CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL II EXAMINATION

A2.1: STRATEGY CORPORATE FINANCE

DATE: WEDNEDAY 26, NOVEMBER 2025

MARKING GUIDE AND MODEL ANSWERS

SECTION A

QUESTION ONE

Marking Guide

Q1	CRITERIA	MARKS
a)	Award:	
i)	Base case NPV	
	▪ 1 Mark for the correct computation ungeared beta (Beta Asset)	1
	▪ Ungeared Cost of Equity using CAPM	1
	▪ **Determine the initial costs**	1
	▪ 0.5 Marks for the correct Annual Capital allowance 25%	2.5
	▪ 0.5 Mark for the correct Tax benefit/charge and correct timing at 30% on capital allowance	2.5
	Maximum marks	**8**
	▪ 0.5 Mark for the correct Net annual operating cash flows	2.5
	▪ 0.5 Mark for the correct Tax on operating cash flows	2.5
	▪ 0.5 correct allocation of the Working capital	1.5
	▪ 0.5 correct allocation of the scrap value	0.5
	▪ 0.5 Mark for correct computation Net annual cash flows	2.5
	▪ 0.5 Mark for correct computation Present value for each period	2.5
	▪ Base case net present value (Base case NPV)	1
	Maximum marks	**13**
ii)	**Present values of the financing sides**	
	▪ Issue costs on equity	0.5
	▪ Gross loan	0.5
	▪ Net Issue costs on debt	0.5
	▪ Annual installment payments	0.5
	▪ 0.5 Marks on each tax shield on interest	2.5
	▪ 0.5 Marks on each PV of tax shield on Interest Payment	2.5
	Maximum marks	**7**
	Computation of Adjusted Present value (APV)	1
	Conclusion	1
	Maximum marks	**2**
	Sub total	**30**
b	Award 1 mark each stated impact, (Max 3 Marks) for Outline	3
	Award 1 mark for explanation (Max 3 Marks)	3
	Maximum marks	**6**
c	Award 1 mark on each stated strategic consideration	3
	Award 1 mark for explanation	3
	Maximum marks	**6**
d	**Award 1 Mark on each well explained agency problem and**	4
	Award 1 Mark on corresponding solution	4
	Maximum marks	**8**
	Total marks	**50**

Model Answer

Qn a)

Step 1: Computation of the base case Net present value

a) Computation of the beta asset:

Be =Equity beta
Ve=Value of equity
Vd=Value of debt
T=Corpotrate income tax
Computed based on Muhanga Disrtict base equity beta
Ungeared beta asset (ba)= Be* $\frac{Ve}{Ve+Vd(1-t)}$
Ungeared beta asset (ba)= 1.598 * $\frac{60}{60+40(1-30\%)}$= 1.09

b) Ungeared cost of equity (KeU)
RF+ Ba (Rm-Rf) = 6%+1.09*(4%) = 10.358% Round to 10%

WORKING 1: Determine the initial costs

		FRW
Purchase costs		800,000,000
Less: Trade discount	**2%*800millions**	**(16,000,000)**
Add: All directly attributable costs		
-Installation costs		5,000,000
-Site preparation		4,000,000
-Delivery and handling costs		7,000,000
-Professional fee		6,000,000
-Testing fee		3,000,000
Initial costs (Total Cost for Asset)		**809,000,000**

Years	**0**	**1**	**2**	**3**	**4**	**5**	**6**
	FRW	**FRW**	**FRW**	**FRW**	**FRW**	**FRW**	**FRW**
Revenues (FRW m)		350,000,000	376,000,000	380,000,000	390,000,000	710,000,000	
Operating costs (FRW m)		(130,000,000)	(145,000,000)	(152,000,000)	(164,000,000)	(170,000,000)	
Net annual operating cash flows (EBIT)		**220,000,000**	**231,000,000**	**228,000,000**	**226,000,000**	**540,000,000**	
Tax on operating cash flows (30%)			(66,000,000)	(69,300,000)	(68,400,000)	(67,800,000)	(162,000,000)
Working capital			-30,000,000		-2,000,000	32,000,000	
Scrap value						373,000,000	
Tax benefit on capital allowance (W3)			60,675,000	45,506,250	34,129,688	25,597,266	-35,108,203
Initial cost (W1)	(809,000,000)						
Net annual cash flows	**(809,000,000)**	**220,000,000**	**195,675,000**	**204,206,250**	**189,729,688**	**902,797,266**	**(197,108,203)**
Discount factor @10.358%	1	0.906	0.821	0.744	0.674	0.611	0.554
Present value (FRW)	**(809,000,000)**	**199,351,202**	**160,667,376**	**151,934,908**	**127,914,568**	**551,532,525**	**(109,114,325)**
							273,286,254

