An oil company has paid $100,000 for the right to pump oil on a plot of land during the next 3 years. A well has already been sunk and all other necessary facilities are in place. The land has known reserves of 60,000 barrels .The Company wishes to know that market value of this operation .The interest rate is 8% and the marginal cost of pumping is $8 per barrel. Both these costs are expected to remain unchanged over the three year period. The current price of oil is $10 per barrel. Company economists have estimated the following

1. Oil will increase in price by 10% with a probability of 40%,or decrease in price by 12% with a probability of 60% during each of the next 3 years
2. The cost of storing oil in above –ground tanks is $0.50 per year.
3. The company can pump a maximum of 20,000 barrels per year at the site.
4. The site may be shut down for a year and then reopened at a cost of 2,00

Determine the market value of the operation ignoring taxes. Assume that all cash flows occur at the end of each year. (Chart all possible sequences of oil prices and calculate the optimal production decisions and payoffs associated with each sequence.)