



STRATHMORE BUSINESS SCHOOL
MASTER OF SCIENCE IN DEVELOPMENT FINANCE
SPECIAL/SUPPLEMENTARY EXAMINATIONS
MDF 8105: FINANCIAL RISK MANAGEMENT

DATE: Monday 27th April 2026

TIME: 3 Hours

INSTRUCTIONS:

Answer Question One which is compulsory and choose any TWO Questions from question three to four. Question Two has a case provided. Select formulas and Time Value of Money Tables are provided at the end of Question Four.

QUESTION ONE

(50 Marks)

Refer to the case provided to provide your responses to some of the questions here.

- (a) From the information presented, discuss **FIVE** macroeconomic risks the Microfinance Institution (MFI) is facing that have adversely impacted its overall performance. **(10 Marks)**
- (b) The Microfinance Institution has prepared a risk management report. Highlight **FIVE** aspects that are missing in the report to make it more informative. **(10 Marks)**
- (c) One of the subsidiaries of the banks has availed the following data for the purpose of computing Expected Credit Loss as at 31 December 2025:

Items	Probability of Default	Exposure at Default (Sh.m)	Loss Given Default (%)
Loans to individuals – Overdrafts	5%	50-80	90%
Loans to individuals – Credit Cards	2%	20-40	100%
Loans to individuals – Terms Loans	10%	300	50%
Loans to individuals – Mortgages	10%	200	20%
Loans to Companies – SMEs	5%	500	40%
Loans to Companies – MSMEs	12%	250	60%
Investment in debt Securities	5%	100	100%

Required

Compute the Expected Credit Loss for the subsidiary on a prudential basis and explain how it is presented in the financial statements. **(10 Marks)**

(d) Using customers' deposits and Loans and advances to customers over the two years, determine whether the liquidity risk of the MFI has increased or reduced. **(8 Marks).**

(e) The MFI has indicated in its risk management report that the Board of Directors is responsible for the overall risk management approach and for approving the risk management strategies and principles.

Required

Expand this role into **SIX** more specific roles for the board in risk management of a bank **(12 Marks)**

QUESTION TWO

(25 Marks)

(a) Zesta Limited manufactures and sells office machines that provide 3-in-1 functionalities of Photocopying, Scanning and Printing. The company is preparing the cash budget for the six months from July 2026 to December 2026. The following information is relevant:

1. The selling price of one machine is Sh. 40,000. The company expects to sell the following machines on credit:

Month	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26
Quantities	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400

Based on history, 20% of credit customers pay in the same month of purchase, 40% pay the next month and 35% in the second month after the sale. 5% of credit customers are expected to default. The company expects to sell 80 machines in July to customers who pay cash. This will increase by 10 machines every month. The customers are given a 2% discount for cash settlement.

2. The total cost of a machine is Sh.26, 000 given as follows:

Direct Materials	Sh. 20,000
Direct Labour	Sh. 4,000
Variable production overheads	Sh. 2,000

The factory expects to manufacture the following quantities of machines:

Month	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26
Quantities	1,200	1,400	1,600	2,000	2,400	2,600	2,400	2,200

30% of the suppliers of raw materials are paid in the same month, 30% are paid in the next month and 40% are paid in the second month after the materials are used in production. Wages (Direct Labor) are paid in the same month in which the machines are produced. 70% of the variable production overhead is paid in the month of production; the remainder is paid in the following month.

Fixed production overheads costs are estimated at Sh. 4,000,000 per month from July to September and then sh. 5,000,000 from October to December and are paid in full in the same month.

3. Corporation tax of sh. 18 million is to be paid on 31st October 2026. Selling expenses amount to Sh. 1,000,000 in July and this will be increasing by Sh.200,000 per month. Administration expenses will be constant at sh. 1 million per month.

4. Two new delivery vans will be purchased in July 2026 at a cost of Shs. 4 million each: the amount payable on 30th September 2026. Two old vehicles are to be sold end of July 2026 for Shs. 600,000 each, cash on delivery.

