



STRATHMORE INSTITUTE OF MATHEMATICAL SCIENCES  
BBS ACTUARIAL SCIENCE; BBS FINANCIAL ECONOMICS; BBS FINANCIAL  
ENGINEERING  
SPECIAL EXAMINATION  
BSF 2206 PORTFOLIO MANAGEMENT

DATE: 13/05/2024

Time: 2 Hours

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**Instructions**

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

**QUESTION ONE [30 marks]**

- a) Discuss how an individual's investment strategy may change as he or she goes through the investment life cycle. (5 marks)
- b) Distinguish between an efficient portfolio and optimal portfolio (4 marks)
- c) Based on the current dividend yields and expected capital gains, the expected rates of return on portfolios X and Y are 11% and 14% respectively. The beta of A is 0.8 while that of B is 1.5. The T-bill rate is currently 6%, while the expected rate of return of the market of the index is 12%. The standard deviation of the portfolio X is 10% annually, while that Y is 31%, and that of the index is 20%.

**Required**

If you currently hold a market index portfolio, would you choose to add either of these portfolios to your holdings (5 marks)

- d) Discuss how bond features affect risk and return (10 marks)
- e) Explain any three alternative investments available to investors. How different are they from the traditional asset classes. (6 marks)

**QUESTION TWO [20 marks]**

Consider a portfolio consisting of Nadis and PLUM shares. The standard deviation of returns of Nadis and PLUM are 20% and 30% respectively. Covariance of returns of the two assets equals **-0.036**

**Required**

- (i) Estimate the risk of the global minimum variance portfolio. (15 marks)  
Let Nadis be asset 1 and PLUM asset 2
- (ii) What is the significance of the global minimum variance portfolio? (5 marks)

**QUESTION THREE [20 marks]**

An investor has collected data regarding covariance of returns, Standard deviation of returns and expected returns for three assets namely M, V and Z. The analyst intends to construct the minimum variance frontier using the three assets that will eventually guide her portfolio choice.

Asset	Expected return	Standard Deviation
M	8%	18%
V	12%	30%
Z	5%	11%

$COV_{(M, Z)} = 0.01$ ;  $COV_{(M, V)} = -0.04$ ;  $COV_{(V, Z)} = 0.03$

**Required**

- i) What do you understand by minimum variance frontier? (5 marks)
- ii) Describe the steps including the inputs that could be implemented in a computer application or program to construct the minimum variance frontier. [**No need for calculations**]. (15 marks)

**QUESTION FOUR [20 marks]**

An investor is considering equity investments in the retail sector in Kenya specifically the telecommunication sector and she has asked you to carry out top-down equity analysis. Provide an outline of what should be included in the report (20 marks)

**QUESTION FIVE [20 marks]**

- a) Explain the application of derivatives in investments and portfolio management citing relevant examples. (6 marks)
- b) A corporate bond with a 4.25% coupon is priced at USD 104.03. This bond's duration is 5.3 What would be the impact on the bondholder's return if the bond's credit spread widens by 75 basis points due to a credit rating downgrade? (4 marks)
- c) Consider the following information:

<b>Investment</b>	<b>E(R<sub>i</sub>)</b>	<b>σ<sub>i</sub></b>
1	18%	2%
2	19%	8%
3	20%	15%
4	18%	30%

- (i) Which investment will a risk averse investor with risk aversion coefficient 2 and utility function  $U=E(R) - 0.5A\sigma^2$  choose? (5 marks)
- (ii) What of a risk neutral investor? (1 mark)
- d) An investor assumes that he can borrow money at 8% and achieve the same return on a stock index The index has an expected return of 20% with a standard deviation of 30%. Calculate his expected risk and return if he borrows 40% of his initial investment amount. (4 marks)