**POSTGRADUATE DIPLOMA IN PROJECT PLANNING AND MANAGEMENT DL VI 2016-2017/2017-2018**

**MODULE: RISK AND DISASTER MANAGEMENT MODULE**

**Please submit a typed copy of your answer by 31/12/2017. Avoid plagiarism.**

**QUESTION:**

A food products company has decided to introduce a new brand of breakfast cereals and is contemplating building either a $10million or a$6million plant to produce the new breakfast cereals. If the company builds the $10million plant, there is a 70 percent chance that competitors will respond with a large increase in their advertising and a 30 percent probability that competitors will respond with a small increase in their advertising. On the other hand, if the company builds the $6million plant, there is a 40 percent probability that competitors will respond with a large increase in their advertising and a 60 percent probability that competitors will respond with small increase in their advertising.

Whether the company builds the $10 million or the $6 million plant and whether competitors will respond with a large or small increase in their advertising, the general demand conditions that the company will face can be high, medium, or low. The probability and the net cash flow that the company faces under each plant it can build and competitors responses are indicated in the table below.

Since the variability of the net cash flow is higher with the $10 million plant, the company uses the risk-adjusted discount rate of 20 percent to calculate the present value of the net cash flows. On the other hand, the company uses the risk adjusted discount rate of 14 percent to calculate the present value of the net cash flow of the $6 million plant.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Plant | Competitors Advertising Reaction | Conditions of demand | Probability | Net Cash Flows for Year (in millions) | | |
| 1 | 2 | 3 |
|  | Large | High  Normal  Low | 0.4  0.4  0.2 | $6  4  3 | $6  5  4 | $5  4  2 |
| $10million |  |  |  |  |  |  |
|  | Small | High  Normal  Low | 0.4  0.4  0.2 | 7  5  4 | 7  5  4 | 7  5  4 |
|  |  |  |  |  |  |  |
|  | Large | High  Normal  Low | 0.4  0.4  0.2 | 3  3  2 | 4  3  2 | 3  2  2 |
| $6million |  |  |  |  |  |  |
|  | Small | High  Normal  Low | 0.4  0.4  0.2 | 5  4  3 | 4  3  3 | 4  3  2 |

***Required:***

1. Construct a decision tree, and determine whether the Food Production Company should build the $10 million or the $6 million plant. Round all calculations to the nearest dollar.
2. What is the applicability of decision trees to decision making?
3. What are the uses/limitations of such a model to business decision making?