Strathmore
UNIVERSITY

STRATHMORE BUSINESS SCHOOL

MASTER OF SCIENCE IN DEVELOPMENT FINANCE

END OF SEMESTER EXAMINATION

MDF 8105: FINANCIAL RISK MANAGEMENT

Date: Tuesday 11th April 2023 **Time**: 3 Hours

Instructions

1. This examination consists of **FOUR** questions.
2. Answer Question **ONE** and **ANY OTHER TWO** Questions
3. Question Two has a case provided.
4. Select formulas and Time Value of Money Tables are provided at the end of Question Four.

Question 1 (Compulsory) (50 Marks)

(a) Zulu 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 2023 to December 2023. 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:

May	- 1,000	Sep	- 1,800
June	- 1,200	Oct	- 2,000
July	- 1,400	Nov	- 2,200
Aug	- 1,600	Dec	- 2,600

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 also sells 100 machines every month to customers who pay on cash. However, 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:

May	- 1,200	Sep	- 2,400
Jun	- 1,400	Oct	- 2,600
Jul	- 1,600	Nov	- 2,400
Aug	- 2,000	Dec	- 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 amount to Sh. 4,000,000 per month and are paid in full in the same month.

3. Corporation tax of sh. 18 million is to be paid in October 2023. Other Non-Production overheads (Selling and Administration) amount to sh.2,000,000 paid at the end of the month.

4. Two new delivery vans will be purchased in July 2023 at a cost of Shs. 4 million each: the amount payable in September 2023. Two old vehicles are to be sold end of July 2023 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 2023.

Required:

(a) (i) Prepare the cash budget for the six months to December 2023 (month by month including total for the six months) (**14 Marks**)

(ii) Using the cash budget, comment on the firm's liquidity risk for the six months pointing out the critical months and what action the company can take to address the same (**6 Marks**)

(b) As highlighted from the credit sales, Zulu Limited is facing credit risk as 5% of the credit customers will likely not pay. Explain how Zulu can use- the 5Cs of credit in screening customers to advance credit (**10 Marks**)

(c) Zulu Limited is now evaluating a project whose estimates are provided as follows, with the base and four scenarios:

	Base	(i)	(ii)	(iii)	(iv)
Initial Investment (Sh.)	10,000,000.00	+10%	0%	0%	0%
Cash Flow (Sh.) - 5 Years	3,000,000.00	0%	-10%	0%	0%
Residual Value (Sh.)	1,000,000.00	0%	0%	-10%	0%
Weighted Average Cost of Capital	12%	0%	0%	0%	+25%

Items in % signify the change in the base values.

Required

(i) Compute the Net Present Value (NPV) for the Base and the four scenarios (**10 Marks**)

(ii) Explain the risk management technique you are using in (i) above and explain the case in which scenario management should give attention, with TWO strategies to mitigate the risk as highlighted (**6 Marks**)

(d) Zulu Limited has learned that big data and analytics is popular in financial risk management (Risk Analytics). Highlight FOUR ways in which data analytics is applied in risk management

(**4 Marks**)

Question 2 (25 Marks)

For this Question, use the case provided.

The case provided relates to extracts from the financial statements, more specifically the financial risk management aspects for year 2021 of a microfinance institution in Kenya, The Microfinance institution did not prepare a separate risk management report. However, based on regulatory requirements, it is expected to have in place a robust enterprise risk management (ERM) framework.

Required

(a) Based on the context of the microfinance institution, discuss the components of the ERM

(**10 Marks**)

(b) Highlight THREE nonfinancial risks that the microfinance institution is facing in addition to the nonfinancial risks provided in the case (**6 Marks**)

(c) Explain TWO other strategies the Microfinance bank can use to manage credit risk, apart from those provided in the case (**4 Marks**)

(d) On page 122, the microfinance institution breached regulatory capital ratios. State which ratios were breached and highlight the TWO risks that these ratios are meant to mitigate as provided in the Basel III accord (**5 Marks**)

Question 3 (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 the large banks. The fund is currently at sh.250 million in two equities 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 equities is 0.0385.

Required

(a) (i) Compute the expected return, and the standard deviation of returns of the portfolio, in shillings, and as a percentage **(8 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 2023. 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 2023 and repaid on 31st December 2023 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 2023. 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.

(i) Evaluate which hedging strategy will likely be effective if interest rates on 1 July 2023 turn out to be 7.5% p.a. **(9 Marks)**

(ii) Highlight One benefit and One Limitation of each method used in (i) above **(4 Marks)**

Question 4 (25 Marks)

It's become a trendy managerial acronym: VUCA, short for volatility, uncertainty, complexity, and ambiguity, and a catchall for "Hey, it's crazy out there!". When you consider various combinations of other events such as wars, natural disasters, the Covid 19 pandemic, these contribute to economic and financial crises.

This calls for organizations to put in place various risk management mechanisms and ensure that everyone in the organization is involved with risk management.

Required

(a) Highlight the role of the following in risk management:

(i) The board of directors (**2 Marks**)

(ii) The risk committee of the board (**2 Marks**)

(iii) The chief risk officer (**2 Marks**)

(iv) The audit committee (**2 Marks**)

(b) Highlight how Covid 19 increased the market risk, credit risk and liquidity risk for the financial sector and suggest for each risk some of the strategies that financial institutions put in place to manage the risks (**9 Marks**)

(c) You are given the following inputs from ABC Limited:

X1 = Working Capital ÷ Total Asset = 0.13
X2 = Retained Earnings ÷ Total Assets = 0.05
X3 = EBIT ÷ Total Assets = 0.13
X4 = Market Capitalization ÷ Total Liabilities = 0.67
X5 = Sales ÷ Total Assets = 0.38

(i) Compute the Altman- Z score for ABC and highlight whether it is financially viable (**5 Marks**)

(ii) Briefly discuss the relevance of the Altman Z Score and other credit scoring models in credit analysis during the Covid 19 Pandemic and other financial crises (**3 Marks**)

SELECTED FORMULAS

$$E(R_p) = w_1 E(R_1) + w_2 E(R_2)$$

$$\sigma_{portfolio} = \sqrt{w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1 w_2 \rho_{12}\sigma_1\sigma_2}$$

$$\rho_{12} = \frac{Cov_{12}}{\sigma_1\sigma_2},$$

$$E(R_i) = R_f + \beta_i \times (E(R_m) - R_f))$$

$$S_A = \frac{\overline{R}_A - \overline{r}_f}{\hat{\sigma}_A}$$

Z = 1.2A x 1.4B x 3.3C x 0.6D x 0.99E

The letters in the formula designate the following measures:

A = Working capital / Total assets [Measures the relative amount of liquid assets]

B = Retained earnings / Total assets [Determines cumulative profitability]

C = Earnings before interest and taxes / Total assets [measures earnings away from the effects of taxes and leverage]

D = Market value of equity / Book value of total liabilities [incorporates the effects of a decline in market value of a company's shares]

E = Sales / Total assets [measures asset turnover]

Table A-3 Present Value Interest Factors for One Dollar Discounted at *k* Percent for *n* Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019