Part 1 Questions:

Determine the decision variables

Formulate the optimization model with all the constraints

• Coding in R, find the optimal number of advertisements to run in each media that maximize the expected number of exposures while satisfying all the constraints.

o What is the optimal profit value?

o What are the optimal values for the variables?

Part 2 Questions:

Using your results from Part I, formulate the total profit (as defined by Vijay).

• Use R (or any other language) to determine the optimal number of ads to run in each medium to maximize the total profit while satisfying all the constraints in Part I.

o What is the optimal profit value?

o What are the optimal values for the variables?

o Based on your calculation, what can you conclude about the accuracy of Vjay’s approximation in Part I (i.e., finding the optimal variables by using the expected number of exposures)?

Part 3 Questions:

Formulate the profit function for Vijay’s ordering problem.

• What is the decision variable?

• Determine the optimal number of gallons of Amour du jour for which Amber must order raw materials each week to maximize the restaurant’s profit. What is the optimal profit?