BAMS 517: Assignment 2

(Each team submits one Word or PDF report and one Excel file on Canvas before the deadline. The Word/PDF report should include your answers to the questions with succinct explanations. Include the full names of the team members on the front page of the report. The Excel file should include your TreePlan models. Name your files as "Lastname_Firstname_HW2.xxx"; the name of any team member can be used, which has no implication on the relative contributions of the team members.)

1. Brainy Business Case (continued)

(c) What is the risk profile of the optimal decision from part (b), i.e., choosing the High price? Does this decision stochastically dominate either of the other two pricing options? (5 pts)

(d) Perform sensitivity analysis to provide Charlotte with managerial insights regarding conditions for the optimal price. More specifically, create a two-way Data Table showing the optimal price (High, Medium, or Low) as Prob{Severe Competition} and Prob{Moderate Competition} vary between 0 and 1 with a step size 0.1. Explain your answer intuitively. (5 pts)

(e) See the new parts of the case below. Develop and analyze a decision tree to help Cerebrosoft decide whether to pay the $10,000 for the market research. Explain your results and conclusion. (10 pts)

[The following are the final parts of the case in Assignment 1]

When Jeannie and Reggie enter the office, Jeannie immediately bursts out: "Guys, I just spoke to our marketing research company. They say that they could do a study for us about the competitive situation for the introduction of Brainet and deliver the results within a week."

Charlotte asks, "Don't we have a simple estimate of how the market will react?"

"Some prior probabilities, you mean? Sure, from our past experience, the likelihood of facing high competition is 20 percent, whereas it is 70 percent for medium competition and 10 percent for low competition," Jeannie has her numbers always ready when needed.

[The following are new parts of the case for question (e)]

Reggie asks Jeannie, "How much do they want for the study?"

"I knew you'd ask that, Reggie. They want $10,000 and I think it's a fair deal."

Charlotte asks, "Do we have any data on the quality of the work of this marketing research company?"

"Yes, I do have some reports here. Given that the competition turned out to be high, they predicted it correctly 80 percent of the time, while 15 percent of the time they predicted medium

competition in that setting. Given that the competition turned out to be medium, they predicted high competition 15 percent of the time and medium competition 80 percent of the time. Finally, for the case of low competition, the numbers were 90 percent of the time a correct prediction, 7 percent of the time a 'medium' prediction and 3 percent of the time a 'high' prediction."

All that is left to do now is to sit down and make sense of all this. …

2. Fruit Stand

Erica manages a large outdoor fruit stand in Vancouver. To replenish her supply, she receives a large box of fruit early each morning from a grower in Richmond. About 90% of the boxes turn out to be of satisfactory quality, with 10% of boxes deemed unsatisfactory. A satisfactory box contains 80% fruit that tastes excellent and 20% that tastes poor, and Erica profits $200 from these boxes. An unsatisfactory box contains 30% fruit that tastes excellent and 70% that tastes poor, and Erica's net loss is $1,000 from these boxes. Before Erica decides to accept a box, she is given the opportunity to sample one piece of fruit to see how it tastes. Based on that sample, she then has the option of rejecting the box without paying for it.

(a) On average, what does Erica gain in profit by having the opportunity to sample the one piece of fruit, and what should she do based on the outcome of the one sample? (10 pts)