KASNEB

CIFA PART II SECTION 4

PORTFOLIO MANAGEMENT

FRIDAY: 27 May 2016. **Time Allowed: 3 hours.**

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

QUESTION ONE

(a) Analyse five constraints that investors are likely to face when making investment decisions. (5 marks)

(b) Paul Letting' wishes to invest in a securities exchange. He has obtained the following information relating to individual securities of interest:

Security	Expected return (%)	Beta	Unsystematic risk (%)
A	15	1.5	40
B	12	2.0	20
C	10	2.5	30
D	09	1.0	10
E	08	1.2	20
F	14	1.5	30

Additional information:

1. The market index variance is 10%.
2. The risk free rate of return is 7%.
3. Assume no short sales is allowed.

Required:

Determine the optimal portfolio. (10 marks)

(c) Highlight five benefits that would accrue to an investor who includes pooled investment products in his portfolio. (5 marks)

(Total: 20 marks)

QUESTION TWO

(a) Explain the following types of risks associated with emerging market investments:

(i) Accounting convections. (2 marks)

(ii) Settlement risk. (2 marks)

(iii) Information barriers. (2 marks)

(iv) Custodial facilities. (2 marks)

(b) A portfolio manager is provided with the following data relating to an investment account:

Date	1 November 2014 Sh. "000"	1 March 2015 Sh. "000"	1 August 2015 Sh. "000"	1 February 2016 Sh. "000"	1 April 2016 Sh. "000"
Account balance (Before deposit or withdrawal)	14,516	14,547	18,351	16,969	18,542
Deposit	-	3,000	-	2,500	-
Withdrawal	-	-	2,000	-	-

Required:

Annual effective yield rate using the time weighted method. (3 marks)

(c) Nicholas Timamo, the Chief Financial Officer (CFO) of Sinet Ltd., chairs the investment committee of the company's Sh.100 million defined benefit (DB) pension plan. Sinet Ltd. operates exclusively in the domestic market and has recently completed a five year early retirement program. As a result of this program, many long time employees decided to retire early at age 50 and receive full pension benefits.

The actuary of the pension plan has determined the following:

1. 60% of all participants in Sinet Ltd.'s DB pension plan are now retired and receiving their pension.
2. The required real rate of return based on actuarial assumptions for the pension fund is 5.5% annually.
3. The average age of active employees who will eventually collect retirement benefits is 45 years.
4. Inflation has been stable at 2% per annum. This rate is forecasted to remain the same for the foreseeable future.
5. The pension plan is currently fully funded and Nicholas would like to minimise the amount of the company contributions required in future.

Required:
Formulate an investment policy objective for Sinet Ltd.'s pension plan under the following headings:

(i) Return objective. (3 marks)

(ii) Risk tolerance. (3 marks)

(iii) Time horizon. (3 marks)

(Total: 20 marks)

QUESTION THREE

(a) (i) Discuss two factors that could affect the level of tracking error in a portfolio of ordinary shares. (4 marks)

(ii) The following information relates to Signature Investment Limited for the year ended 2015:

1. Risk free rate of return is 5.0%.
2. Benchmark standard deviation is 15.0%.
3. Beta of the benchmark index is 1.0.
4. Average annual rate of return is 19.8%.
5. Standard deviation of return of the company is 11.9%.
6. Sharpe ratio is 1.24.
7. Residual standard deviation is 11.5%.
8. Company's beta is 0.80.

Required:
Tracking error for Signature Investment Limited portfolio. (3 marks)

(b) Evaluate four categories of assets that could be used to construct a portfolio. (4 marks)

(c) Justus Mutinda, a portfolio manager for a money market fund at Alpha Asset Managers (AAM), provides advisory services to his two clients; Tricend Limited and Quantum Limited portfolios.

The following information is relevant to the two clients:

Tricend Limited:
The company's portfolio is managed on behalf of an endowment. Justus Mutinda employs a regression model using the data over the past eight years as shown below:

$(R_{pt} - R_{ft}) = \alpha + B\,(R_{Bt} - R_{ft}) + \Sigma t$

Where:
R_{pt}, R_{ft}, R_{Bt} = The return on the portfolio, risk free assets and benchmark at time t, respectively.
α, B = Regression intercept and slope coefficient, respectively.
Σt = Random regression error term.

