UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2018/2019

COURSE NAME	:	WASTE MANAGEMENT
COURSE CODE	:	BNJ 40103
PROGRAMME CODE	:	BNH
EXAMINATION DATE	:	DECEMBER 2018 / JANUARY 2019
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWERS **ALL** QUESTIONS

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

Q1   (a)   Define
                (i)   Waste
                (ii)   Waste management
                (iii)   Solid Waste

(6 marks)

(b)   With an aid of diagram, describe briefly **THREE (3)** water quality assessment.

(6 marks)

(c)   (i)   Explain briefly Biochemical Oxygen Demand (BOD) and how it is measured.

(4 marks)

(ii)   Discuss factors affecting BOD in water system.

(4 marks)

Q2   (a)   Choose **THREE (3)** factors contributing to urban water demand.

(6 marks)

(b)   Analyse **FOUR (4)** potential releases emitted in air and water during printing and finishing processes in textile industries.

(8 marks)

(c)   Illustrate the process of surface water treatment in general using a flowchart.

(6 marks)

Q3   (a)   Distinguish the differences among pre-treatment, primary treatment, secondary treatment and tertiary treatment, and show how they are related.

(12 marks)

(b)   Compare between aerobic and anaerobic process in wastewater treatment. Support your answer with a suitable mechanism illustration.

(8 marks)

Q4   (a)   **Table Q4(a)** shows the municipal solid waste for a typical city in Malaysia. Calculate the average density, composition and moisture content of the municipal solid waste.

(15 marks)

(b)   Briefly describe **TWO (2)** of the five technologies for hazardous waste treatment.

(5 marks)

Q5 (a) List the functional elements of solid waste management. In your opinion, which of these are relevant to rural settings? Justify your answer.

(8 marks)

(b) Explain how incineration of waste material contributes to the air pollution by giving an example from daily life activities.

(8 marks)

(c) Identify **FOUR (4)** laws and regulation that is important in hazardous waste management.

(4 marks)

-END OF QUESTIONS –

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Table Q4(a)

Description	Weight (%)	Typical density (kg/m^3)	Moisture content (%)
Food wastes	39.5	290	70
Yard wastes	3.8	240	60
Paper	0.85	85	6
Plastic	0.7	65	2
Glass/Ceramic	0.5	195	2
Metal	0.65	160	2
Textile	2	65	8
Leather	2.5	160	10
Stones/bricks	40.5	480	10
Miscellaneous	9	240	8
Total	100.00		

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