Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018

COURSE NAME	:	PRODUCTION PLANNING AND CONTROL
COURSE CODE	:	BNM 30803
PROGRAMME CODE	:	BNM
EXAMINATION DATE	:	JUNE / JULY 2018
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 (a) Product design is influenced by customers' requirement and preference. Differentiate **FOUR (4)** types of customers' influence in design. Support your answer with explanation and example.

(12 marks)

(b) Order winners are the criteria that differentiates products and services of a producer from another. In the case of successful KFC business in food services, discover its order winners with explanation.

(8 marks)

Q2 (a) Forecasting is defined as the art and science of predicting future events. Summarize **SEVEN (7)** steps involve in forecasting.

(7 marks)

(b) Forecast error analysis is widely used to determine the accuracy between several forecasting methods. Using data in **Table Q2 (b)**, analyze the forecast error using Mean Absolute Deviation (MAD) by comparing **TWO (2)** forecasting methods:

(i) 3-period weighted moving average weight value of 6, 3 and 1;

(6 marks)

(ii) exponential smoothing with $\alpha = 0.25$, given forecast demand for Year 2012 is equal to its actual demand

(6 marks)

Recommend the most suitable forecasting model from your analysis.

(1 mark)

Table Q2 (b)

Year	Demand
2010	74
2011	79
2012	80
2013	90
2014	105
2015	142
2016	122

Q3 (a) There are several types of inventory in manufacturing or service operations. Identify **THREE (3)** of them with definition.

(6 marks)

(b) A local tyre distribution company expects to sell 9,600 tyres next year. Annual carrying cost is RM16 per tyre and ordering cost is RM75. The distributor operates 288 days a year.

(i) Solve the economic order quantity for the tyre;

(3 marks)

(ii) Based on the calculated EOQ, show the length of an order cycle

(4 marks)

(c) Smartpax Industries Sdn Bhd produces carton boxes for packaging. The demand for carton boxes next year is forecasted to be 10,000 units, with an average daily demand of 30 units. The production rate is 40 units, annual carrying cost is RM0.20 per unit and ordering cost is RM2. Solve for the optimum number of units per order for the company, by showing the total cost incurred.

(7 marks)

Q4 (a) Aggregate planning is the intermediate range planning that determines the best way to meet forecasted demand while minimizing cost over the planning period. Aggregate planning strategies comprise of five capacity options and three demand options. Explain **THREE (3)** capacity options available.

(6 marks)

(b) A manufacturer of roofing supplies has developed monthly forecasts for a family of products. Data for the 6 months period from July to December are presented in **Table Q4 (b)**. The firm would like to begin development of an aggregate planning by maintaining a constant workforce at a level necessary to meet the lowest demand, then to meet demand above this level, subcontracting applies. Illustrate daily demand for the product in a graph, then analyze the total cost incurred if this strategy is used.

Table Q4 (b)

Month	Expected demand [unit]	Production days [day]
July	900	22
August	600	18
September	800	21
October	1,100	21
November	1,400	22
December	900	20
Inventory carrying cost: RM5/unit/month Subcontracting cost: RM10/unit Average pay rate: RM5/hour (RM40/day) Overtime pay rate: RM7/hour (above 8 hours per day) Labour-hour: 1.6hours/unit		

(12 marks)

(c) Briefly define disaggregation with example.

(2 marks)

Q5 (a) Material Requirements Planning (MRP) is one type of short-term planning that involves scheduling techniques to arrange short-range activities. Give **TWO (2)** elements, which their data is required in constructing MRP.

(4 marks)

(b) The demand for subassembly S is 100 unit. Each unit of S requires 1 unit of T and 2 units 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 make Y, and 1 week to make Z.

(i) Construct a time-phased product structure for subassembly S;

(8 marks)

(ii) develop the gross material requirements plan for subassembly S

(8 marks)

- END OF QUESTIONS –