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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER III  
SESSION 2018/2019**

COURSE NAME : FOUNDATION OF CHEMICAL  
ENGINEERING TECHNOLOGY

COURSE CODE : DAK 12302

PROGRAMME CODE : DAK

EXAMINATION DATE : AUGUST 2019

DURATION : 2 HOURS

INSTRUCTION : ANSWERS ALL QUESTIONS

**TERBUKA**

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

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- Q1**
- (a) Define chemical engineering. (2 marks)
- (b) Briefly describe **four (4)** roles of chemical engineering technologist. (8 marks)
- (c) State the SI units of all **six (6)** following items.
- (i) Mass (1 marks)
  - (ii) Length (1 marks)
  - (iii) Temperature (1 marks)
  - (iv) Amount of substance (1 marks)
  - (v) Luminous intensity (1 marks)
  - (vi) Electric Current (1 marks)
- (d) Convert the following to SI unit
- (i) 2 L/s to ft<sup>3</sup>/day. (4 marks)
  - (ii)  $\frac{10(\text{cm}^2)}{(\text{min})(\text{lb}_m)(\text{ft}^2)}$  (5 marks)
- Q2**
- (a) Define molecular weight and atomic weight. (4 marks)
- (b) Find the percent composition for each element in methyl salicylate, C<sub>8</sub>H<sub>8</sub>O<sub>3</sub> given C = 12, H = 1, O = 16 g/mol). (5 marks)
- (c) Chemical process have three classifications which are batch, continuous and semi batch. Discuss **two (2)** types of continuous process. (8 marks)
- (d) Explain the purpose of process flow diagram (PFD). (8 marks)

- Q3** (a) Based on your own understandings, describe term bioremediation. (5 marks)
- (b) Describe in details **four (4)** requirement for bioremediation. (8 marks)
- (c) The two main types of bioremediation are In Situ bioremediation and Ex Situ bioremediation.
- (i) Define Ex Situ and In Situ bioremediation. (4 marks)
- (ii) Define intrinsic bioremediation and accelerated bioremediation. (4 marks)
- (d) State **two (2)** factors that hinder successful bioremediation process. (4 marks)
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- Q4** (a) Define the term Hazard. (1 mark)
- (b) Define and give example of each;
- (i) Behavioral hazard
- (ii) Mechanical hazard
- (iii) Physiological hazard
- (iv) Oxidizer substances (8 marks)
- (b) Give any **one (1)** example to elaborate the Hazard Reduction Steps. (8 marks)
- (c) Describe **four (4)** importance of HAZOP study. (8 marks)

-END OF QUESTIONS -