

**POLITEKNIK**  
Jabatan Pengajian Politeknik

EXAMINATION AND EVALUATION DIVISION  
DEPARTMENT OF POLYTECHNIC EDUCATION  
(MINISTRY OF HIGHER EDUCATION)

MECHANICAL ENGINEERING DEPARTMENT

FINAL EXAMINATION  
DIS 2011 SESSION

**JP303 : PACKAGING PRINCIPLES**

**DATE : 23 APRIL 2012 (MONDAY)**  
**DURATION : 2 HOURS (11:15AM – 1:15PM)**

---

This paper consists of **FIVE (5)** pages including the front page.  
Essay ( 6 questions – answer 4 questions )

---

**CONFIDENTIAL**  
**DO NOT OPEN THIS QUESTION PAPER UNTIL INSTRUCTED BY**  
**THE CHIEF INVIGILATOR**

**QUESTION 1**

- a. Give a definition for packaging.

(4 marks)

- b. By referring to Figure 1, explain in detail THREE (3) main product hazards that may occur to the Hershey's chocolate bar in Figure 1.

(9 marks)



Figure 1 : Hershey's Chocolate Bar

- c. Explain in detail 4 (FOUR) main packaging functions for the product in Figure 1.

(12 marks)

**QUESTION 2**

- a. State FOUR (4) main categories of packaged product.

(4 marks)

- b. Give TWO (2) classifications for THREE (3) product categories that stated in the above question and give a suitable product example for each category.

( 9 marks)

- c. State FOUR (4) products in fully processed foods and explain how it was processed.

(12 marks)

**QUESTION 3**

- a. State FOUR (4) types of product that include in liquid category under drugs and pharmaceuticals.  
( 4 marks)
- b. List THREE (3) types of product in partially processed food products and give an explanation and suitable examples for each types of product.  
(9 marks)
- c. Explain the application for 4 (FOUR) types of pharmaceutical aerosol.  
(12 marks)

**QUESTION 4**

- a. List 4 (FOUR) classes of packaging media. (4 marks)
- b. Gives FOUR (4) characteristics of each class of packaging media in question 4 (a). (8 marks)
- c. By referring to Figure 2, explain briefly the most suitable secondary packaging media for the following product in the pouch bag. (5 marks)



Figure 2: Products in the pouch bag

- d. Explain in detail the most suitable primary and secondary packaging media for products in the form of tablet. (8 marks)

#### QUESTION 5

- a. Define shelf life. (4 marks)
- b. Explain briefly THREE (3) factors that influence the product's shelf life. (9 marks)
- c. Shipping test is a traditional approach to shelf life testing. Explain FOUR (4) equipments that used in the shipping test. (12 marks)

#### QUESTION 6

- a. List FOUR (4) basic distribution environment hazards. (4 marks)
- b. Explain in detail the typical situation for the basic distribution hazards in question 6(a). (8 marks)

c. List FOUR (4) types of material that is common use to make a pallet.  
( 4 marks)

d. List FIVE (5) common pallet styles and sketch FOUR (4) of them.  
(9 marks)