



UNIVERSITY OF COLOMBO, SRI LANKA

FACULTY OF MANAGEMENT AND FINANCE

Master of Business Administration in International Business (Trimester II) Examination –

June, 2016

MBAIB 5105 Operations and Quality Management

Three (03) Hours

Answer Five (05) Questions in all selecting at least Two (02) Questions from Part I and Part II

Answers for Part I and Part II should be provided in separate booklets

Use of Calculators is Permitted

Part I

1. 'Operations function of a business organisation is to make sure the production and delivery of its product or service in a way quality is assured with cost efficiencies.'

i. Explain the meaning of quality from customer and producer's perspective.

(02 Marks)

ii. Argue on the statement that quality is free.

(02 Marks)

iii. Explain how quality management function can contribute to the survival and sustainable growth of a business organisation engaged in international business.

(16 Marks)

(Total 20 marks)

2. 'Competitive product design is fundamental for international business.'

i. Differentiate between product and service design.

(03 Marks)

ii. Explain the importance of 'concurrent engineering' in the context of international business.

(03 Marks)

iii. What are the aspects of product designing that can bring cost efficiencies?

(04 Marks)

iv. Suppose you are contemplating on launching a 'herbal drink' in the international market. Suggest any possible technique to be used for this purpose and explain it with a hypothetical example.

(10 Marks)

(Total 20 marks)

3. "Quality management intentions can best be achieved through better human relations."

i. Argue on this statement referring to TQM conception.

(05 Marks)

ii. Identify any five directions that can be obtained from 'Deming's 14 points' for maintaining better human relations.

(10 Marks)

iii. Explain the meaning of 'six sigma quality management'.

(05 Marks)

(Total 20 marks)

- 'Lean management is to maintain minimum cost without affecting intended quality performance.'

i. Explain the meaning of the term 'lean' used in this effort.

(05 Marks)

ii. Where the attention of lean is directed at in order to minimize cost.

(05 Marks)

iii. Explain any Five (05) types of wastes that may be focused on in lean management exercises.

(05 Marks)

iv. Discuss the importance of the idea "Just-In-Time (JIT)" in the effort of lean management.

(05 Marks)

(Total 20 marks)

Part II

5. i. Suppose the University of Colombo is planning to develop a new student center and athletic complex with a bookstore, theaters, meeting areas, pool, gymnasium, and weight and exercise rooms. Identify three potential sites in the campus for this facility and rank them according to location factors that you consider.

(05 Marks)

ii. What type of layout(s) would be appropriate for:

- a. A grocery store
- b. Home construction
- c. Electronic assembly
- d. A university

(04 Marks)

iii. The following tasks are necessary to be performed for final assembly of a wheel chair. The length of time needed to perform each task, and the operations that must be completed prior to subsequent operations are given in the table below.

Task	Task Time / (Min)	Precedence
A	4	None
B	5	None
C	8	None
D	4	A
E	3	A, B
F	3	B
G	5	D, E
H	7	F
I	1	G, H
J	7	I
K	4	C, J

- a. Construct the precedence diagram. (03 Marks)

 - b. Balance the line using a technique for a desired cycle time of 14 minutes. Clearly indicate the technique used to balance the line. (04 Marks)

 - c. Draw the schematic diagram of the balanced line. (02 Marks)

 - d. How many wheel chairs can actually be assembled in an eight-hour period? (02 Marks)
- (Total 20 marks)**

6. i. In general when using time series methods, the starting forecast is always assumed to be the same as actual demand in the first period. Suggest other ways that the starting forecast might be derived in actual use.

(03 Marks)

ii. The XYZ Company is a catalogue sales operation that specializes in outdoor recreational clothing. Demand for its items is very seasonal, peaking during the holiday season and during the spring. It has accumulated the following data for order per "season" (quarter) during the past five years:

Quarters	Orders in 1000s				
	2011	2012	2013	2014	2015
Q1	10	15	10	5	10
Q2	15	25	20	15	25
Q3	5	10	5	10	15
Q4	20	15	25	20	30

The formula for a liner trend line is defined as $y = mx + c$;

Where gradient;

$$m = \frac{\sum xy - n\bar{x}\bar{y}}{\sum x^2 - n(\bar{x})^2} \text{ and } c = \bar{y} - m\bar{x}$$

a. Find the linear trend line which best represent this data. Develop a seasonally adjusted forecast model. Forecast demand for each quarter for 2016.

(06 Marks)

b. Develop a separate linear trend line and forecast the demand for quarter 1 of 2016.

(05 Marks)

- c. Which of the two approaches used in parts (a) and (b) appear to be the most accurate when calculating forecast for quarter 1 of year 2016? Use absolute error to justify your selection.

(03 Marks)

- iii. Discuss the advantages and disadvantages (two each) of using part-time workers, subcontracting work, and building up inventory as strategies for meeting demand in Aggregate Planning.

(03 Marks)

(Total 20 marks)

7. i. Explain with an example the difference between dependent and independent demand.

(03 Marks)

- ii. Finished product M is assembled from two units of sub assembly S1 and three units of sub assembly S2. S1 is made of one unit of component C1, four units of component C2, and one unit of component C3. S2 is made of three units of C2 and two units of C3.

- a. Draw a product structure diagram for product M.

(02 Marks)

- b. How many C3's are needed to fill an order for 100 M's?

(03 Marks)

- c. Assume no inventory on hand, products take one day to assemble, subassemblies take two days and components take three days. When should an order be released for C3 if the 100 M's are needed by day 7?

(04 Marks)

- iii. Provide very specific answers for the below questions:

- a. Compare situations before and after ERP in a manufacturing organization in relation to delivery of an order.

(02 Marks)

b. What do you understand by 'Parallel processing' in an ERP system?

(02 Marks)

c. Briefly discuss the challenges faced in implementing an ERP system to an organization.

(04 Marks)

(Total 20 marks)

8. i. What is Distribution Requirement Planning (DRP)?

(02 Marks)

ii. Discuss steps involved in implementing supply chain practices in a manufacturing organization.

(08 Marks)

iii. ABC Bicycle (Pvt) Ltd. has a central warehouse, which operates, at a location far from the assembly plant. The bicycles are distributed from the central warehouse to regional warehouses. The central warehouse currently has 950 bicycles of type X and a safety stock of 150 is to be strictly maintained to cater demand uncertainty. The distribution lead-time has been estimated as 2 months. A container full load could accommodate 200 bicycles and therefore the firm expects at least a minimum order size of 200 units. However, the warehouse can order more than the minimum order quantity but each lot size must satisfy the full container load. The data gathered from a number of distribution points have been tabulated as a total gross requirement for the bicycle as follows.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Bicycle of Type X	150	260	580	375	270	350	300	120

Note that due to a loss in demand of the bicycle since August, the distribution manager has decided to reduce the safety stock to 75 units starting from July. Based on the above information, derive a plan to manage the demand for bicycles.

(10 Marks)

(Total 20 Marks)