Base-case NPV = 273,286,254 FRW

Working 3: Tax benefit on capital allowance

	Written down value (WDA)	Capital allowance %25%	Tax benefit/charge at 30% on capital allowance	Timing
Year 1	809,000,000	202,250,000	60,675,000	2
Year 2	606,750,000	151,687,500	45,506,250	3
Year 3	455,062,500	113,765,625	34,129,688	4
Year 4	341,296,875	85,324,219	25,597,266	5
Year 5	**255,972,656**	(117,027,344)	(35,108,203)	6

Net book value	255,972,656
Scrap value	373,000,000
Balancing charge on gain	**117,027,344**

1)Present values of the financing sides

Financing		**FRW**	**Issue costs (FRW)**
Equity	50%	404,500,000	5%
Debt	50%	404,500,000	3%
		809,000,000	
Issue costs on equity=404,500,000*5/95			**21,289,474**
Issue costs on debt=404,500,000*3/97			**12,510,309**
Less: Tax saving @ 30%			**(3,753,093)**
Issue costs on debt after tax=404,500,000*3/97*70%=			**8,757,216**

PV of Issue costs on equity = FRW 21,289,474*1 = 21,289,474

PV of Issue cost of debt = FRW 8,757,216 *1 = 8,757,216

Loan amortization schedule:

Gross amount of the loan	417,010,309
Annuity factor for 5 years at 6%	4.212
Annual equal installments payments=	98,996,746

Year	**Opening Debt**	**Interest (FRW)**	**Annual installments**	**Closing balance**

		6%		FRW
1	417,010,309	25,020,619	98,996,746	343,034,181
2	343,034,181	20,582,051	98,996,746	264,619,486
3	264,619,486	15,877,169	98,996,746	181,499,909
4	181,499,909	10,889,995	98,996,746	93,393,157
5	93,393,157	5,603,589	98,996,746	-

Tax saving

Year	Interest (FRW)	Tax shield FRW	Disc rate	Receipt year	PV FRW
	6%	30%	6%		
1	25,020,619	7,506,186	0.944	Year 2	7,085,839
2	20,582,051	6,174,615	0.890	Year 3	5,495,408
3	15,877,169	4,763,151	0.840	Year 4	4,001,047
4	10,889,995	3,266,998	0.792	Year 5	2,587,463
5	5,603,589	1,681,077	0.747	Year 6	1,255,764
	Total				**20,425,520**

Step 3: Computation of the Adjusted Present Value (APV)

Item	FRW 'million'
Base NPV	273,286,254
Less: PV of equity issue cost	-21,289,474
Less: PV of debt issue cost (net of tax timing)	- 8,757,216
Add: PV of interest tax shield	20,425,520
Adjusted Present Value (APV)	**263,665,084**

Conclusion: The company should go ahead with the investment in Muhanga District Base as it has the positive APV.

b) Impact of the project's financing mix (50% equity and 50% debt) on MULINDI Ltd's financial risk and cost of capital

The financing structure of a project has a major influence on both its overall risk and its cost of capital. MULINDI Ltd's decision to fund its new cement project using an equal mix of debt and equity (50:50) represents a significant shift from its existing capital structure. This change affects the company's financial risk, the return expected by investors, and the overall value of the project. The following analysis explains how this financing mix impacts MULINDI Ltd's financial position and cost of capital.

Increase in financial risk: By financing the new project with equal proportions of debt and equity, MULINDI Ltd is significantly increasing its financial leverage compared to its existing ratio of 25:75.

A higher gearing level means that a larger portion of the company's capital now carries fixed obligations in the form of interest payments. This exposes the company to greater financial risk, especially if operating cash flows fluctuate. While debt can magnify returns when the business performs well, it also amplifies potential losses during downturns, making the company's earnings and shareholder returns more volatile.

Effect on equity beta and cost of equity: The increase in leverage directly affects the company's equity beta, which rises from 1.5 to 1.598 for the project. A higher beta indicates that MULINDI Ltd's shares are now more sensitive to market movements, reflecting the additional financial risk from the new capital structure. Using the CAPM model, the cost of equity is calculated as: 6% + (1.598 × 4%) = 12.4%. This means investors now expect a 12.4% return to compensate for the increased risk, compared to a lower return under the previous capital structure. Therefore, the project's financing decision has raised the expected return required by shareholders.

Cost of debt and tax shield benefits: The debt portion of the financing is described as risk-free with an interest rate of 6%. Since interest expenses are tax-deductible, the effective after-tax cost of debt falls to 4.2%. This tax shield is valuable because it reduces the overall cost of financing the project. The presence of a tax benefit from debt makes borrowing an attractive source of capital, as it enhances project value when evaluated under the Adjusted Present Value (APV) approach. Essentially, the company benefits from cheaper capital while using the tax system to reduce its net financing costs.

Issue costs and financing friction: Although debt appears cheaper, both financing sources come with issuance costs that must be considered. MULINDI Ltd will incur a 5% issue cost on the new equity raised and a 3% issue cost on the bank loan. These costs slightly reduce the actual funds available for investment and increase the effective cost of financing. In the APV framework, these are treated as financing side effects that slightly offset the benefits of cheaper debt and the tax shield. Therefore, while debt financing brings value through tax savings, issue costs create a small but meaningful drag on overall returns.

