NORTHEASTERN UNIVERSITY

Department of Mechanical and Industrial Engineering

Supply Chain Engineering **Prof. Gupta**

IE 7200 **Spring 2014 (Mondays)**

Homework No. 1

(Due: January 27, 2014)

Question 1. What is a supply chain?

Question 2. What is the objective of a supply chain?

Question 3. What are the three key supply chain decision phases and their significances?

Question 4. What are the cycle and push/pull views of a supply chain?

Question 5. How can supply chain macro processes be classified?

Question 6. Why is achieving strategic fit critical to a company's overall success?

Question 7. How does a company achieve strategic fit between its supply chain strategy and its competitive strategy?

Question 8. What are the major drivers of supply chain performance?

Question 9. What is the role of each driver in creating strategic fit between supply chain strategy and competitive strategy?

Question 10. What are the major obstacles to achieving strategic fit?

Problem 11. Use a 3-month moving average and a 5-month moving average to forecast demand for the fist 6 months of year 2 for the following data:

Year	Month	Demand (units)
1	Jan	100
	Feb	120
	Mar	140
	Apr	160
	May	155
	Jun	150
	Jul	145
	Aug	140
	Sep	135
	Oct	145
	Nov	160
	Dec	200
2	Jan	210
	Feb	230
	Mar	250

Problem 12. Consider a noise-free constant-model set of data, $D_t = 10$ for $t = 1, 2, 3,.....,8$. Suppose first-order single exponential smoothing is used to forecast with an initial condition of $F_1 = 5$. Show that a high α value will damp out initial errors more quickly than a low α. Use α values of 0.1 and 0.6 to show this.