Draft Questions

1/2/3/4 Emergency Maintenance cost = $1200Emergency Maintenance cost = $1200

 Hence the Probability of No−defective component =  1− 0.10 = 0.90Hence the Probability of No-defective component =  1- 0.10 = 0.90

 Therefore, the cost of No maintenance = Probability of No−defective component x Maintenance costTherefore, the cost of No maintenance = Probability of No-defective component x Maintenance cost

                                                                  = 1200 x 0.90   = 1200 x 0.90

                                                                   = $1080             = $1080

The expected value of Option #1 No maintenance is $1080

1200 x 0.10

5. 'Decision Analysis' (DA) is a method of decision-making. An ethical decision includes recognizing and evaluating each and every perspective of a decision and selecting activities that rely on the decision that provides the most advantageous result.

The correct choice is Option 1: No preventive maintenance at all and repair vehicles when they fail.

6. The calculation for wheater Swarna do the test

Test Done

|  |  |  |  |
| --- | --- | --- | --- |
| Inflow | Positive Response | Probability | Amount |
| Success | 1600000.00 | 0.8 | 1280000 |
| Failure | 700,000 | 0.2 | 140,000 |
|  |  |  | 1140000 |
|  |  |  |  |
|  |  |  |  |
| Inflow | Positive Response | Probability | Amount |
| Success | 1600000.00 | 0.3 | 480000 |
| Failure | 700,000 | 0.7 | -490000 |
|  |  |  | -10000 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Positive Response | Negative Response | |
| Test Cost | -150000 | -150000 |  |
| Inflow | 1280000 | -10000 |  |
| Net Inflow | 1130000 | -160000 |  |
| Probability | 0.6 | 0.4 |  |
|  |  |  |  |
| Response | Net inflow | Probability | Amount |
| Positive Response | 990000 | 0.6 | 594000 |
| Negative Response | -160000 | 0.4 | -64000 |
|  |  |  | 530000 |

No testing Done

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  | Test Cost | Inflow | Net Inflow | Probability | Amount |
| Success | 0 | 1600000 | 1600000 | 0.5 | 800000 |
| Fail | 0 | -700000 | -700000 | 0.5 | -350000 |
| Amount |  |  |  |  | 450000 |

Not conducting the test market.

 Expected payoff = 0.5 \* 1600000 - 0.5 \* 700000

Expected Pay off = $ 4,50,000

Now. Cost to conduct market test = $ 150,000

Expected Payoff  during good responses

Expected Pay off = 0.8 \* 1600000 - 0.2 \* 700000

Expected Payoff = $ 11,40,000

Expected pay off in Bad response   
Expected Pay off = 0.3 \* 1600000 - 0.7 \* 700000

Expected Payoff = -$ 10000

The company will not be able to launch the product in the market   
Here, The test market reporting 60% of the time during the positive response   
Expected payoff = 1140000 \* 0.6

Expected Pay off = 6,84,000

Cost of market testing = $ 150,000  
Thus,  
Final Pay off = Expected to pay off during positive response  - Cost of testing   
Final payoff = 684000 - 150000   
Final Pay off = $ 534000

The final Pay off is greater than 450000  
Thus, option  Swarna will conduct the test market. The expected value of this decision is $534000.

7/8. The Expected value without performing the test is:

EMV=1600000×0.5−700000×0.5=450000EMV=1600000×0.5-700000×0.5=450000

Expected value after test is:

EV|PI=(1600000−150000)×0.8−(700000+150000)×0.3=905000EV|PI=1600000-150000×0.8-700000+150000×0.3=905000

Hence the expected value of sample information is:

EVPI===EV|PI−EMV905000−450000455000EVPI=EV|PI-EMV=905000-450000=455000

Hence the expected value of sample information is 455000.

9/ 10. Profit per laptop=Sale price per laptop − Cost price per laptop

=$300 −$2  =$80Profit per laptop=Sale price per laptop - Cost price per laptop                            =$300 -$220  =$80

The reseller also needs to consider that every time he fails to fulfill a laptop order, he stands to lose $25 for every unit.

