



UNIVERSITY OF RUHUNA

FACULTY OF GRADUATE STUDIES

Master of Business Management Degree Programme Semester II Examination

(August 2020)

MBM 12093 - OPERATIONS AND LOGISTICS MANAGEMENT

Duration: Three hours

The question paper consists of seven (07) questions.

Answer for five (05) questions only.

Other Instructions:

- Non-programmable calculators are permitted.
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01.

- i. Explain the importance of identifying and differentiating competitive priorities and competitive capabilities.

(06 marks)

- ii. Mayuru hotel prepared and served 350 meals at a birthday celebration last week using seven workers. The week before, six workers prepared and served 330 meals at a wedding reception.

- a. Compare labor productivities of the above two situations.

(02 marks)

- b. Discuss two possible reasons for the productivity differences.

(04 marks)

(Total 12 marks)

02.

- i. Critically evaluate the Economic Order Quantity (EOQ) as an inventory controlling technique.

(06 Marks)

- ii. The production department of the Yasas and Company requires 7,200 Kg of raw materials to manufacture the product "A" per annum. The department has estimated that cost of placing an order is Rs. 72.00 and cost of carrying inventory is 50% of the unit cost of raw material. One unit of raw material is estimated to cost as Rs. 20.00. As per the prior experience, Production Manager estimated that it will take around 10 days to complete an order by the material supplier. The Yasas and Company operates 250 days per year.

You are required to calculate the following.

- a. Optimal Lot Size.

(02 Marks)

- b. Re-ordering Point.

(02 Marks)

- c. Total Annual Inventory Cost.

(02 Marks)

(Total 12 marks)

03.

- i. Briefly explain the usability of seasonal adjustment technique as a method of sales forecasting.

(04 marks)

- ii. Following sales information is extracted from the books of Lahiru and Company.

Year	Quarter sales				Total
	Q1	Q2	Q3	Q4	
2017	250	270	240	230	990
2018	420	430	440	450	1740
2019	510	570	520	550	2150
Total	1180	1270	1200	1230	4880

You are required to,

- a. Compute the linear trend line. (04 Marks)
 - b. Forecast sales for the year of 2020. (02 Marks)
 - c. Forecast sales for each quarter in the year of 2020. (02 Marks)
- (Total 12 marks)

04.

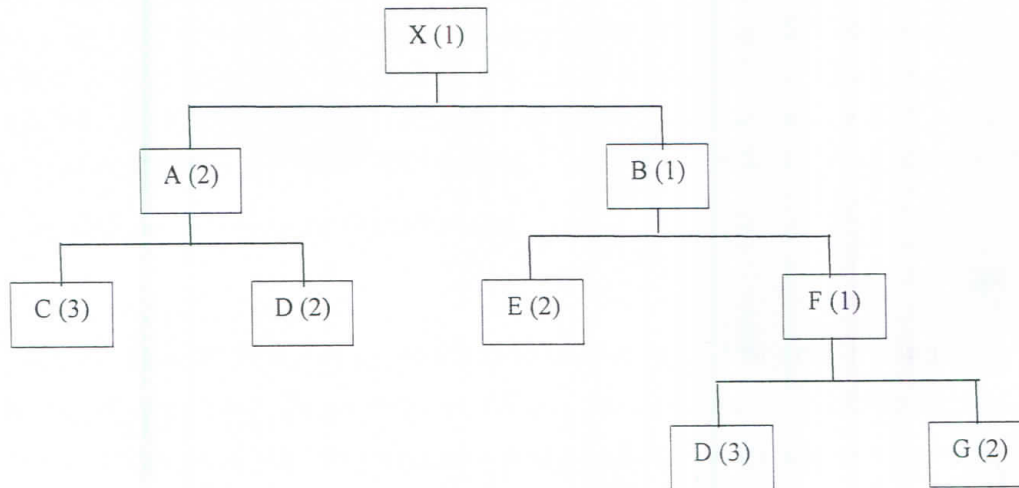
A company is considering the problem of distributing products from three factories (A, B, and C) to three distribution centres (L, M, and N). Monthly supply capacities, demand requirement of distribution centres, and unit transportation costs (in rupees) are shown in the following table.

From \ To	L	M	N	Supply
A	5	2	3	900
B	8	3	8	400
C	11	6	8	850
Demand	800	700	650	

- i. Determine an initial solution using North West corner rule. (02 marks)
 - ii. Calculate total transportation cost of initial solution. (02 marks)
 - iii. Recommend a transportation plan which will minimize total transportation cost (an optimal solution) for the company. (08 marks)
- (Total 12 marks)

05.

Given the product structure of product X, master production schedule, inventory status, and lead time, develop a **Material Requirement Plan (MRP)** for the planning horizon of 11 periods using lot for lot rule.



(The numbers within bracket represents quantities per assembly)

Period	1	2	3	4	5	6	7	8	9	10	11
Master production schedule (X)									125		150

Inventory status and lead times

Item	On hand	Lead time (days)
X	25	2
A	75	3
B	60	1
C	40	2
D	-	1
E	100	3
F	25	2
G	45	3

(Total 12 marks)



06.

- i. Discuss three (03) economic impacts of supply chain management.

(06 Marks)

- ii. "Information is one of the key drivers in a Supply Chain". Explain the role of information to manage a successful Supply Chain.

(06 Marks)

(Total 12 Marks)

07.

- i. Briefly explain the role of "Logistics Management" in organizational success.

(04 Marks)

- ii. Suggest a logistic plan for a newly established Yoghurt manufacturing firm (Explain the necessity of each logistic that you propose in your plan for attaining organizational goals and objectives).

(08 Marks)

(Total 12 Marks)

List of formulae

i. $b = \frac{\sum xy - n\bar{x}\bar{y}}{\sum x^2 - n\bar{x}^2}$

ii. $a = \bar{y} - b\bar{x}$

iii. $EOQ = \sqrt{\frac{2DS}{H}}$

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