**Problem 10-14**

BMW is planning to launch a new sport utility vehicle (SUV), Initially it will have limited production for this model, with a total of only 20,000 units being produced for the year. King’s BMW has been offered up to four of the SUV’s for sale. King’s estimates that the profit it earns from purchasing these SUV’s will be based on the review it receives from Road and Track magazine. The review will give the SUV one of five ratings: poor, good, very good, excellent, or outstanding. The following table gives the profitability Jan King estimates the dealership will learn from ordering the SUV’s based on the rating the vehicle receives;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ***Review in Road and Track*** | | | | |
| **SUVs Ordered** | **Poor** | **Good** | **Very Good** | **Excellent** | **Outstanding** |
| 0 | $2,000 | $5,000 | 3000 | -1000 | -4000 |
| 1 | 1000 | 3000 | 6000 | 4000 | 1000 |
| 2 | -5000 | -1000 | 4000 | 8000 | 9000 |
| 3 | -9000 | -4000 | 3000 | 12000 | 15000 |
| 4 | -14000 | -7000 | 2000 | 12000 | 20000 |

How many SUV’s should the firm order if:

1. It uses the maximin criterion.
2. It uses the minimax regret criterion.
3. It uses the principle of insufficient reason criterion.

**Problem 10-15**

Consider the data give in the problem 14. Based on some preliminary information provided by BMW, Jan King estimates that the following probabilities hold for the states of nature: P(Poor review)=.10. P(Good review)=.15, P (Very Good Review) = .25, and P (Excellent review) = .35

1. Calculate the probability of an Outstanding review and use the expected value criterion to determine how many SUV’s King’s should order
2. What is the most amount of money King’s should pay for advance information regarding the review the SUV will get from Road and Track

**Problem 10-16**

The dean of School of Business at Northern Connecticut State University has been approached by a government agency in Hunan Province, China, to provide MBA training to a group of 30 midlevel officials. The dean is considering submitting a bid of $225,000, $250,000 or $300,000 for providing this program. If the bid is $225,000, the dean estimates there is a 90% chance that the school will get the contract. This probability decreases to .60 if the bid is $250,000 and .20 if the bid is $300,000.

Materials are expected to cost an average of $1,000 per participant. The dean estimates that she will have to pay total faculty salaries of either $180,000 or $220,000. There is a 40% chance that the faculty union will accept $180,000 and a 60% chance that the union will hold out for $220,000.

Using a decision tree approach, determine the dean’s optimal strategy.