Based on the daily closing price data for the last 2 years related to 10 companies in the selected industry, implement the following.

1- Descriptive statistic related to the company's performance:

a) Calculate the average and standard deviation of the daily return of each company in this time period and report it in a table. By drawing a graph, show the difference between these 10 companies in terms of average return and risk.

b) Draw and interpret the time graph of the monthly returns of these companies in the form of a graph.

c) Report the sample correlation matrix related to the monthly returns of these 10 companies. (Graphical representation of the Correlation matrix should also be drawn.)

2-Based on the monthly data of an optimal portfolio using the minimum variance method (Markowitz) for a basket consisting of these 10 assets, form in all of the following situations:

a. Assuming that there is only the possibility of buying shares.

b. Assuming that there is also the possibility of short sell.

3- Draw the efficient frontier for the optimal portfolio in question 2-a.

4-a) Consider a basket consisting of the optimal portfolio in question 2-a and a risk-free asset with a monthly return of 2%. With assuming the possibility of borrowing and lending, draw and describe the corresponding transformation line.

b) On the drawn line, specify the points related to the following portfolios (a) lending the entire capital (ii) not lending or borrowing (iii) borrowing 50% of the capital and purchasing portfolio "2-a" with 150% weight.

5- Draw the best possible transmission line based on the efficiency frontier drawn in question 3.

6 - Based on the monthly data, fit the CAPM model for each of the above 10 companies and report their beta values along with standard deviation of the company's return in a table and interpret the type of stocks in terms of being neutral, aggressive and defensive.

7- Calculate the Treynor ratio, Sharpe ratio and Jensen's alpha criteria for the above 10 companies.

8- perform the following operations for each of the companies:

a) Draw the distribution chart of the monthly return data against the monthly inflation index.

b) Fit a single-factor model assuming the monthly inflation index as a predictor.

c) Calculate the estimate of systematic risk and company risk.

d) Add the fitted line diagram in part "B" on the graph of "A".

9- Fit an APT model based on the results of the question and interpret its results.

10- Values at risk:

1) Calculate the daily value at risk with 95 confidence for each of the above 10 companies in the following ways:

a) Historical

b) Parametric

c) Monte Carlo

2) Report the monthly risk value based on the above calculations for an investment of 1 million tomans.

3) Calculate the amount of value at risk for the portfolio of question "A" in a parametric way.

4) Then do the back test for Var.