UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2011/2012

COURSE NAME	:	PRODUCTION AND OPERATION MANAGEMENT
COURSE CODE	:	BPB 31103 / BPA 3113
PROGRAMME	:	2 BPB
EXAMINATION DATE	:	JUNE 2012
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 Seoul Garden Restaurant is attempting to open a new outlet in a new location. At the moment the firm has three alternatives- stay where it is but enlarge the facility; locate along the main street in nearby Damansara; or locate in a new shopping mall in Pavillion Park. Key success factor and its weighting shown in **Table Q1(a).**

Table Q1(a): Key Success Factors and Its Weighting

Factor	Description	Weight
1	Average community income	.30
2	Community growth potential	.15
3	Availability of public transport	.20
4	Labour availability and cost	.35

The firm has rated each location for each factor, on a 100-point basis. These ratings are given **Table Q1(b):**

Table Q1(b): Scores for location based on the factor

	Location		
Factor	Present location	Damansara	Pavillion Park
1	40	60	50
2	20	20	80
3	30	60	50
4	80	50	50

(a) By using the factor-rating method, calculate the rating for each location based on the weight factor given in **Table Q1(a)** and score in **Table Q1(b).**

(12 marks)

(b) State the best location from the result of Q1(a).

(1mark)

(c) Assume the third factor score raises to 40.

Determine the best location considering the new factor rating.

(7 marks)

Q2 (a) N&F Company has five jobs waiting to be process through its liner department The following jobs (A, B, C, D and E) are waiting to be process at the same machine center. **Table Q2(a)** shows the detail of each job. Assume all jobs arrive on day 285.

Table Q2(a): Job Details

Job	Due Date	Duration (days)
A	323	10
B	322	18
C	335	42
D	324	7
E	324	5

Analyze the best sequence to rank all jobs according to the following priority rules; First Come First Serve (FCFS), Shortest Processing Time (SPT), Earliest Due Dates (EDD) and Longest Processing Time (LPT).

(15 marks)

(b) There are six jobs processing through two work centers; drying and heating in Akaisuki Company. The time for processing each job is shown in **Table Q2(b).** The owner wants to set the sequence to minimize his total processing time for the six jobs by using Johnson's rule.

Table Q2(b): Time Processing for Each Job

Job	Drying	Heating
A	4	5
B	5	6
C	8	3
D	5	8
E	3	5
F	5	4

Calculate:-

(i) Processing time for the six jobs through the two work centers.

(4 marks)

(ii) Total idle time for both work centers

(1 mark)

Q3 (a) Describe **THREE (3)** techniques that beneficial to effective maintenance.

(6 marks)

(b) An electronic manufacturing company produces 100 units of electronic boards to 5000 hours of testing. Halfway through the testing, 10 units failed. Calculate the failure rate in terms of following:

(i) Percentage of failure

(2 marks)

(ii) Number of failures per unit-hour

(6 marks)

(iii) Number of failures per unit-year

(4 marks)

(iv) Mean Time Between Failure (MTBF) for this units

(2 marks)

Q4 The fixed and variable costs for three potential manufacturing plant sites for a rattan chair are in the following **Table Q4**.

Table Q4: Fixed and variable costs

Sites	Fixed cost per Year (RM)	Variable cost per Unit (RM)
A	500	11
B	1000	7
C	1700	4

The expected volume is 200 units per year.

(a) Plot a graph to show the optimal range of production for each sites.

(16 marks)

(b) State the best sites for a production of 200 units based from the graph in Q4(a),

(1 mark)

(c) Calculate the expected profit for the best site in Q5(b) if the expected selling price of unit produced is RM 20,

(3 marks)

Q5 Panasonic wants to establish an assembly line to manufacture new product, the Portable Eco-sensor Air Purifier. The goal is to produce five air purifier per hour. **Table Q5** below shows the tasks, task times and immediate predecessors for producing one unit of air purifier.

Table Q5: Time (minutes) and immediate predecessors for each task

Task	Time (minutes)	Immediate Predecessors
A	10	--
B	12	A
C	8	A,B
D	6	B,C
E	6	C
F	6	D,E

(a) Draw a precedence diagram of this operation and assign task to workstation.
(15 marks)

(b) Calculate:-

(i) Cycle time for this operation
(2 marks)

(ii) The efficiency of the assembly line
(3 marks)

END OF QUESTION PAPER