

# KASNEB

## CIFA PART II SECTION 4

### PORTFOLIO MANAGEMENT

FRIDAY: 25 November 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) The way investors think and feel affects the way they behave when making investment decisions.

In relation to the above statement, describe four behavioural biases that could be faced by financial analysts when conducting portfolio research. (4 marks)

- (b) The distribution of return of security F and that of the market portfolio P is given below:

Probability	Return (%)	
	Security F	Market portfolio, P
0.30	30	-10
0.40	20	20
0.30	0	30

#### Required:

- (i) The standard deviation of security F. (2 marks)
- (ii) The expected return of the market portfolio P. (2 marks)
- (iii) The beta for the security. (4 marks)
- (c) Amos Koech is a pension fund consultant in your country. He is at a meeting with a group of pensioners where they are discussing matters relating to making retirement portfolio decisions.

#### Required:

- (i) Discuss two risks which could be faced by investors when making retirement portfolio decisions. (4 marks)
- (ii) Suggest one way of mitigating each of the risks identified in (c) (i) above. (4 marks)

(Total: 20 marks)

#### QUESTION TWO

- (a) Explain the following terms as used in active portfolio management:

- (i) Alpha. (2 marks)
- (ii) Valued added. (2 marks)

- (b) Examine three assumptions underlying the fundamental law of active portfolio management. (6 marks)

- (c) John Muli is an equity analyst with Mali Mingi asset management firm. He currently follows 100 stocks and makes quarterly forecast. His information coefficient is 0.05.

Muli decides to follow an additional 100 stocks with quarterly forecast but with an information coefficient of 0.04.

#### Required:

The new information ratio for John Muli. (3 marks)

(d) Summit Bank Limited (SBL) is a commercial bank with operations in East Africa.

**Required:**

Evaluate the effect of each of the following scenarios on SBL's investment objectives, constraints, or risk taking ability:

- (i) The target average maturity of loans is increased, with overall risk tolerance unchanged. (1 mark)
- (ii) The Asset Liability Committee (ALCO) decides to increase SBL's credit standards for loans although the bank's overall risk tolerance is unchanged. (1 mark)
- (iii) More opportunities exist for expanding net interest margins with low risk in SBL's loan portfolio in its securities portfolio. (1 mark)

(e) Jackline Moraa is a portfolio manager in a leading investment firm. She is interested in using Value at Risk (VaR) model to monitor risk exposure of her employer's government bond portfolio. The current information relating to the government bond portfolio is shown below:

- Portfolio value Sh. 1,400 million
- Expected annualised rate of return 6%
- Standard deviation of annualised rate of return 7%

**Note:** The standard normal distribution Z-values for the 0.05 and 0.01 probability levels are 1.65 and 2.33 respectively.

**Required:**

The 1% monthly Value at Risk (VaR), in shillings, for the government bond portfolio. (4 marks)

**(Total: 20 marks)**

**QUESTION THREE**

- (a) Discuss five elements of investment policy statement (IPS). (5 marks)
- (b) With reference to Markowitz portfolio theory, examine three problems associated with instability of the minimum variance frontier. (3 marks)
- (c) You have been appointed as a portfolio manager of a big fund. After evaluating the investment portfolio of the fund, you divide the market into four portfolios following two dimensions: Value/Growth and Small/Large. The weight of each portfolio in the index is given below. You designed the following model:

Portfolio	Weight (%)	Sensitivity to factor 1 (Market beta)	Sensitivity to factor 2 (Price/Book)	Sensitivity to factor 3 (Average capitalisation)
Small value	5	0.85	0.80	1
Small growth	5	0.95	0.30	1
Large value	40	0.90	2	8
Large growth	50	1.10	3	10
Risk premium		8%	-2%	0.10%

The risk free rate is 2%.

**Required:**

- (i) Using the arbitrage pricing theory (APT), determine the portfolio that has the highest expected return. (4 marks)
- (ii) One of your competitors uses the capital asset pricing model (CAPM) to calculate the expected return. Based on the betas illustrated above, determine the portfolio that he should choose in order to maximise his expected return. (4 marks)
- (iii) In order to diversify his perceived risk, another competitor wants to combine the small value and large growth portfolios. The new portfolio should have an overall sensitivity to factor 1 (market beta) of 1.

Show how your competitor should invest in the small value portfolio and by how much. (4 marks)

**(Total: 20 marks)**

#### QUESTION FOUR

- (a) Explain the following terms as used in portfolio asset allocation:
- (i) Horse Race or “equal balanced managers” system. (2 marks)
  - (ii) Strategic asset allocation. (2 marks)
  - (iii) Tactical asset allocation. (2 marks)
- (b) Summarise four advantages of using Monte Carlo Simulation approach in personal retirement planning. (4 marks)
- (c) A financial analyst has gathered the following information for the asset allocation of three portfolios:

Portfolio	Fixed Income (%)	Equity (%)	Alternative investments (%)
X	25	60	15
Y	60	25	15
Z	15	60	25

**Required:**

Giving a suitable reason, determine the portfolio that is appropriate for a client who has a high degree of risk tolerance. (2 marks)

- (d) The following information relates to historic geometric rates of return for various asset classes:

Asset class	Geometric rate of return (%)
Equities	8.0
Corporate bonds	6.5
Treasury bills	2.5
Inflation rate	2.1

**Required:**

- (i) The real rate of return for equities. (2 marks)
- (ii) The real rate of return for corporate bonds. (2 marks)
- (iii) The risk premium for equities. (2 marks)
- (iv) The risk premium for corporate bonds. (2 marks)

**(Total: 20 marks)**

#### QUESTION FIVE

- (a) Outline three assumptions in behavioural finance that are necessary in specifying investors portfolios. (3 marks)
- (b) (i) Explain the term “financial engineering”. (2 marks)
- (ii) Propose four factors responsible for growth in financial engineering in your country. (4 marks)
- (c) Analyse four ethical responsibilities of a portfolio manager. (4 marks)
- (d) An investor has a risk aversion of 5% with the following asset mix:

Asset allocation	Expected rate of return E(R) (%)	Standard deviation ( $\sigma$ ) (%)
A	18	12
B	17	9
C	7	5

**Required:**

Using the risk-adjusted rate of return measure, advise the investor on the appropriate asset mix. (4 marks)

(e) The information given below relates to the beta coefficient and the amount of investment for a fund:

Stock	Investment (Sh. "million")	Stock's Beta Coefficient
A	120	0.5
B	100	2.0
C	60	4.0
D	80	1.0
E	40	3.0

The current risk-free rate is 7%, and the market return has the following probability distribution for the next one year:

Probability	Market return (%)
0.1	8
0.2	10
0.4	12
0.2	14
0.1	16

**Required:**

The rate of return on the fund.

(3 marks)

(Total: 20 marks)

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