**Chapter 2: Decision Analysis**

1. Explain attitudes towards risk and the way they may impact on optimal decision-making.
2. A firm which supplies customized software, must decide between two mutually exclusive contracts, one for the government and the other for a private firm. It is hard to estimate the costs firm will incur under either contract but, from experience, it estimates that, if it contracts with a private firm, its profit will be *aaa* million, *bbb* million, or *ccc* million with probabilities *xxx*, *yyy* and *zzz* respectively. If it contracts with the government, its profit will be …. million or …. million with respective probabilities …. and ….. Which is firm’s optimal decision to maximize expected profit? Build a decision tree and make decision.
3. Suppose the CEO of an oil company must decide whether to drill a site and, if so, how deep. It costs …. to drill the first ….feet and there is a ….chance of striking oil. If oil is struck, the profit (net of drilling expenses) is ….. If she doesn’t strike oil, the executive can drill …. feet deeper at an additional cost of ….. Her chance of finding oil between ….and ….feet is ….and her net profit (after all drilling costs) from a strike at this depth is ….. What action should the executive take to maximize her expected profit? Build a decision tree and make decision.
4. Suppose you have an opportunity to invest ….in a business venture which will gross ….or ….with equal probability next year. Alternatively, you could deposit the ….in a bank which will give you a riskless return. How large does the interest rate must be for you to be indifferent between the business venture and the deposit account? (Namely, what is your certainty equivalent? Are you a risk lover?) Explain your choice. Also explain risk taking ability. Are you risk averse, risk neutral or risk lover?
5. What is Expected Value Perfect Information (EVPI)? What is Expected Value with Perfect Information (EVwPI)? Expected Value without Perfect Information (EVwoPI)? Draw a pay-off table by yourself and explain in detail.
6. Your corporation has been presented with a new product development proposal. The cost of the development project is ….. The probability of successful development is projected to be ….. If the development is unsuccessful, the product will be terminated. If it is successful, the manufacturer must then decide whether to begin manufacturing the product on a new production line or a modified production line. If demand for the new product is high, the incremental revenue for a new production line is expected to be …., and the incremental revenue for the modified production line is expected to be ….. If demand is low, the incremental revenue for the new production line is expected to be …., and the incremental revenue for the modified production line is expected to be ….. All of these incremental revenue values are gross figures, i.e. before subtracting the ….development cost, and ….for the new production line or ….for the modified production line. The probability of high demand is estimated as …., and of low demand as ….Build a decision tree and make decision.
7. A company is deciding whether to develop and launch a new product. Research and development costs are expected to be ….and there is a ….chance that the product launch will be successful, and a …. chance that it will fail. If it is successful, the levels of expected profits and the probability of each occurring have been estimated as follows, depending on whether the product’s popularity is high, medium or low:

|  |  |  |
| --- | --- | --- |
|  | **Probability**  | **Profits**  |
| **High**  | …. |  …. |
| **Medium**  | …. | …. |
| **Low**  | …. | …. |

If it is a failure, there is a ….probability that the research and development work can be sold for ….and a ….probability that it will be worth nothing at all. Build a decision tree and make decision.

1. hat following data tells us? Please explain in detail.



**Chapter 3: Game Theory**

1. Two players, A and B play the following game. First A must choose IN or OUT. If A chooses OUT the game ends, and the payoffs are A gets 2, and B gets 0. If A chooses IN then B observes this and must then choose in or out. If B chooses out the game ends, and the payoffs are B gets 2, and A gets 0. If A chooses IN and B chooses in then they play the following simultaneous move game:

|  |  |  |
| --- | --- | --- |
|  |  | B |
|  |  | Left | Right |
| A | Up | …. | …. |
| Down  | …. | …. |

 Using above information draw build the tree that represents this game.

1. What is dominant strategy? Draw payoff table for two players by yourself and explain in detail.
2. What is Nash equilibrium? Draw payoff table for two players by yourself and explain in detail.
3. Two players: The employee (Raquel) and the employer (Vera). Raquel has to choose whether to pursue training that costs ….to herself or not. Vera has to decide whether to pay a fixed wage of ….to Raquel or share the revenues of the enterprise ….with Raquel. The output is positively affected by both training and revenue sharing. Indeed, with no training and a fixed wage total output is …., while if either training or profit sharing is implemented the output rises to ….. If both training and revenue sharing are implemented the output is ….. Construct a payoff matrix using above data.
4. Using below payoff matrix please find dominant strategy for player1 and explain why your finding is dominant strategy for that player?

|  |  |  |
| --- | --- | --- |
|  |  |  Player2 |
|  |  | Do  | Don’t do |
| Player1 | Do | …. | …. |
| Don’t do | …. | …. |

1. Using below payoff matrix please find Nash equilibrium for player2 and explain why your finding is Nash equilibrium for that player?

|  |  |  |
| --- | --- | --- |
|  |  |  Player2 |
|  |  | Do  | Don’t do |
| Player1 | Do | …. | …. |
| Don’t do | …. | …. |

**Chapter 4: Bargaining**

1. What is the difference between acquisition premium and synergy value? Do these (acquisition premium and synergy value) have relationship with bargaining power? Please give an example by yourself and explain in detail.
2. What is the bargaining range? Please give an example by yourself and explain in detail.
3. What is the bargaining power? How can bargaining participant change his/her bargaining power? Please give an example by yourself and explain in detail.
4. Why hostile acquisition occurs? Any relationship with bargaining power?

