



UTHM

Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014**

COURSE NAME : PRODUCTION AND OPERATIONS
MANAGEMENT

COURSE CODE : BPB 31103

PROGRAMME : 2 BPA

EXAMINATION DATE : DECEMBER 2013/JANUARY 2014

DURATION : 3 HOURS

INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

- Q1** (a) (i) Define Material Resource Planning (MRP) and Enterprise Resource Planning (ERP). (2 marks)
- (ii) Explain the purpose of MRP and ERP. (4 marks)
- (b) The demand for subcomponent C is 100 units in week 7. Each unit of component C requires 1 unit of T and 2 unit of U. Each unit of T requires 1 unit of V, 2 units of W, and 1 unit of X. Finally, each unit of U requires 2 units of Y and 3 units of Z. One firm manufactures all items. It takes 2 weeks to make S, 1 week to make T, 2 weeks to make U, 2 weeks to make V, 3 weeks to make W, 1 week to make X, 2 weeks to Y and 1 week to make Z.
- (i) Construct a product structure. (6 marks)
- (ii) Prepare a time-phased product structure. (6 marks)
- (iii) Construct a gross material requirements plan. (7 marks)
- Q2** (a) Describe **FOUR (4)** types of inventory in a manufacturing company. (4 marks)
- (b) The annual demand, ordering cost, and the annual inventory carrying cost rate for a certain item are $D = 600$ units, $S = \text{RM}20/\text{order}$ and $I = 30\%$ of item price. Price is established by the following quantity discount schedule tabulated in Table **Q2(b)**.

Table Q2(b): Price Discount Schedule

Quantity	1 to 49	50 to 249	250 and up
Price	RM5.00 per unit	RM4.50 per unit	RM4.10 per unit

Calculate the order quantity to minimize the total annual cost.

(6 marks)

- (c) You have just completed a course in Operations Management and offered employment by Richard Ng Sdn. Bhd. The company has the following 10 items in inventory tabulated in Table Q2(c).

Table Q2(c): Inventory items at Richard Ng Sdn. Bhd.

Item	Annual Demand	Cost (RM)/Unit
A2	3,000	50
B8	4,000	12
C7	1,500	45
D1	6,000	10
E9	1,000	20
F3	500	500
G2	300	1,500
H2	600	20
I5	1,750	10
J8	2,500	5

- (i) Develop an ABC classification system for the 10 items. (8 marks)
- (ii) Discuss the usage of ABC classification for Richard Ng Sdn. Bhd. (5 marks)
- (iii) Your supervisor reviews the classification and then place item A2 into the A category.

State the reason for doing so.

(2 marks)

- Q3** (a) Selecting a manufacturing facility location is becoming much more complex with globalization.

Discuss the above statement.

(10 marks)

- (b) Poton Car Manufacturing Bhd is considering 3 sites: X, Y and Z at which to locate a factory to build its new-model automobile, the Supersport V2020 GL series. The goal is to locate at a minimum cost site, where cost is measured by the annual fixed plus variable costs of production. Poton Car has gathered the data tabulated in Table Q3(b):

Table Q3(b): Data on potential factory sites

Site	Annualised Fixed Cost	Variable Cost Per Car Produced
X	RM10,000,000	RM2,500
Y	RM20,000,000	RM2,000
Z	RM25,000,000	RM1,000

The Company knows that it will produce between 0 to 60,000 Supersport V2020 GL car at the new plant each year.

- (i) Determine the volume, V of production if any, with the assumption that Z is the recommended site with lowest cost selection. (8 marks)
- (ii) Determine the volume that indicates site X is optimal. (3 marks)
- (iii) Determine the range of volume where site Y optimal. (2 marks)
- (iv) State the reason for your answer in Q3(b)(iii). (2 marks)

- Q4** (a) (i) Explain how JIT and quality are related. (3 marks)
- (ii) A JIT partnership exist when a supplier and a purchaser work together.

Explain **FIVE (5)** importances of JIT partnership.

(10 marks)

- (b) Poton Automobile Sdn. Bhd. has a repetitive plant producing steering wheels for car. The work year of this plant is 305 days. Table Q4(b) tabulates the data to prepare for a reduced lot size.

Table Q4(b): Production of steering wheels data

Annual demand for steering wheels	30,500
Daily demand	100
Daily production (8 hours)	800
Desired lot size (2 hours per production)	200
Holding cost per unit per year	RM100

- (i) Calculate the set-up cost basing on the desired lot size. (6 marks)
- (ii) Calculate the set-up time basing on setup labour cost of RM40 per hour. (6 marks)

-END OF QUESTION-