Universiti Tun Hussein Onn Malaysia

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION
## SEMESTER I
## SESSION 2016/2017

| | | |
|---|---|---|
| COURSE NAME | : | PLANT DESIGN AND PROCESS |
| COURSE CODE | : | DAK 21003 |
| PROGRAMME | : | 2 DAK |
| EXAMINATION DATE | : | DECEMBER 2016/ JANUARY 2017 |
| DURATION | : | 2 HOURS 30 MINUTES |
| INSTRUCTION | : | SECTION A) ANSWER **ALL** QUESTIONS |
| | | SECTION B) ANSWER **TWO (2)** QUESTIONS ONLY |



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

## SECTION A

**Q1** (a) Sketch a Process Flow Diagram (PFD) based on your design plant.

(5 marks)

(b) Show all calculation use to obtain total initial raw material in kg/batch when target product needed is 500 tonne per annum.

(15 marks)

(c) Explain **FIVE (5)** factors that affecting Food Plant location.

(5 marks)

**Q2** (a) Using your own word, describe capital cost estimation based on following;

(i) Effect of Capacity.

(6 marks)

(ii) Effect of Time.

(6 marks)

(b) (i) Define meaning of contingency in plant costing estimation.

(2 marks)

(ii) Point out the importance of contingency to be included in plant costing estimation.

(2 marks)

(c) Describe the meaning of inflation and give relevant example.

(4 marks)

(d) Describe the term payback period.

(5 marks)

## SECTION B

**Q3** (a) Analyze in detail **FOUR (4)** factors and its subdivision that influence total bare module cost.

(12 marks)

(b) Write in details **FOUR (4)** solution/adjustments should be made if your proposed plant cost is too high.

(13 marks)

**Q4** (a) Discuss your national regulation on wastewater standard and solid waste standard.

(7 marks)

(b) Describe **THREE (3)** types of waste treatment involved in your plant.

(12 marks)

(c) Give recommendation for each of treatment or technologies involved.

(6 marks)

**Q5** (a) Define Piping and Instrumentation Diagram (P & ID).

(5 marks)

(b) Compare function of Piping and Instrumentation Diagram (P & ID) and Process Flow Diagram (PFD).

(14 marks)

(c) Describe how to read P & IDs based on first letter, succeeding letters and connecting line.

(6 marks)

**Q6** (a) Select suitable separation method for each of following. Suggest **TWO (2)** equipment per each mixture.

(i) Solid-solid mixture.

(5 marks)

(ii) Solid-liquid mixture.

(5 marks)

(iii) Liquid-liquid mixture.

(5 marks)

(iv) Liquid-gas mixture.

(5 marks)

(v) Gas-gas mixture.

(5 marks)

**- END OF QUESTION –**