



**UNIVERSITY OF RUHUNA**  
FACULTY OF MANAGEMENT AND FINANCE

No of Pages: 04  
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Total Marks 70

**BBA 2201 – Operations Management**

**BACHELOR OF BUSINESS ADMINISTRATION DEGREE 2000 LEVEL**

**SECOND SEMESTER END EXAMINATION – JUNE 2015**

*Three Hours*

**Instructions.**

- Answer **all** the questions.
- Calculators are allowed.

01. P & S wishes to locate a new plant for baking cakes to serve its three outlets currently located in Matara area. Each outlet has different sales volumes. The coordinates for the locations and the monthly cake sales (Wt) of the three outlets are shown below.

	<b>A</b>	<b>B</b>	<b>C</b>
X	150	300	400
Y	250	100	500
Wt	140	110	170

Using the **Centre of gravity** method, find and graphically present the most suitable place for the new plant.

**(05 marks)**

02. As a work study officer at a garment manufacturing firm, you have been assigned to determine the standard times for different jobs in the production floor. You have selected a sewing machine operator for your study and she has completed 30 units of a garment product in a working shift consisted with 8 hours. You noticed that your observations made the employee nervous and that she worked about 10% faster than the normal speed. An allowance of 20% of the standard time is allocated for personal needs and other delays.

Determine the normal time and the standard time for completing one unit of the above product.

**(05 marks)**

03. A company uses Material Requirement Planning (MRP) technique and following information regarding item X is provided to you.

Weekly data for the next month

Period	1	2	3	4	5
Gross requirement (units)	30	50	20	10	40

Ordering cost = Rs.600 per order

Carrying cost = Rs.10 per unit per week

Beginning inventory = 30 units

Lead time = one week

Estimated EOQ level = 60 units

You are asked to determine the most economical lot sizing technique for item X among Lot for Lot (L4L) and Economic Order Quantity (EOQ) techniques.

(10 marks)

04. A winter jackets producer, experiences a seasonal demand pattern, with peaks during the winter. Following table exhibits the sales forecasts for the four seasons.

Season	Forecasted Sales (Number of winter jackets)
Spring	80,000
Summer	50,000
Fall	120,000
Winter	150,000

The beginning workforce is 100 workers and the production capacity per employee is estimated as 1000 winter jackets.

Based on the following costs, determine whether the **level production** or **chase demand strategy** would be more economically meet the forecasted demand for the winter jackets.

Hiring cost = \$ 100 per worker

Firing cost = \$ 500 per worker

Inventory carrying cost = \$ 0.5 per winter jacket per season

Production cost per winter jacket = \$ 2

**(10 marks)**

05. A company is planning to expand its production volume and it has identified three possible alternative processing technologies for enhancing its production capacity.

The cost figures relevant for the three alternatives are given below.

	Alternative		
	1	2	3
Annual fixed cost (Rs)	580,000	1,130,000	2,500,000
Variable cost per unit (Rs)	1,890	1,750	1,680

- i. Using **Break Even analysis (BE)** determine the BE points for alternatives 1 and 2 and for alternatives 2 and 3. Plot the total cost curves and the BE points for the alternatives in a graph.
- ii. What is the most economical alternative for the company if it wishes to produce a volume of 15,000 units?
- iii. At what volume would each of the alternatives be preferred?

**(10 marks)**

06. Describe **three** of the following statements.

- i. A supply chain is an integrated group of processes.
- ii. The type of forecasting method to use depends on several factors.
- iii. Quality can be defined by two perspectives.
- iv. An ergonomically designed job should fulfill four major objectives.

(15 marks)

07. Suppose you are assisting your operations manager to schedule the customer orders. You have to schedule five customer orders (jobs) for processing on one particular machine. The order of arrival, processing time and due dates are as follows.

Job (according to the order of arrival)	Processing time (days)	Due on
A	4	5
B	7	13
C	3	10
D	1	4
E	2	6

Sequence the jobs using First Comes - First Served (**FCFS**), Earliest Due Date (**DDATE**) and Smallest Processing Time (**SPT**) sequencing rules.

(15 marks)

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