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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/2021 ACADEMIC YEAR FOUR**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF BUSINESS AND ECONOMICS**

**FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT**

**COURSE CODE: BBM 413**

**COURSE TITLE: INVESTMENT AND PORTFOLIO ANALYSIS**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 20/08/2021 TIME: 09.00-11.00 AM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of FOUR (4) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Briefly explain three practical uses of the capital asset pricing model. (6 marks)
2. Using a diagram, discuss Seperability theorem as used in portfolio management. (4 marks)
3. Bmg ltd has a portfolio of capital projects which yields an average expected rate of return of 15% per annum. This return is subject to risk and this is estimated as a standard deviation of the probabilities of expected returns of 2.5 per cent. The risk free rate of interest is 6% per annum.

Three projects have come up for consideration by the board of directors and these are designated as M. N, and O. Details of the estimates made for them appear below.

Project

M n o

Expected return 10% 8% 6%

Risk (standard deviation of the probability of distribution) 1% 1.2% 2.4%

Coefficient of correlation of project returns with portfolio returns 0.58 0.89 -0.1

Required:

1. Using capital asset pricing model (CAPM), advice Bmg ltd. On the project(s) to accept or reject (8 marks)
2. The investment portfolio of Jubaland Limited consists of shares in five companies operating in different industries.

|  |  |  |
| --- | --- | --- |
| **Company** | **Amount Invested**  **(Sh. millions)** | **Stock beta**  **Coefficient** |
| A Ltd.  B Ltd.  C Ltd.  D Ltd.  E Ltd. | 160  120  80  80  60 | 0.5  2.0  4.0  1.0  3.0 |

The risk free rate (Rf) is 8%. The market returns have the following probability distribution for the next period.

|  |  |
| --- | --- |
| **Market return %** | **Probability** |
| 10  12  13  16  17 | 0.1  0.2  0.4  0.2  0.1 |

**Required:**

1. Compute the expected return from the market (Rm). (4 marks)
2. Calculate the beta coefficient for the portfolio (βp). (4 marks)
3. Determine the equation for the security market line. (4 marks)

**QUESTION TWO**

1. Evaluate any four assumptions on which the capital asset pricing model (CAPM) is based clearly indicating how far they hold true in practice. (4 marks)
2. Differentiate between systematic risk and unsystematic risk illustrate this with the help of a diagram (4 marks)
3. Investment management is the process that describes how an investor should go about making decisions. Briefly explain the stages in investment process. (4 marks)
4. Mr. Elmi is currently holding a portfolio consisting of shares of four companies quoted on the Nairobi Stock Exchange as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company | **Number of shares held** | **Beta equity**  **co-efficient** | **Market price per share** | **Expected return on equity in the next year**  **%** |
| A  B  C  D | 20,000  30,000  30,000  20,000 | 1.12  0.89  0.70  1.60 | 65  50  45  80 | 18  23  11  17 |

The current market return is 14% per annum and the treasury bills yield is 9% per annum.

**Required:**

1. Calculate the risk of Mr Elmi’s portfolio relative to that of the market. (5 marks)
2. Explain whether or not Mr Elmi should change the composition of his portfolio. (3 marks)

**QUESTION THREE**

Four assets have the following distribution of returns.

***Probability Rate of return (%)***

***Occurrence A B C D***

0.1 10.0% 6.0% 14.0% 2.0%

0.2 10.0 8.0 12.0 6.0

0.4 10.0 10.0 10.0 9.0

0.2 10.0 12.0 8.0 15.0

0.1 10.0 14.0 6.0 20.0

**Required:**

1. Compute the expected return and standard deviation of each asset. (8 marks)
2. Compute the covariance of asset
3. A and B (2 marks)
4. B and C (2 marks)
5. B and D (2 marks)
6. Compute the correlation coefficient of the combination of assets in b above. (6 marks)

**QUESTION FOUR**

1. Discuss the three forms of market efficiency (6 marks)
2. Explain the main models used in portfolio performance appraisal (4 marks)
3. The risk free rate is 10% and the expected return on the market portfolio is 15%. The expected returns for 4 securities are listed below together with their expected betas

**SECURITY EXPECTED RETURN EXPECTED BETA**

A 17.0% 1.3

B 14.5% 0.8

C 15.5% 1.1

D 18.0% 1.7

**REQUIRED:**

1. a. On the basis of these expectations, which securities are overvalued? Which are undervalued? (6 marks)
2. b. If the risk-free rate were to rise to 12% and the expected return on the market portfolio rose to 16%, which securities would be overvalued? which would be under-valued? (Assume the expected returns and the betas remain the same). (4 marks)

**QUESTION FIVE**

1. Outline four conceptual differences between the arbitrage pricing model and CAPM. (4 marks)
2. An investor is considering investing in the stocks of three companies, A Ltd, B Ltd. and C Ltd. The following information relates to the stocks of the three companies:

|  |  |  |  |
| --- | --- | --- | --- |
| Sensitivity of stock’s returns to changes in: | | | |
| Company | Market index | Inflation | Economic growth rate |
| A Ltd | 1.50 | -0.10 | 0.56 |
| B Ltd | 0.90 | 0.10 | 0.60 |
| C Ltd | 1.10 | -0.43 | 0.86 |

During the year 2014, it is expected that the market index will increase in performance by 2.5% up from its current 5%. The risk free rate of return in the market will be 6% on average and the inflation and economic growth rates will be 10% and 5.6% respectively.

**Required:**

1. Expected returns for the three stocks in year 2014 using the capital asset pricing model (CAPM). (4 marks)
2. Expected returns for the three stocks in year 2014 using the arbitrage pricing theory (APT). (4 marks)
3. State the reason why an investor would get different return estimates in (b) (i) and (b) (ii) above. (2 marks)The average return of the market is 14% and the risk free rate is 8%. The following data has been gathered considering three portfolios

|  |  |  |  |
| --- | --- | --- | --- |
| Portfolios | Expected Return | Beta Factor | Standard Deviation.(∂p) |
| W | 12% | 0.90 | 1.8% |
| X | 16% | 1.05 | 2.2% |
| Y | 18% | 1.20 | 2.3% |

Standard deviation of the market is (∂m) = 2%

**Required**: Evaluate the performance of the portfolio using

1. Treynor’s Measure. (2 marks)
2. Sharpes’ Measure. (2 marks)
3. Jensen Measure (2 marks)