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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2018/2019**

COURSE NAME : PAPER AND PAPERBOARDS
PACKAGING

COURSE CODE : BNK 30303

PROGRAMME CODE : BNK

EXAMINATION DATE : JUNE 2019 / JULY 2019

DURATION : 3 HOURS

INSTRUCTION : ANSWERS ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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- Q1** (a) Give the differences between of paper and pulp. (5 marks)
- (b) Explain what is meant by the machine direction. Explain also why paper properties differ in the MD versus the CD. (5 marks)
- (c) Apply the correct type of paper or paperboard by naming the type of paper and explaining its' characteristics towards packaging these products:- (15 marks)
- (i) Coffee drips
 - (ii) 25 kg fertilizer bags
 - (iii) Pharmaceuticals boxes
 - (iv) Mee Hoon goreng
 - (v) 1 litre milk
- Q2** (a) Sketch and label the basic structure 2-layer corrugated box. (2 marks)
- (b) Analyse corrugated boxes as packaging material by explaining the advantages and disadvantages of structural features, properties and manufacturing considerations and applications. (10 marks)
- (c) A paper has a mass 1.5 grams, for area of 200 cm², thickness of 5 sheets 530.2 μm and Tensile Strength 3.6kN/m. Calculate:- (4 marks)
- (i) Grammage (g/m²)
 - (ii) Apparent density (g/cm³)
 - (i) Breaking length (km)
 - (ii) Tensile Index (Nm/g)
- (d) Papers are stored in a store room in a place where the rainfall is high. It was discovered that the store room air-conditioning dehumidifying function was not working. Explain the effects of such an environment to the paper and its' fibres, in relation to its many properties and performance. (9 marks)

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Q3 The box of baby food given in **Figure Q3 (a)** requires to be low cost yet stiff to ease end consumers to hold the box as well as easing the distribution process. This is achieved by multi-layering virgin pulp and recycled pulp as shown in **Figure Q3 (b)**. The top most layer being printable in a separate process in a different factory. Figure out all the manufacturing process steps of this packaging material, from harvesting of trees to finishing in ready condition to be distributed for printing process.

(25 marks)

Q4 A watch is a very personal item for man woman alike. Watches can be made symbols of financial status and gives an image for many people. Other than being functional of various means they also replace jewelry. Imagine if you are a consultant in a packaging design firm and you are tasked to package this product using paper based packaging.

(a) Explain, **THREE (3)** critical attributes/characteristics of the product considerations **AND THREE (3)** commercial considerations to package this product.

(7 marks)

(b) Develop, in detail, on how to design the packaging of this product, in terms of

- (i) The experience
- (ii) Perceived value
- (iii) Sense of individuality
- (iv) Greater sense of brand or purpose
- (v) Insights, action and emotion
- (vi) Functionality

(18 marks)

-END OF QUESTIONS –

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FIGURE Q3 (a)

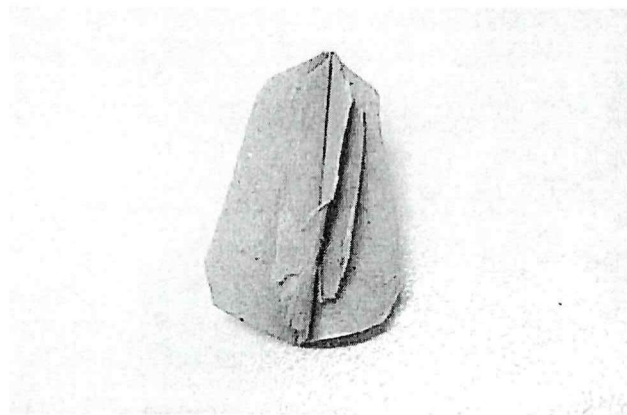


FIGURE Q3 (b)

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