CERTIFIED PUBLIC ACCOUNTANT
ADVANCED LEVEL 2 EXAMINATIONS
A2.1: STRATEGIC CORPORATE FINANCE
DATE: WEDNSDAY 23, AUGUST 2023
MARKING GUIDE AND MODEL ANSWERS

SECTION A

QUESTION ONE	
Marking guide	***Marks***
Ganza Company Ltd (GCL)	
a) (i) Evaluation of NPV	
Initial investment	0.5
Calculation of revenue	1
Calculation of variable cost	1
Calculation of contribution	1
Fixed cost	1
Calculation of net operating income	1
Calculation of present values	1
Applying right discounting factor	0.5
Calculation of net present value	1
Sensitivity to revenue	2
Sensitivity to variable cost	2
Use of Sensitivity	2
Maximum marks	**14**
(ii) IRR	
IRR formula	1
IRR- computation	2
IRR- Decision rule	2
Maximum marks	**5**
(iii) Drawbacks of sensitivity analysis (1 Mark for each, maximum 3)	**3**
vi) Agency Problem	
Causes (1 Mark for each, maximum 5)	5
Solutions (1 Mark for each, maximum 5)	5
Maximum marks	**10**
(v) Calculation of CAPM (1 Mark for Formula and 1 Mark for computation)	**2**
(vi) Assumptions and limitations of CAPM	
Assumptions of CAPM (1 Mark for each assumption max 3)	3
Limitations of CAPM (1 Mark for each Limitation max 3)	3
Maximum marks	**6**
b) (i) Working capital cycle	
Computation of each working period (1 Mark, max 3)	3
Computation of working capital cycle (0.5 Marks, max 1)	1
Assessment of change in the working capital cycle	1
ii) Discussion of the factors (1 Marks, max 5)	5
Maximum marks	**10**
Total marks	**50**

Model Answers

a) i) **Evaluation of NPV to the changes in other variables**

Year	0	1	2	3	4	5
Initial Investment	-12,000,000					
Sales		5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Variable cost		-1,200,000	-1,200,000	-1,200,000	-1,200,000	-1,200,000
Contribution		3,800,000	3,800,000	3,800,000	3,800,000	3,800,000
Less Fixed cost		100,000	100,000	100,000	100,000	100,000
Net operating income	-12,000,000	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000
Discounting Factor	1	0.909	0.826	0.751	0.683	0.621
Present value	-12,000,000	3,363,300	3,056,200	2,778,700	2,527,100	2,297,700
NPV	-1200,000+3,363,300+3,056,200+2,778,700+2,527,100					**2,023,000**

Alternatively:

Workings: contribution = (Selling price – Variable cost) *Quantity = (5-1.2) *1,000,000 Kgs= 3,800,000

Year	**Investment (FRW)**	**Contribution (FRW)**	**Fixed costs (FRW)**	**Net operating income (FRW)**	**Discount factor 10%**	**Total present values (FRW)**
0	(12,000,000)			-12,000,000	1	(12,000,000)
1-5		3,800,000	-100,000	3,700,000	3.791	14,026,700
						2,026,700

NPV of sales revenue = 1,000,000 Kgs * FRW 5 per kg * 3.791 = FRW 18,955,000

NPV of variable costs = 1,000,000 * FRW1.20* 3.791 = FRW 4,549,200

NPV of contribution = FRW 14,405,800.

(i) **Sensitivity to revenue**

As before, for an NPV of zero, contribution has to decrease by FRW 2,026,700. This represents a reduction in selling price of 2,026,700 /18,955,000= 10.7% (NPV of project /NPV of sales)

(ii) **Sensitivity to variable cost**

As before, for an NPV of zero, contribution has to decrease by FRW 2,026,700. This represents an increase in variable costs of 2,026,700 /4,549,200= 44.6%

Use of Sensitivity

The basic approach of sensitivity analysis is to calculate the project's NPV under alternative assumptions to determine how sensitive it is to changing conditions. An indication is thus provided of those variables to which the NPV is most sensitive (critical variables) and the extent to which those variables may change before the investment results in a negative NPV.

Sensitivity analysis therefore provides an indication of why a project might fail. Management should review critical variables to assess whether or not there is a strong possibility of events occurring which will lead to a negative NPV. Management should also pay particular attention to controlling those variables to which the NPV is particularly sensitive, once the decision has been taken to accept the investment.

ii) Internal Rate of Return (IRR) and calculate its sensitivity to the discount rate

IRR computation

$$\text{IRR} = a + \left[\left[\frac{NPV_a}{NPV_a - NPV_b}\right] * (b - a)\right] \times 100$$

