E1 234 SUPPLY CHAIN MANAGEMENT : Problem Set 5

1. Case Study of IBM Solution for paper Industry:

(a) Describe precisely the role of the constructir, destroyer, and improver agents with respect to this case study.
(b) How does the approach provide a globally optimal, enterprise wide solution when in fact, four separate problems (order allocation, run formation and sequencing, optimal trimming, and optimal loading) are beiing solved?
(c) With respect to the order allocation LP, answer the following:
(i) The variables P(jb), inv(jb), backlog(jb), and u(j) can be eliminated from the formulation. State whether true or false and justify.
(ii) Does this formulation take into account possible tradeoffs involved in transportation costs? Justify.
(iii) Does this LP produce solutions which split a customer order across paper mills or machines? Why?

2 Case Study of Shri Shakti Gas

(a). The location modeling did not consider the ports and the end customers (including domestic and commercial) locations as decision variables. Justify.
(b) What logistic alternatives were available to SSLPG? Why were they ruled out?
(c) How was the potential turnover of SSLPG estimated to be about US$ 50m?
(d) How did the tax holidays offerred by the various State Governments affect the model? Does it impact the computation time?
(e) List the cost components of c_{ijk} used in the model.
(f) Briefly sketch how the sales potential was estimated for SSLPG at the dealer outlets. Is there an alternative to the method used in forecasting the demand? Why was that not chosen?
(g) Explain the logic used in arriving at a "Cam" shaped delivery region around each bottling plant. How can this be incorporated into the model solution?
(h) The coupling between a dealer town and the plant serving it was achieved by the constraint $x_{ijk} <= y_{ik}$. Provide an alternative way of coupling. Why do you think the first method is superior to your's (vice-versa)?

3. Write down the Internet technologies/IT areas championed by the following companies towards excellence in their E-business and supply chain operations.

(a) Dell (b) Cisco (c) Amazon (d) Fedex (e) Ariba (f) Chemdex (g) paperexchange (h) Boeing (i) walmart (j) office depot

4. Questions on Kasbah E-market place

(a) Is it possible that the following anamolies can happen in Kasbah. Justify.
(i) A buyer finalizes a deal with a seller who is selling at a price higher than some other sellers of the same product
(ii) a seller finalizes a deal with a buyer eventhough the buyer is offering less than certain other buyers

(b) Write down for ecah object below, about four "methods" that the object should support: (i) buyer agent object (ii) seller agent object (iii) marketplace object

(c) Suggest a "compelling" situation in supply chain context where the Kasbah marketplace can be used to good effect.

5. Questions on MARI marketplace

(a) Is it necessary in MARI that the flexible attributes of a buyer should be fixed attributes of prospective sellers? Is it necessary that the fixed attributes of a buyer be flexible attributes of prospective sellers?

(b) Describe a compelling situation in supply chain context where the MARI marketplace can be used to good effect.

(c) Does MARI become Kasbah when there is only attribute, namely a fixed attribute called price?

(d) Comment on the way MARI automatically computes the relative weights for the flexible attributes. Can it be improved.

6. ERP first or supply chain first? Provide arguments to show that either can lead to problems and therefore the best way is to interleave between ERP and supply chain issues while attempting to IT-enabling an industry.