



University of Kelaniya - Sri Lanka

Centre for Distance and Continuing Education

Faculty of Commerce & Management Studies

Bachelor of Business Management (General) Degree Third Examination (External) – 2019

September - 2023

BMGTE 3045 -- Operational Management

No of questions : 07 (Seven)

Time: 03 Hours

Answer any Five (05) questions.

Question No. 01

- a) "The operations function is that part of every business organization that produces products and/or delivers services". Elaborate this statement.
(05 marks)
- b) Explain the major contribution given by F.W. Taylor to operations management.
(05 marks)
- c) Describe the nature of the operations manager's job?
(05 marks)
- d) Briefly explain each of the following terms related to the historical evolution of operation management.
- i. Industrial revolution
 - ii. Scientific management

(05 marks)

(Total 20 marks)

Question No. 02

- a) Explain the major components of operations systems in operations management. (05 marks)
- b) i) Draw systems view diagrams for any service and manufacturing organization you choose. (05 marks)
- ii) Identify and name the various components of drawn diagrams. (05 marks)
- iii) Describe the conversion processes of the systems that you have drawn. (05 marks)
- (Total 20 marks)**

Question No. 03

- a) Explain why capacity planning is important to a business. (05 marks)
- b) The Aitkan Company has determined that it needs to expand in order to accommodate a growing demand for its laptop computers.

The decision has come down to either expanding now with a large facility, incurring additional costs, or expanding in small, knowing that management will need to reconsider the question in three years. However, a large facility will cost the company Rs. 500 000 while a small facility will cost Rs.100 000.

Management has estimated the following chances for demand:

- The likelihood of demand being high is 0.70.
- The likelihood of demand being low is 0.30.

Annually profits for each alternative have been estimated as follows:

- Large expansion has estimated profitability of either Rs. 100,000 (high demand) or Rs. 60,000 (low demand), depending on whether demand is high or low.
- Small expansion has a profitability of Rs. 50,000, assuming that demand is low.
- Small expansion with an occurrence of high demand would require considering whether to expand further. If the company expands at that point, the profitability would be expected to be Rs.70,000 if demand is high. The profitability is expected to be Rs.5,000 at low demand.

Based on the above information, you are required to,

- (i) Draw a decision tree showing the decisions, chance events, and their probabilities, as well as the profitability of outcomes.

(10 marks)

- (ii) Using the decision tree state what Aitkan company should decide.

(05 marks)

(Total 20 marks)

Question No. 04

- a) Explain the four types of layouts and their characteristics.

(05 marks)

- b) A dress-making operation is designed as an assembly line in a certain company. The following shows the tasks that need to be performed, their task times, and preceding tasks. If the company's objective is to produce 30 dresses per hour, answer the questions given below that follow the table.

Drass making Tasks Information.

Work element	Immediate Predecessor	Task Time(second)
A- Cut dress body	None	30
B- Cut sleeves	None	40
C- Cut Collar	None	20
D- Sew dress body	A	100
E- Sew sleeves to dress	B, D	25
F- Sew collar to dress	C, D	50
G- Hem dress	D, E, F	50
H- Package dress	G	90

(i) Construct an activity diagram (network) for the tasks.

(03 marks)

(ii) Compute the cycle time.

(03 marks)

(iii) Compute the theoretical minimum number of stations.

(03 marks)

(iv) Assign work elements to stations.

(03 marks)

(v) Compute the efficiency of the assembly line.

(03 marks)

(Total 20 marks)

Question No. 05

a) Explain why it is important to measure forecast errors.

(05 marks)

b) Explain some factors to consider when selecting a forecasting model.

(05 marks)

- c) Beauty is a cosmetics company that uses exponential smoothing with trends to forecast monthly sales of its special face cream. At the end of September, the company wants to forecast sales for October. The trend through August has been 10 additional boxes sold per month. Average sales have been 60 boxes per month. The demand for September was 68 boxes. The company uses $\alpha = 0.20$ and $\beta = 0.10$. Make a forecast including trends for the month of October.

(10 marks)

(Total 20 marks)

Question No. 06

- a) Describe the steps used to make facility location decisions. (05 marks)
- b) Describe five factors that should be considered in the facility location decision. (05 marks)
- c) Explain the consequences of poor facility location decisions for a business. (05 marks)
- d) State three advantages and disadvantages of globalization and describe how these affect the facility location decisions. (05 marks)

(Total 20 marks)

Question No. 07

- a) Define the term "work measurement" and indicate the steps in the process of work measurement.

(05 marks)

- b) The following information was the times recorded for each element in minutes for trials of a particular job.

Element	Cycle observed timings (in minutes)					Performance Rating
	1	2	3	4	5	
A	5	6	7	4	5	90
B	6	6	8	5	5	110
C	7	7	7	6	6	100
D	7	7	8	6	7	120

Time allowances for an eight-hour shift are;

Personal need time 30 minutes

Unavoidable delay 12 minutes

Fatigue allowance 5%

The operator, who is paid on a straight rate, receives Rs. 500 per hour. Material costs are Rs.25 per unit. Overhead costs are 20% of the total direct labour and material costs. You are required to determine the following.

- (i) The standard time per 8 hours shift. (05 marks)
- (ii) The number of units each operator produces per 8-hour shift. (05 marks)
- (iii) The production cost per unit. (05 marks)

(Total 20 marks)