Impact on overall cost of capital (WACC/APV): Combining debt and equity in equal proportions affects the company's blended cost of capital. While the higher leverage raises the cost of equity due to increased shareholder risk, the lower after-tax cost of debt tends to pull the overall cost of capital down. The result is a mixed effect—MULINDI Ltd enjoys cheaper financing overall but faces a more volatile return profile. This balance is crucial for maintaining investor confidence and ensuring that the project remains financially sustainable.

Conclusion

The 50/50 financing structure increases MULINDI Ltd's financial risk and pushes up the cost of equity, but at the same time, the tax benefits of debt reduce the overall cost of capital. If the company manages its repayments and cash flows effectively, this balanced approach can enhance the project's value and provide an optimal financing strategy for growth.

Summary of this analysis

Impact Area	Effect of 50% Equity – 50% Debt Mix
Financial Risk	Moderate risk due to balanced leverage

Cash Flow Pressure	Reduced pressure since only half is debt
Creditworthiness	Improved because leverage is not excessive
WACC	Lower than pure equity but not minimum
Cost of Debt	Lower because lenders see moderate risk
Cost of Equity	Slightly increases due to financial leverage

c) Strategic considerations beyond financial evaluation that MULINDI Ltd's management should consider before proceeding with the Muhanga District investment.

Before proceeding with the Muhanga District investment, MULINDI Ltd should consider these strategic (non-financial) factors:

1. **Strategic Fit and Synergy Potential:** Management must assess whether the new diversified investment aligns with the company's core competencies and strategic direction.
2. **Market and Industry Analysis:** Assess the current and projected demand for cement in Rwanda and the region, potential entry barriers, customer preferences, and competitive dynamics. Understanding the market structure ensures that the investment aligns with real demand and avoids overcapacity risks.

   Before diversifying, management should evaluate whether the new industry is attractive and competitive enough to justify entry By Consider:

3. Organizational Capacity and Change Management Readiness

Diversification requires the company to operate in new markets, technologies, or business models. Management must evaluate whether the organization has the capabilities and culture to succeed.

Operational and Technical Readiness: Cement production requires specialized machinery, skilled labor, and efficient logistics. MULINDI Ltd must ensure the availability of technical expertise, raw materials (like limestone and gypsum), and reliable infrastructure (power, water, and transport).

Regulatory and Environmental Compliance: Cement manufacturing can have significant environmental impacts. The firm must consider Rwanda's environmental regulations, licensing requirements, and sustainability obligations to avoid legal, financial, and reputational risks.

Socio-Economic and Strategic Fit: The new investment should align with the company's long-term vision and national development priorities. MULINDI Ltd should assess how the cement project supports Rwanda's industrialization strategy, local employment, and corporate social responsibility goals.

d) Agency problems and suggest appropriate measures to minimize them for sustainable long-term growth.

After the Muhanga District investment, MULINDI Ltd is clearly facing several agency problems, situations where the interests of management and shareholders are not aligned. The following are conflict and the solution:

Conflict over dividends: The first issue is the disagreement about dividends. Shareholders, especially institutional investors, want higher dividends because the company's share price has dropped by 15% and they want quick returns. Management, however, prefers to keep profits in the business to fund expansion and buy new equipment. This shows a typical agency conflict where shareholders want short-term rewards, but management is focused on long-term growth. **To solve this**, the company needs a clear dividend policy that balances both sides providing some steady income for shareholders while keeping enough money for reinvestment. Regular communication to explain why retained profits will increase value in the long run would also help reduce tension.

Managerial Risk-Taking: Management's pay includes performance-based bonuses, but these appear to be tied to results like sales or project completion rather than long-term profitability. This could push managers to take on risky projects, like the Muhanga expansion, just to meet short-term targets. **To address this**, bonuses should be linked to long-term performance indicators such as return on capital employed or total shareholder return. The company could also delay part of the bonuses so that managers are rewarded only after the project proves successful over time.

Information Asymmetry: Many shareholders feel that management is not being honest about the company's financial risks. They say the board's statements are too optimistic and don't fully reveal the financial strain of the new investment. This is a clear case of information asymmetry, where managers know more than shareholders and use that advantage to control the narrative. **The best way to fix this** is by improving transparency: publishing more detailed financial reports, holding investor meetings, and allowing independent audits to verify management's claims. Honest communication helps rebuild trust.

Entrenchment of Management: Institutional investors have asked for more seats on the board so they can monitor management more closely, but the board is resisting this. When the board is controlled mostly by management, it weakens accountability. MULINDI Ltd should strengthen its corporate governance by bringing in independent non-executive directors and setting up committees for audit, risk, and remuneration. This would make sure that management decisions are properly reviewed.

