



SUMMER EXAMINATIONS 2021

EXAMINATION: **UNIT 4 Package Printing and Decorating & Packaging Machinery**

COURSE: **CPD Diploma in Packaging Technology**

DATE: **June 3rd 2021**
 2pm to 4pm

EXAMINERS: Tony Duffy, David Little, Ron Gardiner

TIME ALLOWED: 2 hours

INSTRUCTIONS: Please answer four questions. All questions carry equal marks

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The use of programmable or text storing calculators, smart phones etc are expressly forbidden. Please note that where a candidate answers more than the required number of questions, the examiner will mark all questions attempted and then select the highest scoring ones.

Question 1 (25 marks)

- a) Describe the three fundamental design messages used to sell a branded packaged product.

(10 Marks)

- b) What is the role of the anilox in the flexographic printing process? With the aid of an annotated print unit diagram, describe how the anilox works and the impact it has on the colour reproduction. Mention the impact, of a dirty anilox and of changing the anilox to a different screen or volume.

(15 marks)

Question 2 (25 marks)

- a) Describe how full colour printing is able to print/reproduce colour 'pictures' using just process colours.

(15 marks)

- b) Discuss how fingerprinting a Press can help control the print results, then explain Dot Gain and how it can impact on a printed design.

(10 marks)

Question 3 (25 marks)

- a) Discuss why achieving an accurate fill quantity, and reducing the variability in fill quantity is important.

(3 marks)

- b) Discuss the characteristics of liquid food products which should be considered when selecting an appropriate filling method for filling the material into a bottle.

(5 x 2 marks)

- c) Evaluate the relative merits and constraints of gravity, vacuum and pressure level filling of liquids.

(3 x 2 marks)

- d) Describe two methods of volumetric filling liquid products. Evaluate their merits in comparison to level methods used in question 3 (c).

(2 x 3 marks)

Question 4 (25 marks)

a) Describe the operation of a vertical form fill seal bagging machine for crisps.
(8 marks)

b) The bag back seal can be either a lap or fin seal. Describe these seals and evaluate their relative merits.
(4 marks)

c) Describe four methods of adding variable data to packs and discuss where each can be used.
(8 marks)

d) A simple line consists of 5 operations

Tray De-nester.	120 packs / min at 90% efficiency
Filler.	80 packs/min at 85% efficiency
Top web sealer	100 packs/ min at 95% efficiency
Labeller	120 packs/min at 90% efficiency
Collator	150 pack /min at 80% efficiency

Calculate the line output.

(3 marks)

e) If an accumulator is added between filler and top web sealer how will effect output
(2 marks)

Question 5 (25 marks)

a) Describe the typical retail and distribution packaging for a cough syrup.
(5 marks)

b) Describe the packaging line for this product from packaging materials in store to goods ready for dispatch to a major retailer.
(20 marks)