Assignment 12

1. A company is considering a new project with the following characteristics:
   - Initial cost: $500,000
   - Annual cash inflow: $100,000
   - Life of the project: 5 years
   - Cost of capital: 10%

   Calculate the project's net present value (NPV) and internal rate of return (IRR).

2. A factory produces two products, A and B. The profit per unit for Product A is $5 and for Product B is $7. The factory has a maximum production capacity of 100 units per day. The demand for Product A is at least 30 units per day and the demand for Product B is at most 20 units per day.

   Formulate a linear programming model to maximize the factory's profit.

3. A portfolio consists of two stocks, X and Y. The expected return of Stock X is 10% and the expected return of Stock Y is 15%. The correlation coefficient between the returns of Stock X and Stock Y is 0.5. The investor's risk aversion coefficient is 2.5.

   Calculate the optimal portfolio weights for Stocks X and Y.

4. A company is planning to invest in a new project. The project requires an initial investment of $1,000,000 and is expected to generate annual cash inflows of $200,000 for 10 years. The company's cost of capital is 8%.

   Calculate the project's payback period, discounted payback period, payback period with cash inflows reduced by half, and accounting rate of return (ARR).