastic waste management system that can be beneficial to humans and the global environment. (10 marks)

-END OF QUESTIONS -

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