5. The company expects to have an overdraft balance at the bank of Shs. 3,000,000 as at 1st July 2026.

Required:

(i) Prepare a month-by-month cash budget and the total for the six months ending 31st December 2026. **(10 Marks)**

(ii) Using the cash budget, comment on the firm's liquidity risk for the six months, highlighting the critical months and what action the company can take to address the same. **(5 Marks).**

(b) Based on the expected growth in credit sales, Piza Limited is also facing an increase in credit risk being 5% of the credit customers. Explain how Piza can use the 5Cs of credit in screening customers to advance credit. **(10 Marks).**

QUESTION THREE**(25 Marks)**

(a) Watela Limited is evaluating two projects that will arise over the next year. The cash flow inflow is not certain and hence is estimated using probabilities from five possible events as follows:

	Project A		Project B	
	Cash Flow (\$)	Probability	Cash Flow (\$)	Probability
A	8,000	0.10	4,000	0.10
B	10,000	0.20	20,000	0.15
C	12,000	0.40	16,000	0.50
D	14,000	0.20	12,000	0.15
E	16,000	0.10	18,000	0.10

Both projects require an initial investment of \$10,000, and the weighted average cost of capital is 10%.

Required

Using the concept of expected cash flows, compute the Net Present Value (NPV) and recommend the project to be selected. **(12 Marks)**

(b) Besides expected value analysis, briefly discuss **THREE** other techniques that Rex can use to manage risks in capital budgeting. **(6 Marks)**

(c) Rex Limited is aware that recent technologies such as blockchain, machine learning, artificial intelligence and robotic process automation are useful in financial risk management.

Required

(i) Explain briefly artificial intelligence technology. **(2 Marks)**

(ii) Describe **FIVE** ways in which artificial intelligence aids in Financial Risk Management **(5 Marks)**

QUESTION FOUR**(25 Marks)**

Mazaar Fund has been set up to provide support in terms of donations to Micro and small enterprises that cannot access funding from large banks. The fund is currently at sh.250 million in two companies i.e. Blazers Limited and Trailers Limited. The fund uses the return from the fund to finance the donations.

The fund is allocated as follows:

Company	Amount Invested	Company Beta	Company Risk
Blazers	Sh.120 million	1.25	25%
Trailers	Sh.130 million	1.2	22%

The risk-free rate is 7%, and the expected return on the market is 14%. The covariance between the two stocks is 0.0385.

NB)

$$ER_i = R_f + \beta_i (ER_m - R_f)$$

Portfolio return & risk

$$R_p = w_1 R_1 + w_2 R_2$$

$$\sigma_p = \sqrt{w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2 w_1 w_2 Cov_{1,2}}$$

Required

(b) (i) Compute the expected return, and the risk of the portfolio, as a percentage and also in shillings. **(6 Marks)**

(ii) Compute the following measures of performance for the portfolio and explain the meaning of each:

-Coefficient of variation

(2 Marks)

-Sharpe ratio

(2 Marks)

(b) Assume that it is now a few days to 1st April 2026. Mazaar Fund is considering taking a loan of sh.50 million to increase the size of the fund. This is justified on the basis of the expected return being higher than the interest expense. The loan will be borrowed on 1st July 2025 and repaid on 31st December 2026 together with interest thereon.

However, Mazaar is concerned that interest rates will likely rise over the next three months between April and June. To hedge interest rate risk, Mazaar is considering using a Forward Rate Agreement or an interest rate option on 1st April 2025. The fund has identified a 3 x 9 FRA with a rate of 8% p.a. In addition, the fund has also identified a 180- Day Interest Rate Call with a strike rate of 8.5% p.a. with a call premium of 0.1% of the notional amount.

Required.

Evaluate which hedging strategy will likely be effective if interest rates on 1 July 2026 turn out to be 7.5% p.a. **(6 Marks).**

(c) Mazar Fund is now considering diversifying its portfolio by investing in bonds. The fund identifies a 5- year ABC Bond, with a par value of Sh.100 per bond. The coupon rate is 10% payable annually and the current Yield to Maturity (YTM) of 8%. Mazar would like to measure the risk on the bond.

Required

- (i) Compute the Current bond price **(1 Mark)**
- (ii) Compute the bond price if the YTM increases by 1% to 9% **(1 Mark)**
- (iii) Compute the bond price if the YTM decreases by 1% to 7%. **(1 Mark)**
- (iv) Compute the bond's modified duration and explain what it means **(3 marks)**
- (v) Compute the bond's convexity and explain what it means **(3 Marks)**