**Chapter 5: Auction**

1. Can the auctioneer use phantom bids (agent) profitably in a private-value English auction? If yes, how? Explain your opinion.
2. Why bidding your true valuation is a dominant strategy in English and in second price sealed bid (or Vickrey) auctions? Explain your opinion.
3. Explain relationship between the number of bidders and expected revenues. From both side (auctioneer & bidder).
4. Consider a second-price sealed-bid auction with one seller who has one unit of the object which he values at s and two buyers 1, 2 who have values of v1 and v2 for the object. The values s, v1, v2 are all independent, private values. Suppose that both buyers know that the seller will submit his own sealed bid of s, but they do not know the value of s. Is it optimal for the buyers to bid truthfully; that is should they each bid their true value? Explain your answer.
5. ‘A second price sealed bid auction is better for the seller than a first price auction because in a second price auction the buyer pays less than his bid and will therefore bid higher.’ True or false? Explain with your opinion.
6. ‘A first price sealed bid auction is better for the seller than a second price sealed auction because in a first price auction your optimal bid depends on what your opponent bids. This makes the bidding more competitive.’ True or false? Explain with your opinion

**Chapter 6: Asymmetric Information**

1. What do economists mean by signaling and how can it be used to alleviate information asymmetries?
2. What do economists mean by screening and how can it be used to alleviate information asymmetries?
3. What is the adverse selection problem and how can it arise in the presence of information asymmetries?
4. Briefly name and explain some real-world examples of how markets response to adverse selection.
5. Why asymmetric information produces economic inefficiency? Give an example and explain in detail.
6. What is moral hazard? What are the solutions of moral hazard? Give an example and explain.
7. What is the difference between adverse selection & moral hazard? Give an example and explain.
8. What is the pooling equilibrium? Given the graph below please indicate if there is pooling equilibrium. If not explain why.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | % of population | Risk of illness | WTP | Cost |
| Healthy | ??% | x/xxxx | $xx | $xx |
| Sick | ??% | x/xxxx | $xx | $xx |

1. What is the difference between screening & signaling? Give an example for both and explain the difference.

**Chapter 7: Demand Theory**

1. Demand price of goods is P = xxxx, supply price is P = xxxx. If producer pays $x tax for each good find equilibrium price before and after tax:
2. Demand price of good is P = xxx, supply price is P = xxx. If consumer pays $x and producer pays $x tax for each good, find price of that good before and after tax:
3. Suppose, daily quantity supply for ice-cream is Qs = xxx & quantity demand is Qd = xxx. If maximum selling price of ice-cream limited by $x? Find new quantity, producer & consumer surplus. Draw a graph and show the area of new producer & consumer surplus.
4. Suppose, daily quantity supply for ice-cream is Qs = xxx & quantity demand is Qd = xxx. If minimum selling price of ice-cream limited by $xx? Find new quantity, producer & consumer surplus:
5. If demand is p = xxx and tax rate increase from $x to $x how much consumer surplus will increase/decrease? Draw a graph and show all steps.
6. If price floor is below from equilibrium price what it will have impact to equilibrium of supply & demand? Draw a graph and show all changes.
7. If equilibrium price is below from price floor what it will have impact to equilibrium of supply & demand? Draw a graph and show all changes.

**Chapter 8: Consumer Theory**

1. At prices of $x for a CD and $x for a cigar, Mike can afford to buy x CDs and x cigars with his income. If Mike is maximizing his utility at this bundle, what is his income?
2. Ali’s income is $xxx, and the price of product A is $x, product B is $xx. If Ali’s income increases to $xx and the price of product A decrease $x how will change budget constraint line? Draw a graph and show the changes.
3. Agil is typical economic graduate student and consumes xx goods: economics textbook and coffee. Agil also earns a typical grad student income, $xx a month. He can either spend it all on books and get x, or he can spend it all on coffee and gets xx cups. Given this information, construct the equation for Agil’s line. (put books on the x-axis and coffee on the y-axis).
4. Agil is typical economic graduate student and consumes xx goods: economics textbook and coffee. Agil also earns a typical grad student income, $xx a month.

