UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	WASTEWATER TREATMENT TECHNOLOGY
COURSE CODE	:	BNA 40603
PROGRAMME CODE	:	BNA **TERBUKA**
EXAMINATION DATE	:	DECEMBER 2019 / JANUARY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 (a) Briefly explain the differences between domestic wastewater and stormwater.

(4 marks)

(b) Examine **THREE (3)** environmental impacts due to pollutants from untreated wastewater discharge.

(6 marks)

(c) With an aid of sketches, briefly explain a combined and separated sewer collection system for sanitary wastewater and stormwater.

(5 marks)

(d) Predict the pollutants that are majorly discharge by textile industry.

(5 marks)

(e) Pump stations (also called lift stations) play an important role in wastewater disposal

(i) Discuss the important of pumping station.

(3 marks)

(ii) List the components in the distribution system.

(2 marks)

Q2 (a) Explain the function of screening and design criteria for coarse and fine screen.

(6 marks)

(b) Construct an experiment for Ammonia-Nitrogen Analysis (*Nessler* Method).

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(7 marks)

(c) Wastewater treatment is the process of converting wastewater that is no longer needed or suitable for usage.

(i) Sketch the typical unit processes in treating municipal wastewater.

(9 marks)

(ii) State the objectives of pretreatment including screening and grit chamber in a wastewater treatment processes.

(3 marks)

Q3 (a) Explain the attach growth systems by giving **TWO (2)** common practices of this systems.

(6 marks)

(b) Formulate the pathway of organic matters from wastewater in an oxidation ditch system due to the presence of microorganism under aerobic conditions.

(6 marks)

(c) The F/M (food to microbes) ratio is the most useful design and operational parameter of activated sludge system. Predict the consequences of low and high F/M.

(9 marks)

(d) Develop **FOUR (4)** hypothesis of the problem rise in the filtration system of tertiary wastewater treatment.

(4 marks)

Q4 (a) Point out **FOUR (4)** treatment methods of sludge produced from a wastewater treatment plant.

(8 marks)

(b) Classify the characteristic of sludge produced from primary and secondary clarifier in a wastewater treatment system.

(10 marks)

(c) Plan the recovery operations of sludge from wastewater treatment system.

(7 marks)

- **END OF QUESTIONS -**

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