Short-Termism vs. Long-Term Vision: At MULINDI Ltd, shareholders want quick returns through higher dividends after the 15% fall in share price, while management focuses on reinvesting profits to support long-term growth in the Muhanga project. This creates tension between short-term gains and future sustainability. Management should clearly explain how current investments will boost future value and use progress reports to show both short- and long-term achievements.

Remuneration Misalignment: Even though profits are falling and the share price is down, executives are still getting large bonuses. This makes shareholders feel that rewards are not tied to real performance. **To fix this**, executive pay should be clearly linked to company results for example, only paying bonuses when profit targets or share price recovery goals are met. Introducing a clawback policy could also help reclaim bonuses if future performance does not justify them.

SECTION B

QUESTION TWO

Marking Guide

SN	Description	Marks

a)	Award 0.5 Mark for stating risk. Max 2.5 Marks for 5 Points	2.5
	Award 1 mark for Well Explained Risk. Max 5 marks	5
	Sub total	**7.5**
b)	**Hedging of Receivable in 3 Months Times**	
	Netting of Receivable and Payables in 3 Months' time	0.5
	If No Hedging, we will use Spot rate in 3 Months Times	1
	Forward Market Hedge. Award 1 marks for each calculation	1
	Money Market Hedges Receivable	
	Step1: Amount to be Taken as Loan from Kenyan Bank	1
	Step 2: Convert into Rwanda Currency at Spot Rate	1
	Step 3: Deposit into Local Bank in Rwanda for Generating Interest @ Deposit rate in Rwanda	1
	Currency Options-Based Hedge	1
	Leading	1.5
	Comment on Conclusion of Best Option	1
	Hedging of Payables in 6 months Times	
	Leading	1.5
	Forward Contract	1
	Money Market Hedges	
	Step 1: Amount to be Invested in Kenyan Bank for Settlement of 6-month Debt @ Deposit rate in Kenya	1
	Step 2: Convert int FRW @ Spot rate to Now Equivalent amount to be Borrowed	1
	Step 3: Pili-pili Investment Ltd will pay Accrued interest to Local Bank in 6-month times	1
	Currency Options-Based Hedge	1
	No hedging Wait to Pay @ Spot Rate in 6 months	1
	Comment on Conclusion of Best Option	1
	Sub total	**17.5**
	Total marks	**25**

Model Answer

a)

Pilipili Investment Ltd faces several international risks in its cross-border operations with Kenyan firms. These risks affect its profitability, cash flow, and overall business stability.

First, the company is exposed to **foreign exchange risk** because its transactions are in Kenyan Shillings while its reporting currency is the Rwandan Franc. Any fluctuations in exchange rates can lead to unexpected gains or losses when payments are made or received.

Second, there is a **credit risk**, as some foreign customers might delay or fail to make payments on time. This could create liquidity challenges, especially since the company already relies on borrowing to meet short-term obligations.

Third, **political and regulatory risks** exist due to changing trade policies and government regulations within the East African Community. Such changes may cause delays in payments, alter customs procedures, or increase the cost of doing business.

Fourth, the company faces **logistical and supply chain risks**. Issues like transport bottlenecks, increased freight costs, and longer shipping times can disrupt deliveries and affect customer satisfaction.

Fifth, **inflation risk** is evident as rising prices increase the cost of goods, fuel, and services. This erodes profit margins and raises the company's overall operating expenses.

Sixth, **interest rate risk** affects the company because it relies on borrowing to manage cash flow. Increases in regional interest rates raise the cost of loans and reduce profitability.

Lastly, **environmental and compliance risks** are emerging as governments tighten rules on sustainability and certification. Failure to comply could result in penalties or loss of market competitiveness.

NETTING

all the above transaction is **Receivable and payable in three Months' time** (because they share maturity and currency).

all the above transaction is Receivable and payable in three Months' time		
Imported Goods from Kenya at MAGAD LTD	Ksh	232,000,000
Exported Goods to Kenya to KIWANZA Ltd	Ksh	394,000,000
Net Receivable from Kenya	**Ksh**	**162,000,000**

1. **If No Hedging, we will use Spot rate in 3 Months Times**

Net 3 Month = 394,000,000 – 232,000,000 = 162,000,000 KSH
Using expected 3-month spot 9.00:
FRW inflow = 162,000,000 × 9.00 =FRW 1,458,000,000

2. **Forward Contract for Net Receivable in 3 Month times**

Due to Spot rate are Unfavorable to Us, we will use Forward contract agreement

Converting Net Receivable from Kenya at 3 Months forward Rate	KSH 162,000,000
Three Month Forward Rate (Bid rate)	9.125
Cash Received in 3 months Times	**1,478,250,000**

3. Money market Hedging for Hedging of Net receivable in 3 Month times

Step1: Amount to be Taken as Loan from Kenyan Bank
PV= FV / (1+r) ^n
PV= 162,000,000 / (1+5%/4) = 162,000,000 / 1.0125= KSH 160,000,000

Step 2: Convert into Rwanda Currency at Spot Rate

= KSH 160,000,000 $*\frac{8.456\ FRW}{KSH}$ = FRW **1,352,960,000**

Step 3: Deposit into Local Bank in Rwanda for Generating Interest @ Deposit rate in Rwanda

