

**JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA**  
**PGDM / PGDM (M) / PGDM (SM)**  
**FOURTH TRIMESTER (Batch 2017-19)**  
**END TERM EXAMINATIONS, OCTOBER 2018**

Course Name	Supply Chain Management	Course Code	OM-401
Max. Time	2 hours	Max. Marks	40 MM

**INSTRUCTIONS:**

- 1) What are some ways in which a firm such as Walmart benefits from good sourcing decisions? **(4 Marks)**
- 2) Define supply chain management? Classify, name, and briefly explain each of the supply chain driver. Use a pictorial representation for the classification of drivers. What is Bullwhip effect? **(8 Marks)**
- 3) An electronics company has two contract manufacturers in Asia. Foxconn assembles its tablets and smart phones while Flextronics assembles its laptops. Monthly demand for tablets and smartphones is 10,000 units while that for laptops is 4,000. Tablets cost the company \$100 while laptops cost \$400 and the company has a holding cost of 25 percent. Currently the company has to place separate orders with Foxconn and Flextronics and receives separate shipments. The fixed cost of each shipment is \$10,000. What is the optimal order size and order frequency with each of Foxconn and Flextronics?  
The company is thinking of combining all assembly with the same contract manufacturer. This will allow for a single shipment of all products from Asia. If the fixed cost of each shipment remains \$10,000:
  - a) What is the optimal order frequency and order size from the combined orders? **(5 Marks)**
  - b) How much reduction in cycle inventory can the company expect as a result of combining orders and shipments? **(3 Marks)**
- 4) a). What information do the MSE, MAD, and MAPE provide to a manager? How can the manager use this information? **(4 Marks)**  
b). Weekly demand figures at Hot Pizza are as follows: **(6 Marks)**

Week	1	2	3	4	5	6	7	8	9	10	11	12
Demand	108	116	118	124	96	119	96	102	112	102	92	91

Estimate demand for the next 4 weeks using a simple exponential smoothing with  $\alpha = 0.1$ . Evaluate the MAD, MAPE, MSE and bias in each case.

- 5) a). Draw the different network design options for distribution of products to customers with suitable examples. **(4 Marks)**  
b) Formulate objective function and define constraints for the following problem. **(6 Marks)**  
Daikin., is a manufacturer of air conditioners that has seen its demand grow significantly. The company anticipates nationwide demand for the next year to be 180,000 units in the South, 120,000 units in the Midwest, 110,000 units in the East, and 100,000 units in the West. Managers at Daikin are designing the manufacturing network and have selected four potential Sites-New Delhi, Kolkatta, Chennai, and Gujarat. Plants could have a capacity of either

200,000 or 400,000 units. The annual fixed costs at the four locations are shown in the attached table, along with the cost of producing and shipping an air conditioner to each of the four markets. **Where** should Daikin build its factories and **how large** should they be?

	New Delhi	Kolkata	Chennai	Gujarat	
Annual fixed cost of 200K plant	6	5.5	5.6	6.1	
Annual fixed cost of 400K plant	10	9.2	9.3	10.2	
Capacity 20,000 plant	200000	200000	200000	200000	<b>Demand</b>
Capacity 40,000 plant	400000	400000	400000	400000	
	<b>Production and Transportation Cost</b>				
<b>East</b>	211	232	238	299	110000
<b>South</b>	232	212	230	280	180000
<b>Midwest</b>	240	230	215	270	120000
<b>West</b>	300	280	270	225	100000