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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2017/2018**

COURSE NAME : WASTE MANAGEMENT
COURSE CODE : BNJ 40103
PROGRAMME : 4 BNH
EXAMINATION DATE : DECEMBER 2017 /JANUARY 2018
DURATION : 3 HOURS
INSTRUCTIONS : ANSWER ALL QUESTIONS.

THIS PAPER CONSISTS OF **THREE (3)** PAGES

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- Q1**
- (a) List **FOUR (4)** processes in textile processing and their potential waste.
(4 marks)
- (b) Briefly describe the Fifth Schedule of Industrial Effluent Or Mixed Effluent Of Standards A and B under Environmental Quality (Industrial Effluent) Regulation 2009.
(6 marks)
- (c) Discuss **TWO (2)** most common causes and consequences of each of the following phenomena :
- (i) Greenhouse effect
 - (ii) Acid rain
- (10 marks)
- (d) Discuss on how eco-friendly textile processing can be carried out.
(5 marks)
- Q2**
- (a) Discuss the difference between biochemical oxygen demand (BOD) and chemical oxygen demand (COD).
(3 marks)
- (b) Briefly explain biological indicator including plants and fish in responding to environmental pollution.
(5 marks)
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- (c) Identify and explain the effects of the following wastewater pollutants towards the environment:
- (i) Organic matter
 - (ii) Heavy metals
- (8 marks)
- (d) Calculate the BOD for a wastewater sample with dissolved oxygen depletion of 5 mg/L and dilution factor (p) value of 0.1 for a standard BOD test using 300 ml BOD bottle.
(3 marks)
- (e) A textile wastewater sample has a pH of 11.5, calculate the hydrogen ion $[H^+]$ and hydroxyl ion concentration $[OH^-]$ in mol/L and mg/L.
(6 marks)

- Q3**
- (a) List the processes involved in wet processing of cotton. (2 marks)
 - (b) Identify and briefly explain the potential pollutants produced from the following processes:
 - (i) Scouring
 - (ii) Bleaching
 - (iii) Dyeing
 (6 marks)
 - (c) With the aid of diagram, elaborate a wastewater treatment process for treating textile wastewater by giving a specific example (i.e. Anfi Industries Sdn. Bhd.). (6 marks)
 - (d) Differentiate the coagulation and flocculation process for color removal in treating textile wastewater. (5 marks)
 - (e) Propose **TWO (2)** sludge treatment method for sludge produced from textile industry. (6 marks)
- Q4**
- (a) List **FOUR (4)** examples of solid and hazardous waste produced from textile processing industry. (4 marks)
 - (b) Sketch the hierarchy of **SIX (6)** elements in integrated solid waste management and label the most to least favored options. (3 marks)
 - (c) Propose a recycling activity for textile industry to encourage sustainable development. (6 marks)
 - (d) Differentiate between primary and secondary['] air pollutants by giving at least **TWO (2)** examples for each pollutant. (6 marks)
 - (e) Select **ONE (1)** of air pollutants and discuss in detailed the environmental and human health effects of air pollutants from antropogenic sources. (7 marks)



-END OF QUESTIONS -