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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

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

COURSE NAME : PRODUCTION PLANNING AND CONTROL  
COURSE CODE : BNM 30803  
PROGRAMME CODE : BNM  
EXAMINATION DATE : JUNE / JULY 2019  
DURATION : 3 HOURS  
INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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- Q1** (a) There are several process categories used to describe the process strategies in operation, such as job process, batch process, project process, flow process and continuous process. Differentiate between flow process and continuous process. (4 marks)
- (b) Data collected on the yearly registration for a Six Sigma seminar at the Quality College are shown in **Table Q1(b)**.
- (i) Calculate a 3-year moving average to forecast registrations from year 5 to year 12. (4 marks)
- (ii) Calculate demand for year 9 to year 12 with a 3-year weighted moving average in which registrations in most recent year are given a weight of 2, and registration in the other 2 years are each given a weight of 1. (4 marks)
- (c) Develop a line trend equation for user's demand of internet broadband package Xtrend-mobile networks brand for 9 weeks based on the data listed in **Table Q1(c)**. Use the equation to predict the next value of the series. (8 marks)
- Q2** (a) Demand is classified as dependent and independent. Distinguish dependent and independent demand by providing **ONE (1)** example for each. (4 marks)
- (b) Demand is known, constant and independent is one of the assumptions made when Economic Order Quantity (EOQ) model is to be applied. Give **THREE (3)** other assumptions made for EOQ. (3 marks)
- (c) A gadget distributor has a demand for 10,000 smartphones per year. The firm operates 250-day working days. On average, delivery of an order takes 5 working days. The firm wants to calculate the reorder point. (3 marks)
- (d) Wendy's Nature Foods sells a gluten-free product for which the annual demand is 5000 boxes. At the moment it is paying RM7.20 for each box, carrying cost is 20% of the unit cost, ordering costs are RM28. A new supplier has offered to sell the same item for RM6.50 if Wendy's Nature Foods buys at least 3000 boxes per order.
- (i) Solve the current optimum quantity to order. (3 marks)
- (ii) Investigate whether Wendy's Nature Foods should stick with the old supplier, or take advantage of the new quantity discount offered. (7 marks)

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- Q3** (a) List **THREE (3)** strategies of aggregate planning. (3 marks)
- (b) Define the meaning of 'changing inventory levels'. Next, give **ONE (1)** effect of changing inventory levels in production. (3 marks)
- (c) There are two types of mixing option, which is chase strategy and level strategies. Interpret both of these strategies. (4 marks)
- (d) Sara's firm has developed the following supply, demand, cost and inventory data as shown in **Table Q3(d)**. Allocate production capacity to meet demand at a minimum cost using the transportation method. Assuming that the initial inventory has no holding cost in the first period and backorder are not permitted. Initial inventory is 20 units. Calculate the total cost for aggregate planning. (10 marks)
- Q4** (a) Recognize **TWO (2)** effective use of dependent inventory models that operation managers need to know. (2 marks)
- (b) As the production planner for Gerry Cook Products, you have been given a bill of material for a bracket that is made up of a based, two spring, and four clamps. The base is assembled from one clamp and two housing. Each clamp has one handle and one casting. Each housing has two bearings and one shaft. There is no inventory on hand.
- (i) Draw the design of product structure noting the quantities for each item with its level of coding. (8 marks)
- (ii) Determine the gross quantities needed of each item if you need to assemble 50 brackets. (4 marks)
- (c) Differentiate between bill of material (BOM) and product structure. (4 marks)
- (d) Identify **TWO (2)** disadvantages of Enterprise Resources Planning (ERP). (2 marks)

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- Q5** (a) Scheduling is assigning jobs or works to specific personnel and work centers. Discover the strategic importance of scheduling to an organization. (6 marks)
- (b) There are two types of scheduling approach available. Distinguish the **TWO (2)** approaches by giving an example for each. (4 marks)
- (c) 5 jobs are waiting to be assigned, as shown in **Table Q5(c)**. The firm wants to determine the sequence of processing according to First Come First Serve (FCFS) and Earliest Due Date (EDD) rules. Investigate the effectiveness of both rules applied to choose the best. (10 marks)



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**Table Q1(b)**

Year	Registration [000]
1	4
2	6
3	4
4	5
5	10
6	8
7	7
8	9
9	12
10	14
11	15

**Table Q1(c)**

Period [t]	Demand [y]
1	44
2	52
3	50
4	54
5	55
6	55
7	60
8	56
9	62

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**Table Q3(d)**

Period	Regular Time	Overtime	Sub-contract	Demand Forecast
1	30	10	5	40
2	35	12	5	50
3	30	10	5	40

Data cost;  
Regular time cost per unit = RM100  
Overtime cost per unit = RM150  
Subcontract cost per unit = RM200  
Carrying cost = RM4

**Table Q5(c)**

Job	Job processing time [Days]	Job due date [Days]
A	6	8
B	2	6
C	8	18
D	3	15
E	9	23

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