Course No. ECON F412/FIN F313   **Course Title: Security Analysis & Portfolio Management**
Quiz-2 (CB)   **Marks: 20 (10%) 40 mins.**   **Date: 17/11/2022**

Name of the Student: **ID No.:**

Each question carries 2 marks. There is no negative marking. Please write the correct options in the box below. Please ensure you have written your name and id number.

QUESTIONS	OPTION SELECTED
Q1	
Q2	
Q3	
Q4	
Q5	
Q6	
Q7	
Q8	
Q9	
Q10	

1. You are trying to analyse the performance of the actively managed fund. You have the following information about the fund, market index and treasury security.

	Returns	Stdev of returns	beta
Fund	30.00%	15%	1.6
Market index	17.00%	14%	
90-day Treasury-bill	6.00%	0.00%	

You gathered more insights into the fund and found that fund was not fully diversified. The manager had included certain securities which they expected to be real winners, but that led to a compromise on the diversification. Do you think their selection of winners was justified? Answer by calculating the alpha i.e. returns over and above a required return due to a relevant measure of risk when the fund is not fully diversified. In what range will the answer be?

a) 4% to 5%, Justified
b) 12% to 13%, Justified
c) -4.5% to -2.5%, Not Justified
d) 8%-9%, Justified
e) None of the options is correct

2. Consider that the market timing regression output equation is given as:

$R_p = .03 + 2\ R_m + 0.5\ R_m{}^{\wedge}2$

All coefficients and intercepts are significant. If the return of the market index increases by 3%, the return of the fund will increase by X% if the return of the market index is 11%. What is the value of X%? Up to 2 decimal places

a) 4.24%

b) 8.40%

c) 6.33%

d) 5.30%

e) None of the options are correct

3. Consider that the market timing regression output equation is given as:

$R_p = .04 + 3\ R_m + 1.5\ R_m$ *Dummy, where Dummy is 1 if $Rm > Rf$, 0 Otherwise

If the return of the market index increases by 2%, the return of the fund will increase by X% if the market risk premium is -ve5%. What is the value of X%?

a) 10.15%

b) 9.0%

c) 7.50%

d) 6.00%

e) None of the options are correct

4. You are trying to analyse the performance of an actively managed fund which had mentioned that it would be following an investment strategy of hedging to limit its losses. You have the following information about the historical returns of the fund. Calculate the downside risk i.e. a semi-deviation measure (%) w.r.t average returns. Use population statistics *(divide by n and not n-1)*

Year	Mgr X Return(%)
1	-1.2
2	-1.2
3	-1
4	0
5	4
6	6
7	8
8	14

a) 1.5%-1.8%
b) 3.0% - 3.5%
c) 3.9% - 4.9%
d) 2.3%-2.6%
e) None of the options are correct

5. You are trying to analyse the performance of an actively managed fund which had mentioned that it would be following an investment strategy of hedging to limit its losses. You have the following information about the historical returns of the fund. Calculate the performance measure **Sortino ratio** if the minimum acceptable return threshold is 2%. The downside risk is a semi-deviation measure (w.r.t. average returns) in the Sortino ratio. Use population statistics *(divide by n and not n-1)*

Year	Mgr X Return(%)
1	-1.2
2	-1.2
3	-1
4	0
5	4
6	6
7	8
8	14

a) 0.1-0.5
b) 0.9 – 1.5
c) 3 - 3.5
d) 3.9-5.0
e) None of the options are correct

6. Consider the following performance data for fund A a common benchmark portfolio

	Benchmark		Fund A	
	Weight	Return	Weight	Return
Stock	0.7	5%	0.5	7%
Bonds	0.2	3.50%	0.3	6.00%
Cash	0.1	0.30%	0.2	0.30%

    I.   The fund A outperforms the benchmark by 1.13%

    II.   The fund A outperformed the benchmark due to better allocation skills but poor stock selection skills.

a) Only I is correct
b) Only II is correct
c) Both I and II are correct
d) Neither I nor II is correct

