



# **UTHM**

Universiti Tun Hussein Onn Malaysia

## **UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

### **FINAL EXAMINATION SEMESTER II SESSION 2016/2017**

**COURSE NAME** : **SUSTAINABLE ENVIRONMENT  
AND PACKAGING**

**COURSE CODE** : **BNK 30802**

**PROGRAMME CODE** : **BNK**

**EXAMINATION DATE** : **JUNE 2017**

**DURATION** : **2 HOURS**

**INSTRUCTION** : **ANSWERS FOUR (4) QUESTIONS  
ONLY**

**THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES**

- Q1** (a) Identify the best option for dealing with waste. (5 marks)
- (b) Select **ONE (1)** type of waste management or recycling technique for a product. Discuss the method, highlight on the benefit and also the limitation of the technique chosen. (15 marks)
- (c) Summarize the benefit of reduce, reuse and recycle to the sustainable development. (5 marks)
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- Q2** (a) Define petrochemical in term of its resources. (3 marks)
- (b) Classify the product of petrochemical. (9 marks)
- (c) The pattern of bonding between all atoms in the molecules is important in chemical structure. Sketch the chemical structure for the given polymer:
- (i) Polyethylene (2 marks)
  - (ii) Polypropylene (2 marks)
  - (iii) Polyvinyl chloride (PVC) (2 marks)
  - (iv) Polystyrene (PS) (2 marks)
- (d) Illustrate stages of plastic recycling process (5 marks)

- Q3** (a) Point out the usage of natural materials that can extend beyond border and affects future generations.  
(5 marks)
- (b) ETP (Effluent Treatment Plant) is a process design for treating the industrial waste water for its reuse or safe disposal to the environment.
- (i) List down the need of ETP.  
(3 marks)
- (ii) Categorize and briefly explain the treatment of ETP.  
(12 marks)
- (iii) Sketch the simple flow diagram process of ETP.  
(5 marks)
- Q4** (a) Interpret the definition of landfill.  
(4 marks)
- (b) Evaluate the problems that are often encountered in landfills.  
(4 marks)
- (c) Point out the criteria for the landfill location in order to obtain a permit.  
(4 marks)
- (d) Discover the elements in recycling biomaterials.  
(4 marks)
- (e) Briefly, discuss **THREE (3)** examples of recycled biomaterial.  
(9 marks)

- Q5** (a) Explain what 'Life Cycle Assessment' is and provide example. (4 marks)
- (b) Differentiate between 'Life Cycle Assessments (LCA)', 'Life Cycle Inventory (LCI)' and 'Life Cycle Impact Assessment (LCIA)'. (6 marks)
- (c) Distinguish between 'Wal-Mart' and 'Packaging Impact Quick Evaluation Tools (PIQET)' in term of effectiveness, efficiency, cyclic and clean. (8 marks)
- (d) Predict how 'SimaPro' software can benefits 'LCA'. (7 marks)

**-END OF QUESTIONS -**