FV= PV(1+R) ^n

FV= FRW **1,352,960,000*** (1+6%/4) = **FRW 1,373,254,000**

4. Currency Options-Based Hedge

3- Month Receivable = KSh 162 000 000

Use KSh put (exercise 9.10, premium 0.08).
Expected spot 9.00 < strike 9.10 → exercise.
FRW inflow = KSh 162,000,000× (9.10 - 0.08) **= 1,461,240,000**

5. Leading

If Paid Now (Lead):
Collect now at spot bid 8.456 and invest FRW 3 Month at 6%:
FRW at 3 Months (lead)" = KSh162,000,000×8.456×(1+6%×1/4) = FRW 1,390,420,080

Method	Net FRW payable	Rank
Not hedging now; Wait the Receipt in 3 Month FRW)	**1,458,000,000**	3
Forward Contract (all legs locked)	**1,478,250,000**	1
Money-Market Hedge (separate per exposure)	**1,373,254,000**	5
Options	**1,461,240,000**	2
Leading	**1,390,420,080**	4

Comment: The Best option for Hedging of Receipt is to Use Forward Contract

Hedging of Payable in 6 Months Times

1. Leading

Exposure	FRW Value
6-month payable (894,000,000 × 9.765)	7,857,366,000
Borrowing Rate in Rwanda (P.a) for taking into Consideration of Liquidity Problem Pil-pil we Borrow in Rwanda	(1+6%/2)
Interest To be Paid in 6 months	314,294,640
Net payable	**8,171,660,640**

2. Forward Market Hedge

Principle: If the company will buy KSh → use forward ask; if sell KSh → use forward bid.

Exposure	FRW Value
Amount to pay to Kenyan Supplier in 6 Months times as Agreed Credit time	894,000,000
Forward Rate	9.765
6-month payable (894,000,000 × 9.765)	
Net payable	**8,729,910,000**

3. Money Market Hedges

Hedge payable: deposit PV(KSh) at Kenya deposit rate, convert FRW→KSh at spot ask, borrow FRW at Rwanda borrowing rate.

6-month payable:

Company Purchased Goods from a Kenyan Supplier, That's Means That it's hedging of Payable
Total Amount to pay to Foreign Supplier = KSH 894,000,000

Step 1: Amount to be Invested in Kenyan Bank for Settlement of 6-month Debt @ Deposit rate in Kenya
PV(KSh) = 894,000,000 / (1 + (0.03×0.5)) = **880,788,177**
Set 2: Convert int FRW @ Spot rate to Now Equivalent amount to be Borrowed
= KSH 880,788,177 / 8,789 = FRW **7,741,247,290**

step 3: Pili-pili Investment Ltd will pay Accrued interest to Local Bank in 6-month times
FRW repayment (8%) = 7,741,247,290.64 × 1.04 = **8,050,897,182.27**

4. Currency Options-Based Hedge

6-Month Payable = KSh 894 000 000
Use **KSh call** (exercise 9.70, premium 0.12).
Expected spot 9.80 > strike 9.70 → exercise.
Effective rate = 9.70+0.12=9.82
FRW outflow = 894,000,000 × 9.82 = 8,779,080,000

5. No hedging Wait to Pay @ Spot Rate in 6 months

Exposure	**FRW Value**
Amount to pay to Kenyan Supplier in 6 Months times as Agreed Credit time	894,000,000
Spot Rate in 6 months Times	9.8
6-month payable (894,000,000 × 9.8)	
Net payable	**8,761,200,000**

Method	**Net FRW payable**	**Rank**
Leading (pay now; borrow FRW)	**8,171,660,640**	2
Forward hedges (all legs locked)	**8,729,910,000**	3
Money-Market Hedge (separate per exposure)	**8,050,897,182**	1
Currency Options	**8,779,080,000**	5
No Hedge	**8,761,200,000**	4

Best Option is to use Money Market Hedge for Payment of Foreign Supplier in 6- Months

QUESTION THREE

Marking guide:

SN	Description	Marks
a)	i)	
	Award 0.5 marks for calculation of each EBIT. (0.5 Mark, Each)	1
	Award 0.5 marks for calculation of each EBT. (0.5 Mark, Each)	1
	Award 0.5 marks for calculation of each EAT. (0.5 Mark, Each)	1
	Award 0.5 marks for calculation of Change in EBIT	0.5
	Award 0.5 marks for calculation of Change in EBT	0.5
	Award 1mark for calculation of Degree of operating leverage (DOL) and 1 Mark for interpretation	2
	Award 1mark for calculation of Degree of financial leverage (DFL)and 1 Mark for interpretation	2
	ii)	
	Award 0.5 marks for calculation of each EPS	1
	Award 1 Mark for a well calculated total leverage and interpret	2
	iii)	
	Award 1 Mark for rising high leverage concern	0.5
	Award 2 marks of making order from Best sources of Finance with Justification	1.5
	Sub total	**13**
b)	**Portfolio Management Process**	
	Step1: Define Investment Objectives and Constraints	0.5
	Award 0.5 marks for explain Objective	0.5
	and 0.5 marks for stating constraints	0.5
	Step 2: Choice of the Asset Mix	0.5
	Award 0.5 marks for showing weight,	0.5
	Award 0.5 marks for each interpretation of Expected Return (Rp)	0.5
	Award 0.5 marks for each interpretation of Portfolio Beta (βp), portfolio risk	0.5
	Award 0.5 marks for each interpretation of portfolio risk	0.5