The following s are the bundles that Agil can afford with his income:

|  |  |
| --- | --- |
| **Books** | **Coffee** |
| x | ? |
| ? | x |
| ? | x |
| x | ? |

Fill in the blanks in the table with the quantities that will exhaust Agil’s income.

1. Agil is typical economic graduate student and consumes x goods: economics textbook and coffee. Agil also earns a typical grad student income, $xx a month. If he gets research grant and his income increases to $xx a month. What is the new equation of his budget line? What if income stays constant at $xx? And the price of a book increases to $xx?
2. Agil is typical economic graduate student and consumes x goods: economics textbook and coffee. Agil also earns a typical grad student income, $xx a month. He can either spend it all on books and get x, or he can spend it all on coffee and gets xx cups. Assume that textbook and coffee are complements for Agil. For him to consume xx textbook, he needs xx cup of coffee. How many textbooks does he consume given his income of $xx, with above given price? What is economics being so boring that Agil needs x coffees for every book that he consumes?
3. What is income effect? Give an example and explain in detail.
4. What is substitution effect? Give an example and explain in detail.
5. The return on stock A will be xx% or xx%, each with probability xx. The return on stock B will be xx% or xx%, with probabilities xx and xx respectively. Calculate the expected return and the variance of the return for each stock.

**Chapter 8: Consumer Theory**

1. Stock A has the following probability distribution of expected returns:

|  |  |
| --- | --- |
| **Probability** | **Rate of Return** |
| X | x% |
| X | x% |
| X | x% |
| X | x% |
| X | x% |

What is Stock A's expected rate of return and standard deviation?

1. There is x% probability that the company’s sales will be $x million next year, a x% probability that they will be $x million, and a x% probability that they will be $x million. What are the expected sales and standard deviation of Company next year’s sales?
2. You are given the following estimates for Stock’s A and B. According the given data set calculate expected returns and standard deviation for stock’s A and B respectively? State which stock is riskier and why?

|  |  |  |  |
| --- | --- | --- | --- |
| State of economy | Probability | Return A | Return B |
| Poor | x | x% | x% |
| Normal | x | x% | x% |
| Good | x | x% | x% |

1. The following are possible states of the economy and the returns associated with stocks A and B in those states. Calculate the expected return and the standard deviation of a portfolio comprised of stocks A and B. The weight in stock A is x%.

|  |  |  |  |
| --- | --- | --- | --- |
| State | Probability | Return A | Return B |
| Good | x | x% | x% |
| Normal | x | x% | x% |
| Bad | x | x% | x% |

1. You are given the following estimates for Stock’s A and B. If weight of A in portfolio is x% calculate expected return and the standard deviation of portfolio.

|  |  |  |  |
| --- | --- | --- | --- |
| State of economy | Probability | Return A | Return B |
| Poor | x | x% | x% |
| Normal | x | x% | x% |
| Good | x | x% | x% |

1. What is the difference between systematic and unsystematic risk? Give an example and explain.
2. What type of risk is relevant for determining the expected return?
3. Consider an asset with a beta of x, a risk-free rate of x%, and a market return of x%. What is the expected return on the asset?
4. Investor wants to form a portfolio using 5 stocks: A, B, C, D, and E. He wants to put x% of his money in stock A. Also, he wants to put x times more for stock B than stock C, and x% of stock A’s money to stock D. If E’s weight is x% of stock D what is B’s weight?
5. According to the below table, please calculate Standard Deviation of the stock.

|  |  |
| --- | --- |
| **Probability**  | **Rate of return** |
| x | x% |
| x | x% |
| x | x% |
| x | x% |

1. Investor wants to build portfolio with x AZN. Based on his research, the rate of return of “Qaradağ Sement” stock is x%, “Bakı Şərab” stock is x% “Gilan Holdinq” stock is x%, and “Baku Steel Company” stock is x%. If he invest to “Qaradağ Sement” stock by x AZN, “Bakı Şərab” stock by x AZN, “Gilan Holdinq” stock by x AZN and “Baku Steel Company” stock by x AZN, please calculate expected return of the portfolio.
2. Investor wants to form a portfolio using 5 stocks: A, B, C, D, and E. He wants to put x% of his money in stock A. Also, he wants to put x times more for stock B than stock C, and x% of stock A’s money to stock D. If E’s weight is x% of stock D what is B’s weight?
3. According to the below table, please calculate standard Deviation of the stock.

|  |  |
| --- | --- |
| **Probability**  | **Rate of return** |
| x | x% |
| x | x% |
| x | x% |
| x | x% |

**Chapter 10: Cost Concepts**

1. Ali has small ice-cream shops and 3 equipment for running his business. According to his calculation daily production function is as following table.

|  |  |
| --- | --- |
| Number of workers | Quantity of production |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

Put the quantity of labor on the horizontal axis and the quantity of frozen yogurt on the vertical axis and draw a graph. Calculate marginal product for each level of production and draw a graph.

