



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2015/2016**

COURSE NAME : PACKAGING EQUIPMENT AND OPERATION  
COURSE CODE : BNK 40603  
PROGRAMME : 4 BNK  
EXAMINATION DATE : DECEMBER 2015/JANUARY 2016  
DURATION : 2 HOURS 30 MINUTES  
INSTRUCTION : ANSWER **FOUR (4)** QUESTION ONLY

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

- Q1**
- (a) Filling machine mainly used food for packaging beverage. There are used to fill either bottle or pouch. List out the factor to consider for selecting this machine.  
(3 marks)
  - (b) Solid product is one of the type for food structure. Identify categorize of solid product with explanation.  
(4 marks)
  - (c) Free flowing concept is the importance for filling machine to make sure the smooth operation. Show **THREE (3)** characteristic of free flowing and non-free flowing to be consider for better output from filling machine  
(6 marks)
  - (d) Filling liquid product have several criteria need to be consider before use it. One of the criteria is properties of the liquid that effect the top or bottom up filling. Sketch the type of bottom up filling.  
(8 marks)
  - (e) Filling liquid product by level filler used the container volume to measure the liquid filled. Describe the process of level filler.  
(4 marks)
- Q2**
- (a) Define 'the closure' in food industry and list out **THREE (3)** type of it.  
(5 marks)
  - (b) Closure for closing bottle mainly depends on force applied for good quality of packaging. Describe **TWO (2)** type of torque that applied to closure that make the bottle defect.  
(4 marks)
  - (c) Roll on pilfer proof (ROPP) typically made from soft temper aluminum with a ring at lower edge of closure. The closure position above the neck of container. Sketch the ROPP process at the machine.  
(6 marks)

- (d) Describe the ROPP process when apply the type of closure to the bottle in packaging.  
(4 marks)
- (e) Can closing usually used for sealed the food in metal container and blow up the air in container. Sketch and explain the can seaming process in the industry.  
(6 marks)
- Q3**
- (a) Mechanical component is one of the largest part on the packaging machine. Every mechanical component have their own function in the machine. Carry out **THREE (3)** main mechanical component and their relation  
(6 marks)
- (b) Analyze how mechanical power in packaging machine energized from the electric motor. This mechanical energy will transform electrical energy into a power that can operate the packaging machine.  
(6 marks)
- (c) Bearing are the importance part in energy transform for the packaging machine. It has specific function to assist motor, shaft and gear for energizing the mechanical part. Carry out the function of the bearing.  
(3 marks)
- (d) Chain and sprocket used to send power in packaging machine. Chain are driven by tooth wheel called sprocket. Differentiate the advantage and disadvantage of using chain and sprocket.  
(4 marks)
- (e) Photoelectric sensor is one of the basic component of electrical part in packaging machine. Describe the photoelectric function and basic function of every component.  
(5 marks)

- Q4** (a) The packaging operation comprises all the activities which are involved in combining a product with its packaging method. Outline the efficiency factor for the packaging line to ensure the operation line running smooth.  
(4 marks)
- (b) Operation of packaging process mainly purpose to have a good output and quality product. In food industry, packaging operation have many stage start from washing until pasteurization. Propose an operation of the jam for understanding the food packaging line.  
(8 marks)
- (c) Automotive industry are categorize as the heavy duty industry. In assembly process, many part need to be supply in good condition to support the production line. One of the condition is component packaging. List out the general concept of automotive packaging.  
(5 marks)
- (d) Packaging in military is compulsory for every product especially food. Demonstrate the standard military packaging design for a part in box.  
(5 marks)
- (e) Describe the meaning of packaging line efficiency.  
(2 marks)

- Q5** (a) Differentiate the meaning of specification, packaging specification and packaging material specification. (6 marks)
- (b) Product protection can be consider the first function of the package. The functional and marketing criteria for a package mainly write into specification of product. List out specification of protective packaging element. (6 marks)
- (c) Structure of package and purchasing side deliver the performance of package specification. Some criteria need to be highlight on the specification in detail. Describe the criteria specification commonly used by the people in packaging organization. (4 marks)
- (d) Good feature of specification arrangement determine how well the product can run in packaging line. It is importance for manufacturer to familiar with the equipment that will suit with specification of the package. List out **FIVE (5)** feature of the package. (6 marks)
- (e) Describe the meaning of inspection of specification in packaging. (2 marks)

- Q6** (a) Identify how color and light interaction can give understanding of the surface color. (3 marks)
- (b) Special color in printing are commonly used to give value added for an image or artwork of the product. Analyze the spot color effect in packaging printing. (6 marks)
- (c) Major print process can be characterized in many ways. All print process are essentially a method of communication via image transfer. Analyze the desire properties of ink that can impart the information. (6 marks)
- (d) In general printing presses are design in three formats. Illustrate the Central impression (CI) process with some sketching about the structure of roller. (5 marks)
- (e) Letterpress printing is the oldest print process in printing industry. The process required high pressure between 5 to 15 Mpa to substrate the plate. Explain the basic letterpress printing concept. (5 marks)

**-END OF QUESTION-**