	Step 3: Formulation of Portfolio Strategy	0.5
	Award 0.5 mark for application of passive and 0.5 mark for application active strategy	1
	Step 4: Selection of Securities	0.5
	Award 1 mark for clear explanation on security selection	1
	Step 5: Portfolio Execution / Implementation	0.5
	Award 1 mark for clear portfolio execution explanation	1
	Step 6: Portfolio Revision	0.5
	Award 1 mark for clear explanation on portfolio revision	1
	Step 7: Performance Evaluation	0.5
	for interpretation of each risk-adjusted performance ratios	
	Award 0.5 marks Sharpe Ratio	0.5
	Award 0.5 marks Treynor Ratio	0.5
	Award 0.5 marks Jensen's Alpha	0.5
	Sub total	**12**
	Total	**25**

Model Answer:

a) i.

Compute EBIT, EBT, and EPS

Details	**Base Case**	**20% Increase**
	FRW'000	**FRW'000**
Sales	250,000	300,000
Material costs	85,000	102,000
Labour costs	62,500	75,000
Other variable costs	28,900	34,680
Total variable costs	**176,400**	**211,680**
Contribution	**73,600**	**88,320**
Fixed costs	31,600	31,600
Earnings before interests and tax (EBIT)	**42,000**	**56,720**
Interests	24,000	24,000
Earnings before tax (EBT)	**18,000**	**32,720**
Tax-30%	5,400	9,816
Earnings After tax (EAT)	**12,600**	**22,904**
Number of shares	1,000	1,000
Earnings per share (EPS)	**12.60**	**22.90**

$$\%\text{change in EBIT} = \frac{56{,}720 - 42{,}000}{42{,}000} = 35.05\%$$

$$\%\text{change in EBT} = \frac{32{,}720 - 18{,}000}{18{,}000} = 81.78\%$$

$$\%\text{change in Sales} = 20\%$$

Degree of Operating Gearing (DOG)

Formula:

$$\text{DOG} = \frac{\%\text{change in EBIT}}{\%\text{change in Sales}}$$

$$\text{DOG} = \frac{35.05}{20} = 1.75$$

or

$$\text{DOG} = \frac{Contribution}{EBIT} = \frac{73{,}600}{42{,}000} = 1.75$$

Interpretation:
A DOG of 1.75 shows that a 1% change in sales causes EBIT to change by 1.75%. The company has moderate operating leverage due to its fixed cost structure.

Degree of Financial Gearing (DFG)
Formula:

$$\text{DFG} = \frac{\%\text{change in EPS (or EBT)}}{\%\text{change in EBIT}}$$

$$\text{DFG} = \frac{EBIT}{\text{EBIT}-\text{Interest}} = \frac{42{,}000}{18{,}000} = 2.33$$

Degree of Financial Gearing

$$\text{DFG} = \frac{81.78}{35.05} = 2.33$$

Interpretation:

A DFG of 2.33 means a 1% change in EBIT results in a 2.33% change in EPS. This indicates high financial leverage; the company is significantly affected by interest costs.

ii) Degree of Total Gearing (DTG / EPS Sensitivity)
Formula:

$$\text{DTG} = \text{DOG} \times \text{DFG}$$

$$\text{DTG} = 1.75 \times 2.33 = 4.08$$

Or **Degree of Total Gearing (DTG / EPS Sensitivity)**
Formula:
$\text{DTG} = \text{DOG} \times \text{DFG}$
$\text{DTG} = 1.75 \times 2.33 = 4.08$

Interpretation:
A 1% change in sales will lead to a **4.08% change in EPS**. The company's earnings are **highly sensitive** to sales fluctuations, combining both operational and financial risks.
iii)
Recommendation:

- The company's financial gearing is already high (DFG = 2.33).

- Taking on more debt would raise interest obligations and increase risk.
- Since the company is profitable and retains earnings, internal financing (retained profits) or new equity issuance would be safer.
- If additional funds are needed, a mix of internal and low-cost long-term debt could be used cautiously.

Therefore, Rutsiro Mines Ltd should first use retained earnings or issue equity to finance growth. Only supplement with moderate debt, if necessary, to avoid excessive financial risk.

b) Portfolio Management Process

Step 1: Define Investment Objectives and Constraints

UPF's investment objective is to earn a minimum nominal annual return of 12% to ensure sustainable pension payments to its 1,200 members, while preserving capital in real terms and maintaining stable and adequate income flow.