Where: a is lowest discounting factor = 10%

b is highest discounting factor = 20%

NPVa is NPV at lowest discounting factor = FRW 2,026,700

NPVb is NPV at highest discounting factor = FRW (933,300)

$$\text{IRR} = 10\% + \left[\left[\frac{2{,}026{,}700}{2{,}026{,}700 + 933{,}300}\right] * (20\% - 10\%)\right] \times 100$$

$$\text{IRR} = 10\% + 0.068 \approx 16.8\%$$

Decision Rule: The project is acceptable because its IRR (16.8%) is greater than the discount rate (10%)

iii) **Drawbacks of sensitivity analysis**

- ✓ The method requires that changes in each key variable are isolated. However management is more interested in the combination of the effects of changes in two or more key variables.
- ✓ Looking at factors in isolation is unrealistic since they are often interdependent.
- ✓ Sensitivity analysis does not examine the probability that any particular variation in costs or revenues might occur.
- ✓ Critical factors may be those over which managers have no control.
- ✓ In itself it does not provide a decision rule. Parameters defining acceptability must be laid down by managers.

iv) Causes of agency problem

Incentive Problem

Managers may have fixed salary and they may have no incentive to work hard and maximize shareholders wealth. This is because irrespective of the profits they make, their reward is fixed. They will therefore maximize leisure and work less which is against the interest of the shareholders.

Consumption of "Perquisites"

Prerequisites refer to the high salaries and generous fringe benefits which the directors might award themselves. This will constitute directors' remuneration which will reduce the dividends paid to the ordinary shareholders. Therefore, the consumption of perquisites is against the interest of shareholders since it reduces their wealth.

Different Risk-profile

Shareholders will usually prefer high-risk-high return investments since they are diversified i.e they have many investments and the collapse of o ne firm may have insignificant effects on their overall wealth. Managers on the other hand, will prefer low risk-low return investment since they have a personal fear of losing their jobs if the projects collapse. (Human capital is not diversifiable). This difference in risk profile is a source of conflict of interest since shareholders will forego some profits when low-return projects are undertaken.

Different Evaluation Horizons

Managers might undertake projects which are profitable in short-run. Shareholders on the other hand evaluate investments in long-run horizon which is consistent with the going concern aspect of the firm. The conflict will therefore occur where management pursue short-term profitability while shareholders prefer long term profitability.

Management Buy Out (MBO)

The board of directors may attempt to acquire the business of the principal. This is equivalent to the agent buying the firm which belongs to the shareholders. This is inconsistent with the agency relationship and contract between the shareholders and the managers.

Pursuing power and self-esteem goals

This is called “empire building” to enlarge the firm through mergers and acquisitions hence increase in the rewards of managers.

Creative Accounting

This involves the use of accounting policies to report high pro fits e.g stock valuation methods, depreciation methods recognizing profits immediately in long term construction contracts etc.

Solutions for agency problems

Pegging/attaching managerial compensation to performance

This will involve restructuring the remuneration scheme of the firm in order to enhance the alignments/harmonization of the interest of the shareholders with those of the management e.g. managers may be given commissions, bonus etc. for superior performance of the firm.

Threat of firing

This is where there is a possibility of firing the entire management team by the shareholders due to poor performance. Management of companies have been fire d by the shareholders who have the right to hire and fire the top executive officers e.g the entire management team of Unguka Group, IBM, G.M. have been fired by shareholders.

The Threat of Hostile Takeover

If the shares of the firm are undervalued due to poor performance e and mismanagement, Shareholders can threaten to sell their shares to competitors. In this case the management team

is fired and those who stay on can lose their control and influence in the new firm. This threat is adequate to give incentive to management to avoid con flict of interest.

Executive Share Options Plans

In a share option scheme, selected employees can be given a number of share options each of which gives the holder the right after a certain date to subscribe for shares in the company at a fixed price.

The value of an option will increase if the company is successful and its share price goes up. The theory is that this will encourage managers to pursue high NPV strategies and investments, since their shareholders will benefit personally from the increase in the share price that is from such investments.

Direct Intervention by the Shareholders

Shareholders may intervene as follows:

- ✓ Insist on a more independent board of directors
- ✓ By sponsoring a proposal to be voted at the AGM
- ✓ Making recommendations to the management on how the firm should be run.

v) The required rate of return for investment proposal II using Capital Asset Pricing Model.

CAPM, Required rate of return = Risk free rate + Beta [(Market return - Risk free rate)

CAPM = 5% + 1.5(9% - 5%)

Required rate of return = 11%

vi) Three assumptions and three limitations of using Capital Asset pricing Model (CAPM).

Assumptions

- ✓ The market is perfect competition that trading by any investor would not affect the asset price.
- ✓ The investment is a one-period action, which means that investors cannot keep updating their portfolios.
- ✓ Only tradable assets are considered, excluding some assets such as private enterprises.
- ✓ Borrowing rate and lending rate are the same at risk-free rate.
- ✓ No tax or transaction cost exists.
- ✓ All investors are rational and having the same assessment criteria towards assets.

Limitations

- ✓ The CAPM is based on assumptions about rational investors who have diversified their portfolios, who can buy and sell securities in perfect markets, in particular with no transaction costs and no taxes, and who can all borrow and lend at the same rates of interest. These assumptions do not necessarily hold true. The model can be adjusted to deal with some of these imperfections, but transaction costs can mean that the model does not give exact predictions of the required return, and market imperfections, and the failure of many investors to diversify their portfolios, mean that unsystematic risk is not wholly removed by diversification.