1. The production function of the shop is as following table. Ali pays salary for each of his workers $80 per day. Variable cost of each product is $0.50, daily fixed cost is $100.

|  |  |
| --- | --- |
| Number of workers | Quantity of production |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

If Ali produce daily x and x ice-creams, how much should be his variable and fixed cost? Calculate variable and fixed cost for each level of production. Draw the variable and fixed cost curve. How much is marginal cost for x ice-cream productions? How much is next x ice-creams? Calculate *MC* for each level of production.

1. The production function of the shop is as following table. Ali pays salary for each of his workers $x per day. Variable cost of each product is $x, daily fixed cost is $x.

|  |  |
| --- | --- |
| Number of workers | Quantity of production |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

Calculate *AVC, AFC* and *ATC* for each level of production. Draw *AFC*, *AVC* and *ATC* curve on a graph. How much ice-cream has produced when *ATC* was minimum and maximum?

1. Below table shows cost of automobile production.

|  |  |
| --- | --- |
| Quantity of production | TC |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

How much is *FC*? Calculate *VC, AVC, ATC* and *AFC* for each level of production function. Calculate *MC* for each level of production. Draw *AVC, ATC, AFC* and *MC* curve on a diagram.

1. Fill the empty cells on a below table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Quantity | TC | MC | ATC | AVC |
| x | x | - | - | - |
| x | ? | x | ? | ? |
| x | ? | x | ? | ? |
| x | ? | x | ? | ? |
| x | ? | x | ? | ? |
| x | ? | x | ? | ? |

1. *FC* of the company is $x, *MC* is as following.

|  |  |
| --- | --- |
| Quantity | MC |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

How much is exit price from the market? How much is total revenue on exit price?

1. Fill the empty cells on a following table. Show all calculations in detail.

*Q* – quantity, *FC* – Fixed cost, *VC* – Variable cost, *TC* – Total cost, *AFC* – Average fixed cost, *AVC* – Average variable cost, *ATC* – Average total cost, *MC* – Marginal cost.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Q** | **FC** | **VC** | **TC** | **AFC** | **AVC** | **ATC** | **MC** |
| x | ? | x | x | ? | ? | ? | ? |
| x | ? | x | ? | ? | ? | ? | ? |
| x | ? | ? | x | ? | ? | ? | ? |
| x | ? | x | ? | ? | ? | ? | ? |
| x | ? | ? | x | ? | ? | ? | ? |
| x | ? | x | ? | ? | ? | ? | ? |
| x | ? | x | ? | ? | ? | ? | ? |
| x | ? | ? | x | ? | ? | ? | ? |

1. What is implicit and explicit cost? Give an example and explain in detail.
2. Production function of the company is as following table. Daily salary per worker is $ x. If variable cost (*VC*) per product is $ x, fixed cost (*FC*) is $ x, calculate variable cost and total cost *(TC)* for each level of production. Show all calculations in detail. Draw the graph for each of (*VC* and *TC*) them. Calculate marginal cost *(MC)* for each level of production and draw a graph. Show all calculations in detail.

|  |  |
| --- | --- |
| **Number of workers** | **Quantity of produced goods** |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

1. Production function of the company is as following table. Daily salary per worker is $ x. If variable cost (*VC*) per product is $ x, fixed cost (*FC*) is $ x, calculate variable cost and total cost *(TC)* for each level of production. Show all calculations in detail. Draw the graph for each of (*VC* and *TC*) them. Calculate marginal cost *(MC)* for each level of production and draw a graph. Show all calculations in detail.

|  |  |
| --- | --- |
| **Number of workers** | **Quantity of produced goods** |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |
| x | x |

1. Fill the empty cells on a following table. Show all calculations in detail.

*Q* – quantity, *FC* – Fixed cost, *VC* – Variable cost, *TC* – Total cost, *AFC* – Average fixed cost, *AVC* – Average variable cost, *ATC* – Average total cost, *MC* – Marginal cost. **(10 points)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Q** | **FC** | **VC** | **TC** | **AFC** | **AVC** | **ATC** | **MC** |
| 1 |  | x | x |  |  |  | - |
| 2 |  | x |  |  |  |  |  |
| 3 |  |  | x |  |  |  |  |
| 4 |  | x |  |  |  |  |  |
| 5 |  |  | x |  |  |  |  |
| 6 |  | x |  |  |  |  |  |
| 7 |  | x |  |  |  |  |  |
| 8 |  |  | x |  |  |  |  |

1. What is economic profit? What is accounting profit? What is the difference between them? Give an example and explain.