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Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022**

COURSE NAME : WASTE MANAGEMENT
TECHNOLOGY

COURSE CODE : BNS 20202

PROGRAMME CODE : BNS

EXAMINATION DATE : JANUARY /FEBRUARY 2022

DURATION : 2 HOUR 30 MINUTES

INSTRUCTION : 1. ANSWERS ALL QUESTIONS
2. THIS FINAL EXAMINATION IS
AN **ONLINE** ASSESSMENT AND
CONDUCTED VIA **CLOSE BOOK**

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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TERBUKA

- Q1** (a) Humanity continues to develop and produce cutting-edge products to fulfill its most fundamental needs of life. However, the resulting production and consumption of resources end up with prominent problems regarding solid waste generation and management in diverse parts of the world. Describe **THREE (3)** human activities that contribute towards abundant amount of solid waste generation. (9 marks)
- (b) Pyrolysis has been used to treat municipal solid waste and plastic waste. The main advantage is the reduction in volume of the waste. In principle, pyrolysis will regenerate the monomers (precursors) to the polymers that are treated, but in practice the process is neither a clean nor an economically competitive source of monomers. **Figure Q1 (b)** shows diagram of pyrolysis process. Sketch the diagram and construct the working process (complete with explanation) for each of the stages in the pyrolysis process. (15 marks)
- (c) Composting is receiving increased attention as a means of solid waste disposal. It is a cost-effective and environmentally friendly component of organic solid waste management. State **ONE (1)** solid waste suitable to be used in composting process. (1 mark)
- Q2** (a) Perhaps, in once in a lifetime, normal people would consume prepared frozen foods that they might buy at convenience store and such. Prepared frozen foods are foods that have been mixed with other ingredients, sometimes cooked or partially cooked, and packaged for easy consumer use. The food processing industry is here to stay. Furthermore, there is every indication that the prepared frozen foods industry will enjoy steady growth in the foreseeable future. During the preparation, these prepared frozen foods will produce several solid wastes.
- (i) Identify **THREE (3)** major solid wastes produced by these industries (6 marks)
- (ii) Construct **FOUR (4)** control mechanisms of wastes minimization that were suitable to be applied in these industries. (12 marks)
- (b) The metal manufacturing industry involves the production of metal for use in a variety of other industries. According to Visiongain, the global metal packaging market has a forecast worth of almost \$165.5 billion for 2021. **Table Q2 (b)** shows three common processes undergone by most of the metal production. For each of the processes, analyze **ONE (1)** major waste produced by each individual process that involves in production of metal as in **Table Q2 (b)**. (6 marks)

- (c) Metal fabrication is the process of building machines and structures from raw metal materials. The process includes cutting, burning, welding, machining, forming, and assembly to create the final product. List **ONE (1)** product manufactured from machining process of metal.

(1 mark)

Q3

The construction industry utilizes different materials and byproducts, many of which have considerable environmental impacts and most significant sources of construction waste are generated during the construction phase. **Figure Q3** shows a typical generated construction wastes of a construction site.

- (a) List **TWO (2)** regulations/ guideline the construction site as in **Figure Q3** violates

(1 mark)

- (b) Does Site Safety Supervisor (SSS) job description relate with the management of construction waste? Scrutinize your answer with **THREE (3)** points of discussion (If not related why and if related, what are the justifications)

(9 marks)

- (c) Outline **THREE (3)** construction solid wastes from **Figure Q3**

(3 marks)

- (d) Based from your answer in Q3 (c), employ **FOUR (4)** possible waste management technologies that can be applied to reduce or eliminate the wastes from the construction site.

(12 marks)

Q4

- (a) Some definition of recycling processes was to treat or process (used or waste materials) to make suitable for reuse, others were to alter or adapt for new use without changing the essential form or nature. Nowadays, many companies want to adopt a recycling process as part of their corporate business culture. Pretend that you are now working with ABC Manufacturing Sdn Bhd and one of your job descriptions was to conduct recycling activities for the administration office and production floor. Execute **FOUR (4)** activities to initiate recycling activities for the ABC Manufacturing Sdn Bhd

(16 marks)

- (b) There are over one billion end-of-life tires generated annually worldwide. Going back 100 years or so into the history of tires, the price of an ounce of rubber to manufacture tires rivaling the price of an ounce of silver. But sadly, tires recovery nor recycling of it was not important as with other one-time plastic usage. **Figure Q4 (b)** shows four solid wastes that were dumped without undergone recovery process. Identify **THREE (3)** recovery processes complete with its end products that can be conducted to the solid wastes as in **Figure Q4 (b)**.

(9 marks)

-END OF QUESTIONS -

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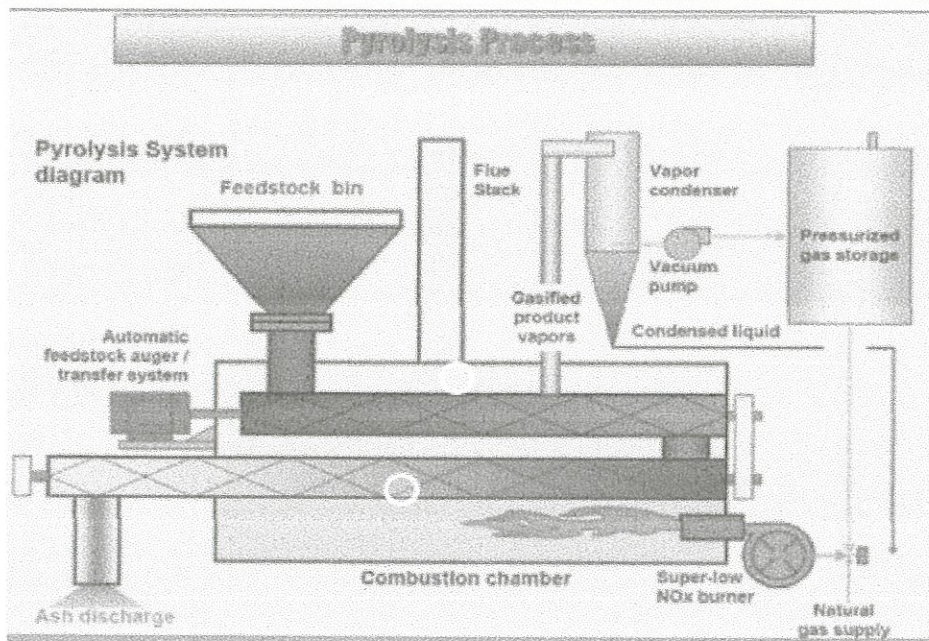


Figure Q1 (b)

Table Q2 (b)

	Chemical Descaling	Degreasing	Rinsing
Process	Parts are immersed in a bath of aqueous solution of acid or molten alkali.	materials are immersed in vapors of boiling liquids for the purpose of cleaning or altering their surfaces, and are subsequently removed from the vapors, drained, and dried in a solvent vapor degreaser.	parts and pieces undergoing manufacturing processes are rinsed in a water bath after each process that involves immersion in an aqueous solution.
Wastes			



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Figure Q3



Figure Q4 (b)

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MAJLIS KEMENTERIAN
KUALA LUMPUR
KEMENTERIAN KEMAMPUAN
BERSAMA SAMA MELAKSANAKAN TRANSFORMASI
KEMERDEKAAN BERKUALITI