Please state all your assumptions and show all your work. Define your decision variables clearly. Briefly explain your constraints and objective functions. Define all units of measure (e.g., hours, $, $/hour, etc.) Explain what software package you used (e.g., LINDO, LINGO, EXCEL solver, etc.)For EXCEL solver, be sure to give a separate statement of the formulation /input.. Use an equation editor for the equations. If you cannot get one, then use subscripts to indicate indexing. Graphs should be detailed and easy to read.

Question 4

Lawson's department store faces a buying decision for a seasonal product for which demand can be high, medium, or low. The purchaser for Lawson's can order 1, 2, or 3 lots of the product before the season begins but cannot reorder later. Profit projections (in thousands of dollars) are shown.

	State of Nature		
	High Demand	**Medium Demand**	**Low Demand**
Decision Alternatives	s_1	s_2	s_3
Order 1 lot, d_1	60	60	50
Order 2 lots, d_2	80	80	30
Order 3 lots, d_3	100	70	10

a) If the prior probabilities for the three states of nature are 0.3, 0.3, and 0.4, respectively what id the recommended order quantity?

b) At each preseason sales meeting, the vice president of sales provides a personal opinion regarding potential demand for this product. Because of the vice president's enthusiasm and optimistic nature, the predictions of market conditions have always been either "excellent" (*E*) or "very good" (*V*). Probabilities are as follows.

$P(E) = 0.70$	$P(s_1 \mid E) = 0.34$	$P(s_1 \mid V) = 0.20$
$P(V) = 0.30$	$P(s_2 \mid E) = 0.32$	$P(s_2 \mid V) = 0.26$
	$P(s_3 \mid E) = 0.34$	$P(s_3 \mid V) = 0.54$

What is the optimal strategy?

c) Use the efficiency of sample information and discuss whether the firm should consider a consulting expert who could provide independent forecasts of the market conditions for the product.