Constraints:

- Liquidity: Maintain at least 10% of assets in Treasury Bonds for benefit payments.
- Time Horizon: Over 20 years, allowing for long-term asset growth.
- Risk tolerance: Moderate - sufficient to meet return objectives but not excessive given pension obligations.
- Legal/Regulatory: Compliance with Rwandan pension investment laws.
- Current challenge: 80% of funds currently in fixed deposits yielding 7%, below the required 12%.

Step 2: Choice of the Asset Mix

Based on the return objective and risk tolerance, I have structured a **diversified strategic asset mix** that aligns with the fund's profile:

Asset Class	Weight	Expected Return	Role in Portfolio
Treasury Bonds	25%	10%	Safety, liquidity, and capital preservation
Corporate Bonds	20%	12%	Income and moderate growth
RSE Equities	25%	16%	Capital appreciation and inflation hedge
Unit Trusts	20%	13%	Diversified exposure, professional management
Real Estate	10%	14%	Stable income and long-term value growth

- The **expected portfolio return (E[Rp])** is **12.9%**, exceeding the 12% target.
- The **portfolio beta (βp) = 0.77**, indicating the fund is **23% less volatile than the market** -suitable for a pension fund seeking moderate risk.
- The **average standard deviation (σ)** across asset classes suggests **medium volatility** consistent with the Fund's risk tolerance.

Step 3: Formulation of Portfolio Strategy

Given your long-term horizon and moderate risk appetite, I recommend adopting a **core passive strategy** complemented by **selective active management**.

- The **passive core** will maintain the strategic mix, holding broad, low-cost instruments across asset classes.
- The **active satellite portion** will exploit market inefficiencies through **sector rotation**, **duration management**, and **security selection** to capture incremental returns when opportunities arise.

This hybrid approach will allow us to maintain stability while improving performance relative to the market benchmark.

Step 4: Selection of Securities

With the strategic allocation approved, we now identify **specific securities** within each asset class:

- **Treasury Bonds:** Invest in Government of Rwanda issues of varying maturities (20 and above).
- **Corporate Bonds:** Target high-credit-rated corporates offering yields above Treasury instruments without excessive default risk.
- **RSE Equities:** Focus on large, dividend-paying firms listed on the Rwanda Stock Exchange to balance income and growth.
- **Unit Trusts:** Select licensed, diversified funds that provide exposure to both local and regional equities and bonds at low cost.
- **Real Estate:** Acquire or participate in income-generating commercial properties to act as an inflation hedge.

All selections will be screened for **credit quality, liquidity, expected return, and correlation** to ensure overall portfolio efficiency.

Step 5: Portfolio Execution / Implementation

We will gradually reallocate funds from the current **80% held in bank deposits (earning 7%)** into the diversified structure described above.

Each investment transaction will be benchmarked against the **IPS and market conditions** to confirm adherence to the strategic plan.

Step 6: Portfolio Revision

Once implemented, the portfolio will be **monitored continuously** and **reviewed quarterly**. As market prices shift, asset weights may deviate from targets, we will **rebalance** whenever deviations exceed ±5% of target allocations.

Step 7: Performance Evaluation

At the end of each period, we will measure the portfolio's effectiveness using risk-adjusted performance ratios:

Metric	Interpretation
Sharpe Ratio = 0.65	The Fund earns **0.65 units of excess return per unit of total risk**, indicating efficient diversification.

Treynor Ratio = 6.36%	The Fund earns **6.36% per unit of market risk (β)**, showing solid systematic risk compensation.
Jensen's Alpha = -0.49%	Slight **underperformance** relative to expected CAPM returns, suggests room for better security selection or timing.

The portfolio achieves the required nominal return target (12%) and maintains systematic risk below market level. Risk-adjusted performance (Sharpe = 0.65) confirms that the fund is efficiently diversified. Continuous evaluation will focus on improving the portfolio.

QUESTION FOUR

Marking guide

Qn	Description	Marks
a)	Award 0.5 marks on each shown ratio changes for company	2.5
	Award 0.5 marks on each shown ratio changes for industry	2.5
	Award 0.5 marks for comparison company and industry for each ratio	2.5
b)	By using earning method to value the company, determine the value at which the company will be bought.	
	Computation of Number of shares	1
	Computation of earnings per share	1
	Adjustment of average P/E to cater for size and risk of the company	1
	Computation of Value per share	1
	Market capitalization (value of equity)	1
	Sub total	**5**
c)	Award 1 mark on each advantage Max 3 marks	3
	Award 1 mark on each disadvantage Max 2 marks	2
	Sub Total	**5**
d)	Performance analysis by incorporating benchmarking for AKEZA Ltd financial information presented above	
	Award 1.5 marks for each step	7.5
	Total marks	**25**

Model Answer:

a)

Return on Capital employed

This ratio relates the overall profitability of a company to the finance used to generate it. Form the ratio computed it is Cleary showing that the company has improved during the year, which is a positive sign of performance. However, compared to the industry the company has under-performed since the sector ration increased by 3.1% yet the company only improved for 2.3%.

