

The questions in this section are independent of Part A and Part B. The scenario is the same but the values are different. All answers MUST be submitted in a single document (Excel, Word or PDF only). See upload button at the bottom of this page.

Senior management at Humber bakery requested a new analysis based on adjusting the selling price and the number of units produced under each production plan. Initial probability estimates are also updated. Resulting gross profits (\$) and state of nature probabilities are given in the following payoff table.

	Low Demand	Medium Demand	High Demand
Light Production	47,550	75,000	75,000
Moderate Production	35,100	90,000	90,000
Heavy Production	-2,250	52,650	135,000
Probability	0.2	0.5	0.3

- a) [8 marks] What is the optimal decision using the minimax regret approach? Show your work.

The new analysis also necessitated updating the offer made to Bramptinos under the heavy production plan. The probability that Bramptinos will accept the new offer is 26% and the associated gross profit is determined to be \$121,500. Again here, if Bramptinos declines the offer, the loaves will still sell based on current demand conditions (low, medium, or high).

- b) [8 marks] Using the decision tree you selected from Part B along with the payoffs and probabilities provided in this section, construct a decision tree for the problem. (You can draw manually or use software. Marks will be given for presentation). What is the optimal decision in this case? Why?

Before making a final decision on the production plan to adopt, the bakery's manager decides to contact Professor Leung in the Math Department to conduct a market research survey. The results of the survey will indicate either favourable or unfavourable market conditions for premium breads.

In the past, when there was Low Demand, Professor Leung's predictions were unfavorable 80% of the time. The professor's predictions have also been favourable given Medium Demand 88% of the time, and unfavourable given High Demand 10% of the time.

- c) [12 marks] Calculate posterior (revised) probabilities (Round to 3 decimal places; do not round intermediate results). Show calculations or tables.
- d) [25 marks] Construct a multistage decision tree (based on part b) with the additional information from Professor Leung.
- e) [2 marks] What is the value of the sample information (EVSI) provided by Professor Leung?
- f) [3 marks] State the optimal decision strategy if Professor Leung's consulting fees were \$500.
- g) [2 marks] Does the strategy change if Professor Leung's consulting fees were \$1,500? If yes, state the new optimal strategy? If no, explain.