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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : WASTE MANAGEMENT
COURSE CODE : BNJ 40103
PROGRAMME CODE : BNH
EXAMINATION DATE : JUNE / JULY 2019
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : ANSWER **ALL** QUESTIONS

THIS QUESTION 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) With an aid of diagram, describe briefly **THREE (3)** water quality assessment. (6 marks)
 - (c) Discuss **TWO (2)** most common cause 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 different 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)
 - (c) Identify and explain 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) Choose **THREE (3)** factors contributing to urban water demand. (6 marks)
- (d) Differentiate the coagulation and flocculation process for color removal in treating textile wastewater. (5 marks)
- (e) Examine **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) Assess and discuss in detailed the environmental and human health effects of air pollutants from anthropogenic sources (6 marks)

-END OF QUESTIONS -