UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: BCE 3114
COURSE	: POLLUTION CONTROL
SEMESTER/SESSION	: 1- 2022/ 2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains **4** questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise up your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 4 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

(a) Most people consume drinking water to be clear, colorless, odorless and free from harmful chemical and pathogenic microorganisme. However natural waters usually contain some degree of dissolved, particulate and microbiological constituents, which are obtained from the surrounding environment. Explain the design of water treatment processes from raw water until it reaches the community. (12 marks)

(b) List **(4) four** parameters of water quality and explain in details. (4 marks)

(c) The following test results were obtained for a waste water sample taken at an industrial facility. The test was performed using a sample size of 150 mL. Determine the concentration of total solid, total volatile solid and total suspended solids for the sample. (9 marks)

Item	**Weight (g)**
Tare mass of evaporating dish	54.6424
Mass of evaporating dish plus residue after evaporation at 105 °C	54.7224
Mass of evaporating dish plus residue after ignition at 550 °C	54.6801
Tare mass of Whatman GF/C filter	1.5347
Mass of Whatman GF/C filter plus residue after drying at 105 °C	1.5622

QUESTION 2

(a) Two purpose of municipal wastewater treatment are to protect human health and prevent pollution of a receiving surface water or groundwater. While treatment procesess are very efficient at removing pathogens and other pollutant and also found new chemical in wastewater such as fragrances, surfactant in soaps and detergents as well as pharmaceutical chemicals. Explain the process of primary and secondary treatment. (10 marks)

(b) Dissolve oxygen deplection usually occurs in polluted wastewater and its measured as biochemical oxygen demand (BOD), define biochemical oxygen demand. (3 marks)

(c) The following information is available for a seeded 5-day BOD test conducted on a wastewater sample. 10 mL of the waste sample was added directly into a 300-mL BOD incubation bottle. The initial DO of the diluted sample was 10.8 mg/L and the final DP after 5 days was 3.6 mg/L. The corresponding initial and final DO of the seeded dilution water was 9.5 and 7.5, respectively. Compute is the 5-day BOD (BOD_5) of the wastewater sample? (6 marks)

(d) Activated sludge process is one of the common processes used for treating sewage and industrial wastewater. Outline **(6) six** steps involve in this process. (6 marks)

QUESTION 3

(a) Solid waste include paper and plastic generated at home, ash produced by industries, food waste, hospital medical waste and demolition debris from the constructon sites. These materials are considered a waste when owners and society believe they no longer have value. (10 marks)

Open dumps, sanitary landfill and composting are methods applied in solid waste management. Compare the methods mentioned and conclude the best method to be practiced in Malaysia.

(b) There are ways to converts solid waste to energy conversion. Discuss all pathways in details. (10 marks)

(c) Incineration is the burning of waste treatment process that involves the combustion of organic substances contained in waste material. Predicts **(3) three** disadvantages of this process. (3 marks)

QUESTION 4

(a) The decrease of strastospheric ozone was first report in 1974 and its decrease was linked to the presence of man- made compounds in the atmospheres.The most damaging of which is the class of compounds known as CFCs. Sketch the diagram ozone deplation process. (7 marks)

(b) Air pollution is caused either by human activities or natural sources. Carry out **(2) two** examples of natural sources. (6 marks)

(c) Interpret the typical reaction mechanism of acid rain and the effect of acid rain. (8 marks)

(d) Categorize **(4) four** sampling methods in measuring air pollution. (4 marks)

----------End of question----------