Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2017/2018

COURSE NAME	:	PRODUCTION AND OPERATIONS MANAGEMENT
COURSE CODE	:	BPB 31103
PROGRAMME CODE	:	BPA
EXAMINATION DATE	:	DECEMBER 2017 / JANUARY 2018
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1   (a)   State **TWO (2)** functions of inventory in a manufacturing company.

(4 marks)

(b)   The Utara Bicycle shop operates 350 days a year, closing during seasonal seasons. The shop pays RM300 for a particular bicycle purchased from the manufacturer. The annual holding cost per bicycle is estimated to be 25% of the dollar value of inventory. The shop sells an average of 4 bikes per day. The ordering cost for each order is RM250.

(i)   Calculate the optimal order quantity.

(5 marks)

(ii)   Calculate the total minimum cost.

(5 marks)

(c)   Teguh Jaya Sdn. Bhd. is a small manufacturing firm in Batu Pahat. The maintenance department for the firm has responsibility for maintaining an inventory of spare parts for the machinery it services. The parts inventory, unit cost, and annual usage are tabulated in **Table Q1(c)**.

Table Q1(c): Inventory spare parts at Teguh Jaya Sdn. Bhd.

Part	Annual Usage	Unit Cost (RM)
A101	5,000	1.50
B115	1,500	8.00
N210	10,000	10.50
F312	6,000	2.00
S128	7,500	0.50
T532	6,000	13.60
V899	5,000	0.75
J771	4,500	1.25
A443	7,000	2.50
P116	3,000	2.00

Develop an ABC classification system for the spare parts.

(6 marks)

Q2   (a)   Discuss the **EIGHT (8)** steps that should be used to develop a forecasting system.

(4 marks)

(b)   Define the use of tracking signals.

(2 marks)

(c)   Explain correlation coefficient.

(2 marks)

(d)   Boxmix Furniture Company tries to forecast the value of its production output on money spent on maintenance of it machines and upgrading its facility. The data collected for production output in terms of ringgit generated and the money spent on maintenance and facility is summarized in **Table Q2(d)**.

Table Q2(d): Production output on money spent on maintenance

X	Production Outputs (RM)	42	6	35	1	3	8	4	5	1	2
Y	Maintenance and upgrading expenses (RM)	750	150	701	41	97	167	110	254	51	90
X	Production Outputs (RM)	9	2	6	25	14	2	17	7	13	32
Y	Maintenance and upgrading expenses (RM)	191	92	142	377	197	63	265	92	232	548

(i)   Calculate the value of production output using linear regression analysis for next year if the company decides to budget RM150,000 in maintenance of it machines and upgrading its facility.

(4 marks)

If the company now wants to find out how closely production outputs are related to the money spent on maintenance of its machines and upgrading of its facility.

(ii)   Calculate the coefficient of correlation for the data given in **Table Q2(d)**.

(4 marks)

(iii)   Comment on the degree of the linear relationship.

(2 marks)

(iv)   Determine what happen, if the correlation coefficient was the same but negative.

(2 marks)

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Q3 (a) Explain **THREE (3)** importance criterias in scheduling.

(3 marks)

(b) Explain why service systems differ from scheduling in manufacturing systems.

(2 marks)

(c) The Chantek Sdn. Bhd. produces custom scarfs. The company has five jobs on order, as shown in the following **Table Q3(c)**. Today is day 142, and none of the jobs have been started or scheduled.

Table Q3(c): Job Data

Job	Date Job Received (days)	Processing Time (days)	Due date (days)
A	122	10	175
B	130	18	210
C	120	30	200
D	125	16	230
E	110	20	180

(i) State the sequence of job using Short Processing Time (SPT) rule.

(1 mark)

(ii) Determine the schedule table by using First Come First Serve (FCFS) rule.

(10 marks)

(iii) Calculate the average flow time and the average job lateness.

(4 marks)

Q4 (a) (i) Elaborate the relationship of quality to lean.

(5 marks)

(iii) Differentiate between kaizen and kaizen events.

(5 marks)

(b) Fugisu Sdn. Bhd. is moving to kanbans to support its car relay assembly lines. The data collected for computation of kanban are as follows:

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Set-up cost = RM30.00
Annual holding cost = RM120 per subassembly
Daily production = 20 subassemblies
Annual usage =2,500 (50 weeks x 5 days each x daily usage of 10 subassemblies)
Lead time = 16 days
Safety Stock = 4 days' production of subassemblies.

(i) Determine the size of the kanban for the subassemblies.

(5 marks)

(ii) Determine the number of kanbans needed.

(5 marks)

Q5 In the competitive environment, manufacturing companies need to find ways to improve their performance even better by ensuring that all key drivers are being developed and utilized effectively. Obsolete technologies, limited skilled employees, and low integration level among partners in the food supply chain cause challenges for manufacturers. As competition becomes more intensified, it is inevitable for company to increase competitive advantages, business performance, and satisfy customers' expectations in enabling increasing sustainable competitive advantages and making company becomes different from competitors in the competitive business environment.

(a) Identify **FOUR (4)** types of strategic operations decision areas that should be included of a food manufacturing company operating in this environment.

(4 marks)

(b) Determine **FOUR (4)** strategic performance objectives you would use in running the operations based on competitive strategy.

(4 marks)

(c) Illustrate in an operation strategy matrix, how the company relates its competitive strategy to its operations strategy.

(8 marks)

(d) Explain what the formulation process in **Q5(c)** is trying to achieve to derive its planned operation outcomes.

(4 marks)

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- END OF QUESTIONS –