

PGDM/PGDM-IB, 2018-2020

Procurement Management

DM-443/IB-419

Trimester – IV, End-Term Examination: September 2019

Time allowed: 2 Hrs 30 Min

Max Marks: 50

Roll No: \_\_\_\_\_

**Instruction:** Students are required to write Roll No on every page of the question paper, writing anything except the Roll No will be treated as **Unfair Means**. All other instructions on the reverse of Admit Card should be followed meticulously.

Sections	No. of Questions to attempt	Marks	Total Marks
A	3 (Long Questions)	10 Marks each	3*10 = 30
B	Compulsory Case Study	20	20
		<b>Total Marks</b>	<b>50</b>

Section A

**A1.** A company manufactures a line of ten items. The usage and unit cost are shown in the following table. (CILO 1)

- Calculate the annual Rupee usage for each item.
- List the items according to their total annual Rupee usage.
- Calculate the cumulative annual rupee usage
- Group the items into A, B, and C groups based on the percentage of annual Rupee usage

Part Number	Annual Usage	Unit cost (Rs.)
1	100	20
2	600	400
3	100	40
4	1300	10
5	100	600
6	10	250
7	100	20
8	1500	20
9	200	20
10	500	10

OR

**A1.** What is meant by procurement? Explain the differences between procurement, purchasing and sourcing. How has purchasing process evolved over the years? Also, briefly discuss the different type of purchases. (CILO1)

**A2.** The demand for an item over 8 periods is given. The demand is assumed to occur at the beginning of each period. Determine the optimal solution(s) by the Wagner-Whitin algorithm. (CILO 2)

Period	1	2	3	4	5	6	7	8
Demand	40	50	70	60	80	30	40	70

The holding cost is Re.1 per unit and period and the ordering cost is Rs. 100.

**OR**

**A2.** A firm that produces wood shutters and bookcases has received two orders for shutters: one for 100 shutters and one for 150 shutters. The 100-unit order is due for delivery at the start of week 4 of the current schedule, and the 150-unit order is due for delivery at the start of week 8. Each shutter consists of two frames and four wood sections. The wood sections are made by the firm, and fabrication takes one week. The frames are ordered, and lead time is two weeks. Assembly of the shutters requires one week. There is a scheduled receipt of 70 wood sections in week1. Determine the size and timing of planned-order releases necessary to meet delivery requirements under each of these conditions: **(CILO 2)**

- (i) lot-for-lot ordering
- (ii) Lot-size ordering with a lot size of 320 units for frames and 70 units for wood sections.

**A3. (a)** Why are buyer-supplier relationships important? Discuss the various types of buyer-supplier relationships **(CILO 3)** (5)

**(b)** Discuss Deming's 14 points for TQM. **(CILO 5)** (5)

**OR**

**A3.** Discuss three common supplier evaluation systems. What is meant by cross-sourcing? How it is important in procurement process? Also discuss some important costs of quality? **(CILO 3, 5)**

### Section B- Case Study

During January 2009, Tom Sosa, the purchasing manager, received a telephone call from their Columbus, Indiana, diesel engine supplier informing him that effective June, they were no longer producing the D-432 diesel engines at the Columbus plant. The D-342 engine sales were decreasing and would no longer be in their product line. Tom was in shock. He was now forced to deal with the sole supplier of the D-342 located in Portland, Oregon. The most recent price schedule submitted by the Oregon engine supplier is given below **(CILO 2, 4)**

Units per order	Unit price
Less than or equal to 100	\$ 4,800
Between 100 and 200	\$4,700
Greater than 200	\$4,550

The prices had been basically the same as the Columbus supplier except that they are F.O.B. Portland (i.e once the goods leave the supplier's shipping dock, responsibility for the goods falls on the buyer).The traffic department informed Tom that the transportation cost per hundredweight is \$10 for the carload lots of 50,000 pound. The less than carload rate is \$15 per hundredweight. The replenishment cycle normally takes one week.

#### **BACKGROUND**

Tom Sosa, the supply manager for MARS, Inc. was contemplating several significant changes in the D-342 diesel engine market. Mr. Sosa was concerned because in its production of the 98-D loader, MARS used 10 diesel engines each working day of the month. (MARS operated

on a 20-day-per-month schedule). Each engine weighs 500 pounds. Engine orders are currently placed every Monday morning. For the past 10 years the D-342 engines had been produced in only two locations in the United States, one in Columbus, Indiana, and the other in Portland, Oregon. Mr. Sosa felt fortunate that the Columbus producer was located approximately 30 miles from his facility. The Columbus supplier offered just-in-time delivery services at no charges to MARS.

MARS implemented lean manufacturing in 2002. The kanban controlled JIT production system was implemented based on the premise of minimizing work-in-process- inventories by reducing lot sizes in order to increase production efficiency and product quality

Mr. Sosa compiled cost and warehouse capacity data on the D-342 engine from the accounting department. See table below.

Cost of unloading engines into warehouse	\$0.25(per hundredweight)
Order processing cost per requisition	\$100
Warehouse Capacity	200 Units
Outside warehouse cost	\$39 per year per unit*
Expediting cost per requisition	\$50
Inventory carrying cost	38%

\* There is existing space in the warehouse for 200 units. Additional space must be leased for a year. If an order is more than 200 units, part of the order must be stored in leased space

- i. What were MARS's total cost per year prior to the new price structure when the diesel engine price was \$4,800? Was MARS using the EOQ method?
- ii. With volume discount and the warehouse constraints, what is the best ordering quantity?
- iii. With purchase discounts and different rates, how are costs and EOQs affected?
- iv. How will these changes impact the lean manufacturing philosophy at MARS?
- v. Determine the cost impact of using the Portland supplier. How will the change in supplier for the D-342 diesel engine affect the sales for 98-D loader?