Net Profit Margin

This ratio, also called profit from operations margin, indicates the efficiency with which costs have been controlled in generating profit from sales. Form the ratio computed it is Cleary showing that the company has improved during the year, which is positive sign of performance, however compared to the industry the company has under-performed since the sector ration increased by 1.7% yet the company only improved for 1%.

Asset Turnover

This ratio calculate how assets was used to generate sales which is measure of efficient use of assets. Form the ratio computed it is Cleary showing that the company has improved during the year which is positive sign of performance, however compared to the industry the company has under-performed since the sector ration increased from 0.95x to 1.07x the company only improved from 1x to 1.2x.

Cash conversion cycle

The cash conversion cycle (also called the operating cycle or working capital cycle) is found by adding inventory days and trade receivables days and then subtracting trade payables days. It indicates the period of time for which working capital financing is needed. The longer the cash conversion cycle, the higher the investment in working capital. From the compute performance, the company has increased its cash conversion cycle by 20days less than that of sector that increased by 26days. Even though high investment in working capital might be negative sign, the company has performed better that the sector.

Interest coverage times

The interest coverage ratio shows how many times the company can cover its current interest payments (finance charges) out of current profits and indicates whether servicing debt may be a problem. It is apparent that during the year the company has improved its capacity to service debt by increasing its Interest coverage ratio from 2x to 2.5x however compared to the industry, the company performed below the industry that has improved from 2.9x to 3.6x

b)

	Formula	
Net income for the year		417,005,948
Total share capital		4,083,841,226
Nominal value of share		10,000
Number of shares	= 4,083,841,226/10,000	408,384
Earnings per share (EPS)	$\frac{\textbf{Net Income}}{\textbf{Number of shares}}$	**1,021.11**

Comparable companies	**Working**	**P/E Ratio**
CNBG		12
BNG		8

CMUI		10
Cardinal		14
Average P/E ratio	(12+8+10+14)/4	11
Discounted by 30% to cater for size and risk of the company	$\mathbf{11 * (1 - 30\%)}$	**7.70**
		-
Value per share	$(EPS * P/E\ ratio)$	**7,863**
Total Company Value	$\boldsymbol{Value\ per\ share * Number\ of\ shares}$	**3,210,945,801**

c)

Arguments for Going Private

Reduced Regulatory Burden:
Private companies are free from continuous disclosure, corporate governance, and listing requirements imposed by the Capital Market Authority, saving compliance costs.

Greater Management Control and Flexibility:
Ownership becomes concentrated, allowing management to make long-term strategic decisions without short-term shareholder pressure.

Avoidance of Market Volatility:
The company's value is no longer affected by daily market fluctuations, speculation, or investor sentiment, especially in small or illiquid markets like Rwanda's.

Arguments Against Going Private

Loss of Access to Public Capital:
A private company cannot easily issue shares or bonds to raise funds, which may limit its ability to finance expansion or acquisitions.

Reduced Public Profile and Credibility:
Listed status enhances reputation, investor confidence, and brand visibility. Going private can weaken the company's image and investor trust.

d)

Step 1: Annual coupon payments

Each year, coupons = 6% × 10,000 = USD 600 per year
→ Over 3 years = 600 × 3 = USD 1,800

Step 2: Principal repayment breakdown at maturity

Principal = 10,000 USD distributed as:

Currency	% of principal	USD amount	Foreign currency amount (Year 0 rate)
EUR	40%	4,000	4,000 × 0.85 = **3,400 EUR**
GBP	35%	3,500	3,500 × 0.75 = **2,625 GBP**

JPY	25%	2,500	2,500 × 110 = **275,000 JPY**

Step 3: Value of principal in USD at maturity (Year 3)

We convert back to USD using Year 3 exchange rates:

Currency	Foreign amount	Year 3 rate	USD value at Year 3
EUR	3,400	0.9	3,400 / 0.9 = **3,777.78 USD**
GBP	2,625	0.72	2,625 / 0.72 = **3,645.83 USD**
JPY	275,000	115	275,000 / 115 = **2,391.30 USD**

Total principal repaid in USD = 3,777.78 + 3,645.83 + 2,391.30 = 9,814.91 USD

Step 4: Total USD cash flows

Year	Description	USD amount
0	Initial investment	**-10,000**
1	Coupon	600
2	Coupon	600
3	Coupon + principal	600 + 9,814.91 = **10,414.91**

Step 5: Total return (USD terms)

Total received = 600 + 600 + 10,414.91 = 11,614.91 USD
Net gain = 11,614.91 – 10,000 = 1,614.91 USD
Total USD return over 3 years = 16.15%

Step 6: Annualized return

$(1 + 0.1615)^{\frac{1}{3}} - 1 = 0.0511$ or 5.11% p.a

End of Model Answers and Marking Guide.