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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : ENVIRONMENTAL ENGINEERING
COURSE CODE : DAK 10903
PROGRAMME : 1 DAK
EXAMINATION DATE : DECEMBER 2015 / JANUARY 2016
DURATION : 3 HOURS
INSTRUCTION : SECTION A) ANSWER ALL
QUESTIONS
SECTION B) ANSWER **TWO (2)**
QUESTIONS ONLY

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

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SECTION A

- Q1** (a) Recycling turns materials that would otherwise become waste into valuable resources.
- (i) Identify **three (3)** advantages of recycling. (3 marks)
 - (ii) Briefly elaborate the process of recycling. (8 marks)
- (b) Several methods are used for treatment and disposal.
- (i) Briefly describe landfilling methods. (6 marks)
 - (ii) Determine **four (4)** advantages and **four (4)** disadvantages of landfilling methods. (8 marks)
- Q2** (a) Hazardous waste is waste that poses a potential danger to human health.
- (i) Define of hazardous waste. Give **two (2)** examples household waste. (3 marks)
 - (ii) Determine **four (4)** criteria of hazardous waste. (8 marks)
- (b) As an environmental engineer you were assigned to find the solutions to overcome current hazardous wastes for Batu Pahat region.
- (i) Identify **two (2)** suitable treatment techniques for wastes disposal. (2 marks)
 - (ii) State **three (3)** advantages and **three (3)** disadvantages of the each selected treatment. (12 marks)

SECTION B

- Q3** (a) Smog is caused by chemical reaction & air inversion.
- (i) Explain photochemical smog. Give **one (1)** example of famous smogs.
(3 marks)
 - (ii) Identify **four (4)** pollutants and effect of photochemical smog.
(8 marks)
- (b) Water pollution is the contamination of water bodies. This form of environmental degradation occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds.
- (i) Identify **two (2)** types of water pollutants exist.
(2 marks)
 - (ii) Determine and briefly elaborate **three (3)** effects of water pollutions.
(12 marks)
- Q4** (a) Pure water is a colorless, odorless, and tasteless liquid. List **five (5)** usage of water.
(5 marks)
- (b) Humans have accelerated this process by adding nutrients and by discharging sewage, fertilizers, and detergents into lakes. Briefly explain **three (3)** stages of lakes.
(6 marks)
- (c) In order to remove these contaminants, and to comply with state and federal water quality standards, water is treated before it is distributed for consumption. Determine all process involves in water treatment from raw water until distribution to consumer.
(14 marks)

- Q5** (a) The vast majority of surface water on the planet is neither fit for drinking nor toxic. Poor water quality can also pose a health risk for ecosystems. List **six (6)** sources of water contaminants. (6 marks)
- (b) Total Suspended Solids (TSS) can be measured by taking the amount of solid separated from a water sample. TSS is related to turbidity. Clarify turbidity and give **two (2)** ways to measure turbidity. (4 marks)
- (c) Fecals bacteria is commonly used as indicators because they are commonly found in human and animal feces. Determine **five (5)** types of fecal indicators. (5 marks)
- (d) Water quality is the physical, chemical and biological characteristics of water. Identify and describe **five (5)** parameters in chemical characteristics. (10 marks)
- Q6** (a) Wastewater treatment consists of applying known technology to improve or upgrade the quality of a wastewater.
- (i) Determine **four (4)** benefits of wastewater treatment. (4 marks)
- (ii) Identify **five (5)** main characteristics in wastewater treatment. (5 marks)
- (b) Aerobic Ponds and Aerated Ponds is two types of ponds by processes. Draw and label zone of typical ponds and briefly explain both types of ponds. (7 marks)
- (c) Describe briefly types of trickling filter. (9 marks)

- END OF QUESTION -