



PIABC LEVEL 5 DIPLOMA IN PACKAGING TECHNOLOGY
(Qualification No. 610/0740/7)

SAMPLE EXAMINATION PAPER

K/650/2134 UNIT 2 (PAPER A)

UNDERSTANDING PACKAGING MATERIALS AND COMPONENTS

INSTRUCTIONS TO CANDIDATES

Write your answers in the answer book provided.

Wherever possible, use diagrams to illustrate your answer.

This is a closed book examination.

100 marks are available in total for this examination.

The number of marks is given in brackets () at the end of each question or part question.

Leave time at the end to check your answers.

This examination paper is worth 50% of the total marks for Unit 2

Examination Time: 2 Hours

Issued under the authority of the
PACKAGING ASSESSMENT BOARD
14 September 2023

SECTION 1

TWO QUESTIONS - 20 MARKS EACH

Question 1

- A) Identify the FOUR main ingredients (excluding cullet) in a batch of container glass (Type III) and describe the function of each ingredient in the mix. (4 x 1 mark)
- B) Cullet is often added to the mix. How can this affect the glass making process? (2 marks)
- C) Explain why hot and cold end coatings are used on glass; describe where they are applied, and the typical materials used. (4 marks)
- D) A bottle can be made by one of two blowing processes. Briefly describe the difference between these processes and discuss the benefits/drawbacks of each process. (2 x 5 marks)

Question 2

A carbonated orange fruit drink can be packed in plastic, metal and glass containers.

- A) For each of these materials; identify suitable pack types to contain the drink. (3 marks)
- B) With reference to the properties of the drink, explain how each of these containers are able to provide a shelf life of at least 12 months. (3 x 3 marks)
- C) Discuss the advantages and disadvantages of using plastic to contain this product from a functional, environmental, commercial and aesthetic perspective. (8 marks)

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SECTION 2

SIX QUESTIONS - 10 MARKS EACH

Question 3

Discuss how the selection of raw materials (3 marks), additives (3 marks) and pulp processing (4 marks) can influence the characteristics of paper

Question 4

Identify TEN properties of aluminium foil when used as a packaging material. Using examples, discuss the advantages and disadvantages of these properties when using this packaging material. (10 x 1 mark)

Question 5

- A) Provide a definition of a polymer (2 marks)
- B) Explain how each of the following affects the properties of a polymer:
- Copolymerisation (2 marks)
 - Chain branching (2 marks)
 - Orientation (2 marks)
 - Glass Transition Temperature (2 marks)

Question 6

- A) Describe TWO common quality issues with corrugated board. What are their causes and what impact do they have? (2 x 3 marks)
- B) Discuss TWO important properties of a sheet of corrugated board, typically found in a board specification, and briefly describe how the board would be tested. (2 x 2 marks)

Question 7

Explain, with the use of a diagram, how the construction and material properties of a 3-piece steel can help to protect and preserve a can of beans over its shelf life. (10 marks)

Question 8

- A) Describe, with the aid of diagrams, the manufacturing process for a thermoformed container to hold a soft spread product such as margarine or butter. In your answer describe the process from receipt of a reel of material to despatch of finished container to the filler. (9 marks)
- B) Justify a suitable material for the container. (1 mark)

END OF EXAMINATION PAPER