



CII Institute of Logistics
PGDSCM & Certificate Programs
Semester-end Examination – June 2010

OPERATIONS MANAGEMENT I

Time : Three Hours

Marks : 100

Part A

Answer all questions

(10 x 1 = 10 Marks)

1. Which of the following is not included in Inventory Carrying cost
 - a) Capital Cost
 - b) Risk Cost
 - c) Storage Cost
 - d) Transportation cost
2. Which of the following is not a benefit of sound job design for the organization
 - a) Highly skilled work Force
 - b) Improved quality delivery
 - c) Better work focus
 - d) More career opportunities
3. Which one of the following is an example of a time series forecasting technique?
 - a) Survey Analysis
 - b) Delphi Method
 - c) Trend Adjusted Exponential smoothing
 - d) Market research
4. The goal of ABC Analysis is to
 - a) Determine the profitability of items
 - b) Estimate average volume per rupee value
 - c) Estimate rupee value per unit
 - d) To identify 'A' classification items for better control
5. Which of the following is not associated with MRP?
 - a) Time Phasing
 - b) Time Study
 - c) Time bucket
 - d) All the above
6. The assumptions of Economic Order Quantity does not include
 - a) Demand rate is known & constant
 - b) There is no limitation on lot size
 - c) Unit price decreases with increase in volume
 - d) None of the above
7. Which of the following is associated with the concept of "company wide quality"
 - a) Quality control
 - b) Total Quality Measurement
 - c) Quality Assurance
 - d) Total Quality Management
8. Work Measurement is also known as
 - a) Work study
 - b) Time Study
 - c) Unit of work
 - d) Work technique
9. Which of the following statements is not true ?
 - a) MRP can be used for dependant demand
 - b) EOQ can be used for independent demand
 - c) A production line is paced by the station that has the smallest cycle time.
 - d) Bill of materials is an exhaustive list of parts / components that go into production of an item

10. The number of periods during which no changes can be made to the MPS without special authorization from management is the
- Planning Time Fence
 - MPS Fence
 - Demand time Fence
 - Management Fence

Part B

Answer any four

(4x15 = 60 marks)

1. The weekly demand for cassata ice-cream at a local restaurant during the past six weeks is shown below:

Week	1	2	3	4	5	6
Demand	650	521	563	735	514	596

- Forecast demand for week 7 using five period moving average
 - Forecast the demand for week 7 using a three period weighted moving average with the following weights:
W1 = 0.5 W2 = 0.3 W3=0.2
2. Discuss the validity of a “Total Cost Minimizing “criterion for the static scheduling problems.
3. Draw a schematic MRP logic & identify inputs , processing & outputs
4. Six jobs must be processed through machine A & then B as shown below:
The processing time for each job is also shown

Job NO.	Machine A	Machine B
1	10 Minutes	6 Minutes
2	6 Minutes	12 Minutes
3	7 Minutes	7 Minutes
4	8 Minutes	4 Minutes

5	3 Minutes	9 Minutes
6	6 Minutes	8 Minutes

- Develop a Gantt Chart to determine the total time required to process all six jobs using the sequence as job numbers 1 to 6.
 - Can you develop any better sequence to reduce the total time required for processing?
5. Distinguish Job Enrichment from Job Enlargement by giving examples.
6. Contrast independent and dependant demand items for a firm. What inventory systems best manage these items?

Part C

Case Study

(3x10=30 marks)

Food King

Food King’s target market is the upscale food shopper, who has the following shopping priorities:

- Cleanliness.** The facility is clean and orderly, with items well marked and easy to find.
- Availability.** The selection of items is broad, and the customer has several choices for any one item.
- Timely Services.** The store is open at convenient times, and customers do not have to wait in long checkout lines.
- Reasonable Prices.** Although customers are willing to pay a small premium for cleanliness, availability, and good service, prices still must be competitive.

Moyer was promoted to the store manager’s position at the large, flagship Food King store in Columbia. This facility had just instituted around –the – clock hours in response to competitive pressures.

An area he has identified as a particular concern is the scheduling of stockers and baggers. The cleanliness, availability, and service time priorities put added pressure on Moyer to have the appropriate number of stocking and bagging personnel available. Maintaining a high level of cleanliness requires more stocking personnel to keep the stock orderly on the shelves and the aisles clear and swept. The availability priority requires more frequent replenishment of the shelves because the greater selection of items means less space is allocated to any one brand or item. Finally, the need for fast service requires baggers be available to assist the cashier, especially during peak shopping periods when long waits could occur if cashiers had to both bag and ring up the groceries.

Moyer Knows that he cannot solve the cleanliness, availability, and timely service issues just by adding stocking and bagging personnel to the payroll. To make a profit in a low-margin business environment, he has to control costs so that prices remain competitive. The trick is to develop a work schedule for the stocking and bagging personnel efficiently to minimize labor costs.

Moyer begins to address this problem by collecting information on existing scheduling policies and procedures along with a forecasted level of demand for personnel. The stocking and bagging positions can be filled with either full- or part- time employees. Full-time employees work 8 hours per day, 5days a week , with two consecutive days off each week. The 8-hour shifts usually are scheduled as consecutive 8-hours blocks of time; however, Moyer can schedule an employee to two 4-hours time blocks (with 4 hours off between them) within a particular day if there is a stocker and a bagger for the 4-hour period between scheduled blocks of time.

All part – time employees are scheduled in 4-hour blocks of time for up to 20 hours per week. Food king limits the number of part-time employees to 50 percent of the total number of full-time employees for each category of worker. Most of the part-time employees are utilized as baggers because they tend to be retired people who have difficulty with the heavy lifting required in stocking shelves. Food King likes to hire retired people because they are dependable, reliable, and more willing to work weekends than are teenagers. Full –time employees earn \$5.25 per hour; part –time employees earn only \$ 4.50 per hour.

For scheduling purposes, each day is divided into six 4-hour time blocks beginning with 8:00 A.M to 12:00 P.M. Demand for stocking and bagging personnel varies quite a bit within a 24-hour period. Moyer developed a forecast of personnel needs by 4-hour time blocks by analyzing customer activity data and supplier delivery schedules. The following table provides estimates of the total number of stockers and baggers required for each 4-hour block of time starting at the time indicated:

	Day						
Hour	M	T	W	Th	F	S	Su
8:00 A.M	6	8	5	5	8	15	4
12:00 P.M	6	8	5	5	10	15	6
4:00 P.M	5	6	5	5	15	15	6
8: 00 P.M	4	4	4	4	8	6	4
12:00 A.M	4	4	4	4	5	4	4
4: 00 A.M	8	4	4	8	5	4	4

The peak requirements occur during the heavy shopping periods on Friday and Saturday. More stocking personnel are required on Monday and Thursday evenings because of the large number of supplier deliveries on those days.

Moyer wants to determine the number of stocking and bagging personnel needed, the appropriate mix of full- time and part – time employees, and the work schedule for each employee. Going to a 24-hours –a – day operation certainly complicates the scheduling task. He knows that younger, full –time employees probably will be sent for the late night and early morning blocks of time. But the younger employees dislike working these hours. Somehow the schedule has to convey fairness for all.

Questions

1. Translate the four priorities and shoppers into a set of competitive priorities for operations at the Columbia Food King store.
2. Develop a schedule of full- time and part time stockers and baggers for Marty Moyer. Explain the strategy you used and the trade –offs you made to satisfy the Columbia store’s competitive priorities.
3. What measures would you take to ensure that the schedule is fair to all employees?