Hence, the payoff matrix is as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Demand | Profitability | Order | | | |
| 0 | 1 | 2 | 3 |
| 0 | 0.3 | 0 | -25 | -50 | -75 |
| 1 | 0.4 | 0 | 80 | 55 | 30 |
| 2 | 0.2 | 0 | 80 | 160 | 135 |
| 3 | 0.1 | 0 | 80 | 160 | 240 |

EMVs as follow

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Demand | Profitability | Order | | | | EMV | | | |
| 0 | 1 | 2 | 3 | 0 | 1 | 2 | 3 |
| 0 | 0.3 | 0 | -25 | -50 | -75 | 0 | -7.5 | -15 | -22.5 |
| 1 | 0.4 | 0 | 80 | 55 | 30 | 0 | 32 | 22 | 12 |
| 2 | 0.2 | 0 | 80 | 160 | 135 | 0 | 16 | 32 | 27 |
| 3 | 0.1 | 0 | 80 | 160 | 240 | 0 | 8 | 16 | 24 |
| EMVs | | | | | | 0 | 48.5 | 55 | 40.5 |

The reseller would go with order 2 as it has highest EMV i.e. 55 than all other orders where the reseller’s best decision without conducting the survey.

EVPI

EPPI=(0.3×0)+(0.4×80)+(0.2×60)+(0.1×240)         =0+32+32+24         =88EVPI=EPPI−EMV          =88−55          =33

11. Katie should accept the settlement because the manufacturer agreed that they would pay $700 k out of which $100 k would be paid to legal fees so the best option Katie has is this one because all other options are vague and not profitable.

12. The probability of business doing good  = 0.7

The probability of a slow business = 0.3

Using Equally Likelihood (Laplace) Criteria, Expected payoff is given as:

 Expected Payoff (E) = Σ(Payoff )No. of statesExpected Payoff (E) = Σ(Payoff )No. of states

→ E(Buy) = 90 + (−10)2 = 802 = 40→ E(Buy) = 90 + (-10)2 = 802 = 40

 → E(Rent) = 70 +402 = 1102 = 55→ E(Rent) = 70 +402 = 1102 = 55

 → E(Lease) =60 +552 = 1152 = 57.5

13. 145 is maximax value.  
maximum criterion so 145 is expected highest payout.

14. EV= Expected value

EV = Outcome \* probability

value pf perfect information = EV with perfect information - EV without perfect information

Demand - very favorable, favorable and unfavorable

probabilities of demand - 40% , 30%, 30%

Supply (options) - Open in Seattle , Open in Seattle and New York.

Supply are mentioned as the column heading and demand as the row heading .

PAY OF TABLE

|  |  |  |
| --- | --- | --- |
|  | OPEN IN SEATTLE | OPEN IN SEATTLE AND NEW YORK |
|  |  |  |
| very favorable          (40%) | 380 | 200 |
| favorable                  (30%) | 70 | 80 |
| unfavorable             ( 30%) | (400) | (200) |

EV WITHOUT PERFECT INFORMATION

OPEN IN SEATTLE = (380 \* 40%) + (70 \* 30%) +(-400 \* 30%)

                                = 152+ 21+ -120          = 53

OPEN IN SEATTLE AND NEW YORK = (200 \* 40%) + (80 \* 30%) + (-200 \* 30%)

                                                           = 80 + 24 + -60       = 44

Felicidad will choose to open in Seattle because without any perfect information the maximum expected value given is 53 more than the other option

     Therefore choose to open in Seattle based on EV method

EV WITH PERFECT INFORMATION

Maximum outcome of the given demands

(380 \* 40%) + ( 80 \* 30%) +( -200 \* 30%)

= 152 + 24 + -60         = 116

VALUE OF PERFECT INFORMATION = EV WITH PERFECT INFORMATION - EV WITHOUT INFORMATION

                                                            = 116 - 53

                                                              = 63

The maximum amount Felicidad can pay for Manny for his services is $ 63