Results:

Parameter	Coefficient estimate	Standard error
α	0.025	0.121
B	1.05	0.336

Quantum Limited:
The company's portfolio is managed on behalf of a pension fund with a high risk aversion ($\lambda = 0.15$). The portfolio is anticipated to generate quarterly residual return of 0.5% with a residual risk of 1%.

Required:

(i) The ex-post information ratio (IR) for Tricend Limited portfolio. (3 marks)

(ii) The annualised value added (VA) for Quantum Limited portfolio using the estimates of residual risk and residual return. (3 marks)

(iii) The optimal level of annualised residual risk for Quantum Limited Portfolio. (3 marks)

(Total: 20 marks)

QUESTION FOUR

(a) An investor's background, past experiences and attitudes can play a significant role in decisions made during the asset allocation process.

Required:
In relation to the above statement, explain how investors could be classified under the following models:

(i) Barnewall Two-Way model. (4 marks)

(ii) Bailard, Biehl and Kaiser (BKK) Five-Way model. (5 marks)

(iii) Highlight three limitations of classifying investors using both of the models identified in (a)(i) and (a)(ii) above. (3 marks)

(b) Cyrus Mwamba and his wife Lucy, aged 40 years and 39 years respectively are considering what to do with a recent windfall that they received from participating in an online sports game. The windfall is estimated to be Sh.2,500,000 (after taxes). Cyrus is currently a supervising mechanic at a local luxury car dealership and earns a salary of Sh.100,000 per month while Lucy is not employed. The couple has two children: Henry and Abby aged 12 and 10 years respectively. By design, the couple owe no debt and pay their expenses on a monthly basis. Family expenses last year amounted to approximately Sh.1,010,000.

In addition to the windfall, the couple have an additional Sh.1,250,000 in cash equivalents. Cyrus and his wife have approached you for assistance in managing their portfolio. The couple made the following statements at a recent client discovery meeting:

1. One of our goals at this stage in our lives is to pay for the university education of our children.
2. We expect our annual expenses to increase at the general rate of inflation of 5% per annum.
3. We want to retire at the age of 65 years and be able to live comfortably but not extravagantly.
4. We are taxed at the rate of 30% on both income and capital gains.
5. We believe our portfolio should never suffer an annual loss of more than 5%. In addition, we do not want to invest in any individual investment or security that is too risky.
6. We do not foresee any unsual expenses over the short-term. As always, we would like to have enough cash at hand for emergencies.

Required:

(i) The couple's after-tax nominal return for the coming year. (4 marks)

(ii) The couple's risk tolerance. (4 marks)

(Total: 20 marks)

QUESTION FIVE

(a) With the aid of a well labelled diagram, illustrate the meaning of the following terms as used in portfolio theory:

(i) An efficient frontier (2 marks)

(ii) A feasible set. (2 marks)

(iii) Capital market line (CML). (2 marks)

(b) The returns on Hydromax Oil Corporation Limited ordinary shares has been found to be influenced by three risk factors: X_1, X_2 and X_3.

Where:
X_1 - An index reflecting energy cost.
X_2 - Changes in the level of market share prices.
X_3 - Changes in the exchange rate of the local currency relative to other currencies.

The following table indicates the risk factor, risk premium and the beta factor for the returns of the company:

Risk factor	Risk premium	Beta factor
X_1	4.5%	0.7
X_2	7.5%	0.3
X_3	11.25%	1.1

The risk free rate is 8.25%.

Required:

(i) The required rate of return of the company's share using the Arbitrage Pricing Theory (APT). (3 marks)

(ii) The required rate of return of the company's share using the Capital Asset Pricing Model (CAPM). (3 marks)

(iii) Highlight four assumptions of Arbitrage Pricing Theory (APT). (4 marks)

(c) Distinguish between "strategy breadth (BR)" and "information coefficient (IC)" in relation to active portfolio management. (4 marks)

(Total: 20 marks)

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