Assignment 3

The due date for submitting this assignment is 21-03-2023, 23:59 IST.

1. If a stock is purchased for 200 and sold for 213 after one year, then the rate of capital gain (in percentage) for one year equals:

   - 5.5%
   - 6%
   - 8.5%
   - 5%

2. The present value.

   - Answered.
   - 8.5

   Consider a stock which can be purchased for 100 and its value after one year takes the following values, depending on the state of the economy:

<table>
<thead>
<tr>
<th>State</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recession</td>
<td>85</td>
<td>0.2</td>
</tr>
<tr>
<td>Stagnation</td>
<td>100</td>
<td>0.4</td>
</tr>
<tr>
<td>Boom</td>
<td>110</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Then the expected return on the stock (in percentage) equals:

   - 5.5%
   - 7.5%
   - 0.75
   - 1.5

3. Consider the same Table as given in Question No. 2. Then the variance of return on the stock (in percentage) equals:

   - 0.25
   - 0.05
   - 0.02
   - 0.5

4. The historical stock prices are given by the values 100, 90, 105, 130, and 180, all with equal probabilities of 0.2. Then the estimated value of the variance of returns based on these historical data equals:

   - 0.813
   - 1.794
   - 0.907
   - 1.174

5. Suppose that we have a portfolio comprising of 10 and 30 stocks of risky assets A1 and A2, respectively, with the prices of the two assets at time t = 0 being A1(0) = 10 and A2(0) = 30, respectively. Now, at time t = 1, if the prices of the assets became (A1) = 40 and A2(1) = 70, respectively, then the change in the weight w1 = f (weighted A1) from t = 0 to t = 1 equals:

   - 0.1
   - 0.05
   - 0
   - 0.05

6. Consider a portfolio of two assets A1 and A2 with the expected returns being μ1 = 4% and μ2 = 6%, respectively. Further, σ1 = 0% and σ2 = 10% and the assets returns are uncorrelated. Then the weight of the second asset A2 at which the portfolio attains its minimum variance equals:

   - 0
   - 0.5
   - 0.6
   - 0.4

7. Which of the following is (are) possible sets for a three asset portfolio, with no short selling being allowed.

   - (ω1, ω2, ω3) = (0, 0, 0)
   - (ω1, ω2, ω3) = (0, 0.5, 0.5)
   - (ω1, ω2, ω3) = (0, 0.5, 0.4)
   - (ω1, ω2, ω3) = (0, 0.5, -0.5)

   - Answered.
   - 1, 2, 3