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| Course | ESILV |
| Module | Optimisation & Operational Research |
| Lecturer | Muhammad Alli |
| Continuous Assessment Number | 5 |
| Continuous Assessment Weighting | 10% |
| Due Date | 27th March 2024 |
| Submission | Via Moodle Link |
| Submission Type | Decision Trees and Bayes Theorem III |
| Overall Marks | 100% |

Problem

A screenshot of a paper

Description automatically generated

The Miramar Company is now considering entering a contract with a market research firm to do a survey to determine future market conditions

The results of the survey will indicate either positive or negative market conditions.

There is a 0.6 probability of a positive report, given favourable conditions; a 0.3 probability of a positive report, given stable conditions; and a 0.1 probability of a positive report, given unfavourable conditions.

There is a 0.9 probability of a negative report, given unfavourable conditions; a 0.7 probability, given stable conditions; and a 0.4 probability, given favourable conditions.

Using decision tree analysis and showing your calculations clearly:

1. Determine the decision strategy the company should follow?

(25 Marks)

2. Determine the expected value of the strategy? (25 Marks)

3. Find the maximum amount the company should pay the market research firm for the survey results?

(25 Marks)

4. Compute the efficiency of the sample information for the Miramar Company?

(25 Marks)

(Total Marks 100)

**---- End of Assessment----**

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| **Marking Rubric**   |  |  | | --- | --- | |  | **Decision Trees and Bayes Theorem III** | | **80-100%** | Exceptional comprehension of the topic with evidence of extensive reading beyond the key texts using academic sources etc. | | **70-79%** | Thorough knowledge and understanding of the topic with evidence of reading beyond the key texts. | | **60-69%** | Shows evidence of relevant and sound knowledge and understanding of the topic. | | **50-59%** | Shows relevant knowledge of the topic. | | **40-49%** | Shows basic knowledge of the topic. | | **0-39%** | Shows basic knowledge of the topic but insufficient at this level to reach the pass mark. | | **Important Note:** A pass mark is 40% | | |