



PIABC LEVEL 5 DIPLOMA IN PACKAGING TECHNOLOGY

(Qualification Number: 600/0017/X)

EXAMINATION PAPER

June 2021

J/502/5923 UNIT 02

Packaging Materials and Components

Paper B

INSTRUCTIONS TO CANDIDATES

You are required to answer and pass ALL the questions.

Write your answers in the answer book provided.

Wherever possible, use diagrams to illustrate your answer.

This is a closed book examination.

This examination paper is worth 30% of the total marks for Unit 2.

Reading Time: 5 minutes

Examination Time: 2 Hours

Issued under the authority of the
PACKAGING ASSESSMENT BOARD
30 January 2021

INSTRUCTIONS TO CANDIDATES

You are required to answer **ALL** the questions on this paper

**Learning Outcome 4
Understand the raw materials, properties, and applications of packaging adhesives**

Question 1

- A) Describe the mechanical and diffusion theories of adhesion. (2 x 3 marks)
- B) Identify FOUR types of adhesive. For EACH material describe its characteristics, suggest typical applications, and discuss how the adhesive bond is achieved. (4 x 4 marks)
- C) The flaps of a paperboard carton are sealed with an adhesive. The flaps have been found to have opened. Discuss the possible reasons for this failure. (8 x 1 mark)

**Learning Outcome 5
Understand the different types of labels and the materials used**

Question 2

- A) For the following containers, identify and describe an appropriate decorated label type, including the material(s) and adhesives used, with the factors to consider in its manufacture, component application and use. **You can only use one label type once.** (3 x 9 marks)
- A 500ml returnable glass bottle for a high-volume beverage
 - A 1-litre non-symmetrical plastic bottle for bubble bath
 - A 3ml glass vial for an injectable medicine
- B) Describe THREE tests that can be used to evaluate the performance of printed labels as part of the development process. (3 marks)

**Learning Outcome 6
Understand closure systems and the factors that affect seals**

Question 3

- A) Describe, with the use of appropriate diagrams, the closure system, including materials, design, and application method, for the following closure mechanisms and give an example where each closure type is used:
- Roll on pilfer proof closure (7 marks)
 - Induction heat seal with wad closure (7 marks)
 - Crown closure (7 marks)
- B) Identify THREE types of child resistance packaging and explain how child resistance is achieved. (3 x 2 marks)
- C) Briefly describe how child resistant packaging is assessed. (3 marks)

END OF EXAMINATION PAPER