

CONFIDENTIAL



UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : PACKAGING WITH PLASTIC
COURSE CODE : BNK 30403
PROGRAM : 3 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

CONFIDENTIAL

- Q1** (a) Polymers can be divided into natural polymers and synthetic polymers. State the differences between natural polymers and synthetic polymers. (5 marks)
- (b) Plastic materials display properties that are unique when compared to other materials. Identify the properties of the following plastic materials:
- (i) Polyethylene Terephthalate (PET)
 - (ii) High Density Polyethylene (HDPE)
 - (iii) Polypropylene (PP)
 - (iv) Polyvinyl Chloride(PVC)
 - (v) Polyamides(Nylon)
- (10 marks)
- (c) Plastic materials are the fastest growing group of packaging and have contributed greatly to our everyday life. Explain the benefits of using plastics in food packaging. (10 marks)
- Q2** (a) Differentiate between flexible and rigid packaging and give one example each. (5 marks)
- (b) Generally, films are defined as plastic sold in thicknesses of less than 100 μ m. Discuss the used of films in packaging industries. (5 marks)
- (c) Coatings are applied to the surfaces of plastic films to improve heat-sealing and barrier properties. Explain the following types of film coating:
- (i) Acrylic coatings
 - (ii) PVdC coatings
 - (iii) Low-temperature sealing coatings (LTSCs)
- (15 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. Explain the plastics conversion processes and draw schematic diagram to support your answer below:
- (i) Blow Film
 - (ii) Extrusion Blow Moulding
- (15 marks)
- (b) Understanding of the distribution system is fundamental for providing the appropriate protection to the packaged product. Explain how the distribution environments can cause damage to the packaged product.
- (10 marks)
- Q4** (a) Explain definition of the dairy product and nutrient composition.
- (5 marks)
- (b) Discuss **TEN (10)** steps how to production cheese process. Use the suitable schematic diagram to support your answer.
- (20 marks)
- Q5** (a) List **NINE (9)** of the packaging requirements of fresh fish.
- (9 marks)
- (b) Several methods are used to specify packaging of fresh fish to consumers. Discuss the packaging methods below:
- (i) Modified Atmosphere packaging
 - (ii) Vacuum Packaging
 - (iii) Active Packaging
- (19 marks)

FINAL EXAMINATION

SEMESTER/ SESSION : SEM 1 20142015
COURSE : PACKAGING WITH PLASTIC

PROGRAMME : BNK
COURSE CODE : BNK 30403

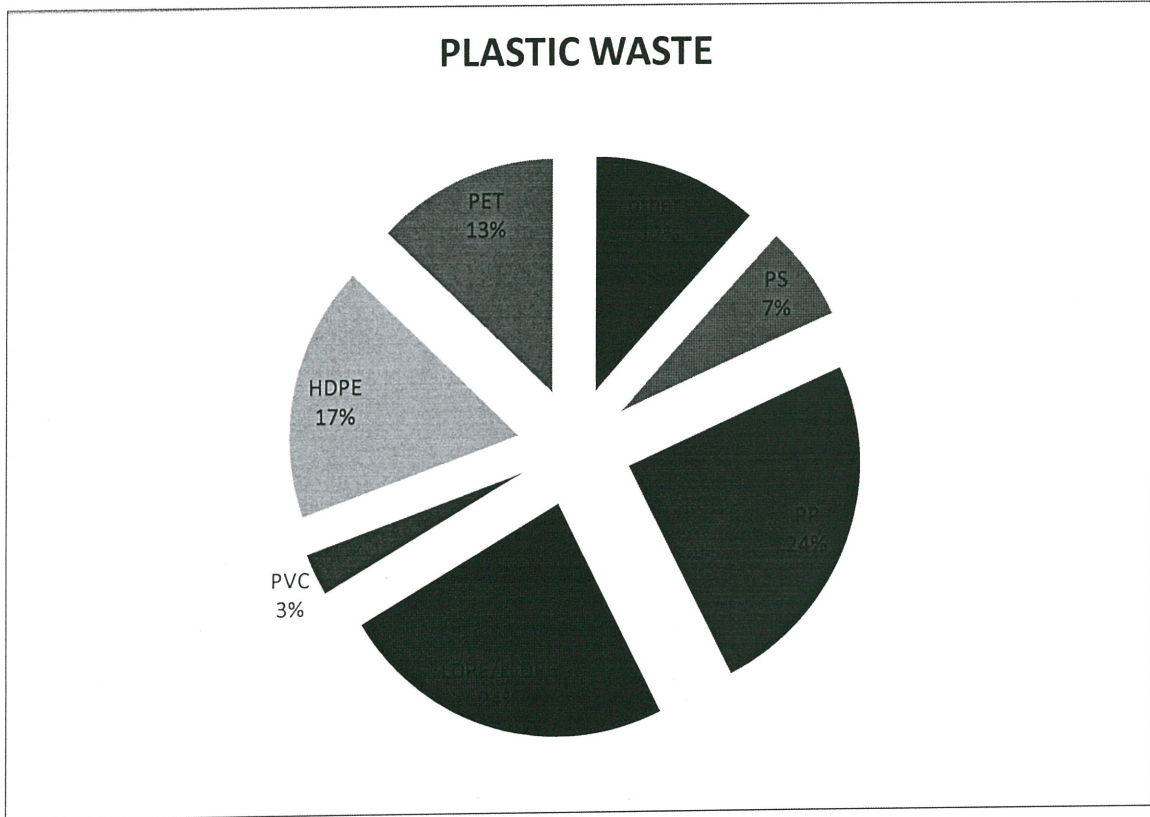


FIGURE Q6 (a)