7. Consider the following performance data for fund B a common benchmark portfolio

	Benchmark		Fund B	
	Weight	Return	Weight	Return
Stock	0.7	5%	0.3	5%
Bonds	0.2	3.50%	0.5	3.50%
Cash	0.1	0.30%	0.2	0.30%

    I.   Fund B outperforms the benchmark by 0.92%

    II.   Fund B manager has no selection skills but good allocation skills which caused the outperformance

a) Only I is correct
b) Only II is correct
c) Both I and II are correct
d) Neither I nor II is correct

Data for Q8 to Q10

You are trying to analyze the performance of the actively managed fund. You have the following information about the fund. The fund comprises stocks, bonds and some cash holdings. The Tables below provide information on the market value of these asset classes in the fund, the correlation of returns between asset classes, and their expected returns and standard deviation of returns. All values are annualized values. The correlation of returns of these asset classes with the market index (which is the benchmark index) is also provided.

The expected return of the market index was 7% p.a. and the standard deviation of returns of the market index was 20% p.a.

Asset classes in Fund	Investment value in fund (INR million)	Expected Return (%)	Standard deviation of returns (%)
Stock	1000	15%	25%
Bond	750	8%	12%
Cash	550	6%	0%

Correlation matrix	Stock	Bond	Cash	Market
Stock	1	-ve 0.2	0	0.7
Bond	-ve 0.2	1	0	0.2
Cash	0	0	1	0
Market	0.7	0.2	0	1

8. What is the Beta of the fund? (*Refer to formula sheet if needed*)

   a) 0.6-0.9
   b) 1.2-1.5
   c) 0.35-0.5
   d) 2-2.5
   e) None of the options are correct

9. What is the fund's Sharpe measure, and did it overperform or underperform the market? (*Remember:variance= $w^T\sum w$*)

   a) 0.01-0.05, underperformed
   b) 0.3-0.7, overperformed
   c) 0.9-1.5, overperformed
   d) None of the options are correct

10. What is the fund's Treynor measure, and did it overperform or underperform the market?

    a) 0.09 - 1.0, overperformed
    b) 0.00-0.01, underperformed
    c) 1.5-2.0, overperformed
    d) None of the options are correct

FORMULA LIST

Performance Attribution Analysis

The Formula

$$\text{Allocation Effect} = \Sigma_i \left[(W_{ai} - W_{pi}) \times (R_{pi} - R_p) \right]$$

$$\text{Selection Effect} = \Sigma_i \left[(W_{ai}) \times (R_{ai} - R_{pi}) \right]$$

where:

w_{ai}, w_{pi} = the investment proportions of the ith *market segment* in the manager's portfolio and the benchmark policy portfolio, respectively

R_{ai}, R_{pi} = the investment return to the ith market segment in the manager's portfolio and the benchmark policy portfolio, respectively

$$E(R_{port}) = \sum_{i=1}^{n} W_i R_i$$

where: W_i = the percent of the portfolio in asset i

$E(R_i)$ = the expected rate of return for asset i

$$\sigma_{port} = \sqrt{\sum_{i=1}^{n} w_i^2 \sigma_i^2 + \sum_{i=1}^{n} \sum_{\substack{j=1 \\ j \neq 1}}^{n} w_i w_j \text{Cov}_{ij}}$$

where :

σ_{port} = the standard deviation of the portfolio

W_i = the weights of the individual assets in the portfolio, where
weights are determined by the proportion of value in the portfolio

σ_i^2 = the variance of rates of return for asset i

Cov_{ij} = the covariance between the rates of return for assets i and j,
where $\text{Cov}_{ij} = r_{ij} \sigma_i \sigma_j$

Beta_i = Covariance (Ri, Rm) / Variance (Rm)

$$\beta_P = \sum_{i=1}^{n} x_i \beta_i$$

where Xi is the proportion invested in asset i.