



**SCHOOL OF LAW AND BUSINESS SCIENCES  
DEPARTMENT OF ECONOMICS AND FINANCE**

<b>BACHELOR OF COMMERCE</b>	<b>PART 4 SEMESTER 2</b>
<b>COURSE</b>	<b>MARKET AND LIQUIDITY RISK MANAGEMENT</b>
<b>CODE</b>	<b>HBF429</b>
<b>DATE</b>	
<b>DURATION</b>	<b>3 HOURS</b>

GREAT ZIMBABWE UNIVERSITY  
RECEIVED  
-- NOV 2024  
EXAMINATIONS OFFICE

**MAIN EXAMINATION**

**INSTRUCTION TO CANDIDATES**

1. THE PAPER COMPRISES 5 QUESTIONS.
2. YOU ARE REQUIRED TO ANSWER ANY FOUR QUESTIONS.
3. BEGIN THE ANSWER TO EACH QUESTION ON A FRESH PAGE OF THE ANSWER BOOKLET.
4. NON-PROGRAMMABLE SCIENTIFIC CALCULATORS ARE ALLOWED INTO THE EXAMINATION.
5. CANDIDATES WILL OBTAIN CREDIT FOR SHOWING ALL WORKINGS.

**QUESTION 1**

- a) Define Value at Risk (VaR) and explain its role in market risk measurement. [5 marks]
- b) Discuss interactions between different types of liquidity risk and explain how liquidity risk events can increase systemic risk. [5 marks]
- c) Describe the various types of market risk that financial institutions face. Which type do you consider most critical and why? [5 marks]
- d) Analyze the role of regulatory frameworks, such as the Basel Accords, in addressing market and liquidity risk. [10 marks]

**[TOTAL 25 MARKS]**

**QUESTION 2**

- a) Complete the following Table that present daily marking to market cashflows for a futures contract. Initial margin is set at 10% and maintenance margin is 5% of futures price. [10 marks]

**Table 1: Futures contract marking-to-market**

Day	f(n,T)	Cashflow	Beginning of day balance	Payment	End of day balance
0	140				
1	138				
2	130				
3	140				
4	150				

- b) Provide explanations for daily Cashflows in Table 1 above. [5 marks]
- c) Outline the components of a contingency funding plan. How does liquidity stress testing play a role in the formulation of such plans? [10 marks]

**[TOTAL 25 MARKS]**

**QUESTION 3**

- a) XYZ Bank has the following assets and liabilities on its balance sheet:

Assets:

- 5-year loans worth \$500 million, with a fixed interest rate of 6% per annum.
- 10-year bonds worth \$300 million, with a fixed interest rate of 5% per annum.

Liabilities:

- 2-year time deposits worth \$400 million, with a fixed interest rate of 3% per annum.
- 7-year savings accounts worth \$200 million, with a variable interest rate currently at 2% per annum.

Assuming that all interest rates are compounded annually, calculate the following:

- i. The annual cash flows from assets and liabilities for the next 10 years. [4 marks]

- ii. The cumulative gap between assets and liabilities for each year. [5 marks]
  - iii. The impact on the bank's equity if interest rates for all instruments increase by 1% immediately after the calculation, considering a flat yield curve. [5 marks]
  - iv. Discuss the implications of the results for XYZ Bank's ALM strategy. [5 marks]
- b) Differentiate between sources of liquidity risk faced by banking institutions. [6 marks]

**[TOTAL 25 MARKS]**

**QUESTION 4**

- a) Assume that the profit/loss distribution for XYZ is normally distributed with an annual mean of \$15 million and a standard deviation of \$10 million. Calculate the VaR at the 95% and 99% confidence levels using a parametric approach. [5 marks]
- b) Discuss the advantages and disadvantages of non-parametric estimation methods. [10 marks]
- c) AFC Bank conducts an Asset-Liability Management (ALM) analysis to assess its interest rate risk exposure. The bank has the following assets and liabilities with different maturities:

Assets:

- \$50 million in 1-year fixed-rate loans
- \$30 million in 2-year floating-rate loans
- \$20 million in 3-year fixed-rate bonds

Liabilities:

- \$40 million in 1-year fixed-rate deposits
- \$35 million in 2-year floating-rate deposits
- \$25 million in 3-year fixed-rate borrowings

Interest Rate Assumption: The bank expects interest rates to increase by 1% across all maturities.

Calculate the bank's net interest income (NII) sensitivity to a 1% parallel increase in interest rates using the ALM framework. Use the following information: [10 marks]

- Current interest rate spread: 2%
- Modified duration of assets: 3 years
- Modified duration of liabilities: 2.5 years
- Total assets: \$100 million
- Total liabilities: \$100 million

**[TOTAL 25 MARKS]**

**QUESTION 5**

- a) You are given the following ABC Bank's Financial Statement Data:
  - Cash and Cash Equivalents: \$50 million
  - Required stable funding: \$1 500 million
  - Marketable Securities: \$30 million
  - Loans (Net): \$500 million
  - Deposits: \$400 million
  - Tier 1 Capital: \$80 million
  - Total Assets: \$600 million

Total Liabilities: \$520 million  
High-Quality Liquid Assets (HQLA): \$100 million  
Total Net Cash Outflows over the next 30 calendar days: \$60 million  
Privileged equities with a maturity of one year or more: \$70 million  
Liabilities with a maturity of one year or more: \$320 million  
Demand deposits for short-term funding: \$650 million  
Long-term wholesale funding: \$120 million

You are required to compute and appraise the following ratios:

- i) Liquid asset ratio. [3 marks]
  - ii) Loan to deposit ratio. [3 marks]
  - iii) Liquidity coverage ratio. [3 marks]
  - iv) Net stable funding ratio. [3 marks]
  - v) If a sudden economic downturn caused a 10% withdrawal of demand deposits, how would this affect ABC Bank's LCR? Would the bank still be in compliance? [5 marks]
- b) Imagine CFX bank faces a sudden surge in customer withdrawals. Discuss potential actions the bank could take to manage this liquidity squeeze. [8 marks]

**[TOTAL 25 MARKS]**

**~ END OF EXAMINATION ~**