SUMMER EXAMINATIONS 2019

EXAMINATION: **UNIT 1 Fundamentals of Packaging Technology and Packaging in the Supply Chain**

COURSE: **CPD Diploma in Packaging Technology**

DATE: **8th May 2019**
10am to 12pm

EXAMINERS: Colm Munnelly, David Little

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) With regard to developing a new product and understanding how it would be stored and distributed, discuss how you would set about defining and designing packaging for the Warehouse and Distribution environment.

(20 marks)

b) List five (5) Hazards of Distribution.

(5 marks)

Question 2 (25 marks)

c) Why would you use Pallet Design Software? Briefly discuss TEN typical ADVANTAGES of such software to illustrate your answer

(10 X 1 mark)

d) Discuss FIVE factors that could compromise the compression strength of a case if not taken into consideration at the beginning of the design process

(5x2 marks)

e) Sketch and label the packaging design sequence you would consider when designing packaging for a plastic bottle of ketchup collated in cases using pallet design software. Why is it important to consider all of these elements at the design stage?

(5 marks)

Question 3 (25 marks)

a) What are the functions of packaging and discuss why they are important to Brand Owners, Packer/Fillers and End Users.

(15 marks)

b) Select two of the following packs and explain how the various levels of packaging perform the functions of packaging for their product. Focus on the top 3-4 functions.

- Box of Cornflakes
- Easter Egg
- 6 pack of bottled beer
- Packet of biscuits

(Using these examples, you may state a specific product type, style or format, if required.)

(2 X 5 marks)

Question 4 (25 marks)

a) Calculate the fragility factor, G for a cup dropped from a height of 800 mm that decelerates to 0 on impact in 0.002 seconds.

   Note: $v^2 = u^2 + 2as$ and $v = u + a\tau$ where: v: final velocity (m/s)
       u: initial velocity (m/s)
       a: acceleration (m/s/s)
       s: distance travelled (m)
       τ: time taken(s)
       g: acceleration due to gravity (9.81m/s/s)

   (12 marks)

b) What thickness of expanded polystyrene foam would be required to protect this cup, dropped from the same height, knowing that the cushion factor for EPS is 2.6

   (3 marks)

c) What are the internal dimensions of a case required to pack this cup in EPS if the dimensions of the cup are 150 x 130 x 130 mm

   (3 marks)

d) Packaged products sometimes get dropped from a height. Briefly discuss some of the assumptions made when designing packaging that may be dropped.

   (7 marks)

Question 5 (25 marks)

a) Briefly discuss five ways in which packaging has supported the development of modern societies.

   (10 marks)

b) Discuss what you understand by the term "an environmentally responsible pack"

   (5 marks)

c) Using examples, describe what you would consider when designing such a pack

   (4 marks)

d) What is a carbon footprint **(2 marks)** and briefly discuss the reasons why you would calculate it **(4 marks)**

   (6 marks)