- ✓ It is difficult to test the CAPM because the model deals with expected returns, but it is only possible to record actual results. (Arbitrage pricing theory avoids this conceptual problem, but requires more calculations in order to produce a model that is unique to each investment.)
- ✓ CAPM is based on the market portfolio, which means all available investments, but beta values are usually calculated by reference to market indices, which act as proxies for the market portfolio.
- ✓ Much research has been done to investigate the relationship between expected returns (or, often, actual returns) and risk as postulated by the CAPM, but the results have not conclusively demonstrated that there is in fact a relationship.
- ✓ CAPM is based on a one-year time period, and its extension to multiple time periods requires the economic environment and returns on the project relative to the market to remain stable. This may not happen. The model becomes more unreliable when used to find expected rates of return for several years ahead, which needs to be done for most capital investments.
- ✓ There are problems in estimating project and market returns under changing economic and market conditions. Estimates of company betas tend to be subject to larger statistical errors than betas for markets or sectors.
- ✓ The risk-free rate is assumed to be equal to the return on government bonds, but returns on different government bonds are not necessarily the same. Each investment or project should have its own discount rate corresponding to its own degree of risk. Betas are calculated using published information about the investment performance of shares, and consequently reflect the risk of the whole company, not the project

b)

i) Working Capital Assessment

Working Capital Cycle/Cash Conversion Cycle = Inventory Conversion Period + Accounts Receivables Period – Accounts Payables Period.

Formula	**2022**	**2021**
Inventory Conversion Period = $\frac{\text{Inventory}}{\text{Cost of goods sold}} \times 365$	$\frac{3,500}{6,500} \times 365 = 196.5$ days	$\frac{1,200}{3,300} \times 365 = 132.7$ days
Accounts Receivables Period = $\frac{\text{Trade Receivables}}{\text{Credit sales}} \times 365$	$\frac{5,600}{9,200} \times 365 = 222.2$ days	$\frac{1,400}{4,600} \times 365 = 111.1$ days
Accounts Payable Period = $\frac{\text{Trade Payable}}{\text{Cost of goods sold}} \times 365$	$\frac{3,400}{6,500} \times 365 = 190.9$ days	$\frac{1,550}{3,300} \times 365 = 171.4$ days
Working Capital/Cash Operating Cycle	227.8 days= 228 Days	72.4 days =73 Days

This represents an increased investment in working capital. AL's working capital cycle increased from 73 days in 2021 to 228 days in 2022. This increase is as a result of investment

in other branches that AL opened in Kenya and Tanzania. This investment was funded by cash reserves and short – terms borrowings by AL.

ii) Factors influencing the formulation of working management policy

- ✓ **Nature of the business**

The type of business will have an effect on the working capital policy as this can influence the components of working capital. Manufacturing companies are likely to have high levels of inventory and trade receivables whereas service companies will have low levels of inventory. High street retail companies are likely to have low levels of trade receivables.

- ✓ **Operating cycle**

The length of the operating cycle combined with the desired investment in current assets determines the amount of working capital finance required. Working capital policies should be designed to optimize the length of the components of the operating cycle which are the inventory turnover days, the trade receivables days and the trade payables days.

- ✓ **Terms of trade**

It will be difficult to offer a much shorter payment period than competitors as this is likely to lead to a loss of customers. The level of receivables is determined by the credit level offered and the average credit period taken by customers.

- ✓ **Risk appetite**

Risk-averse companies will usually operate with higher levels of inventory and receivables than companies that are more prepared to take risks. A risk-averse company will also employ a conservative policy and use long-term finance for its permanent current assets and some fluctuating current assets, but a company more prepared to take risks will employ an aggressive policy and use short-term finance for fluctuating current assets as well as some permanent current assets.

- ✓ **Short-term Financing Options**

Inventory is ideally financed by credit granted by the supplier; dependent on the cash conversion cycle, it may however, be necessary to utilize a bank loan (or overdraft), or to "convert debtors to cash" through "factoring" in order to finance working capital requirements.

Market and Demand Conditions - For e.g. if an item's demand far exceeds its production, the working capital requirement would be less as investment in finished goods inventory would be very less.

- ✓ **Price Level Changes**

Rising prices necessitate the use of more funds for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. Therefore, the effect of rising prices is that a higher amount of working capital is required.

SECTION B

QUESTION TWO

Marking Guide	*Marks*
a) (i) Hedging - Computations	
Money market - Borrowing	1
Money market - Conversion of currency	1
Money market – Investment of money	1
Maximum marks	**3**
Forward contract - Borrowing	1
Decision on the two contracts	1
Maximum marks	**2**
ii) Foreign currency risks	
Identification (1 marks each value, max 3)	3
Explanation (1 marks each value, max 3)	3
Maximum marks	**6**
b) (i) Explanation of key financial risks (2 Mark each, max 4)	4
ii) Discussion of approaches hedging transactions exposure (2 marks each value, max 8)	8
c) Explanation of currency swaps	2
Total marks	**25**

Model Answers

a) i) Evaluation of the two methods of hedging

Money Market hedging

- Borrow Egyptian Pounds EGP

Borrowed amount =EGP 50,000,000/ [1+ (0.102/2)] = EGP 47,573,739

- Convert the borrowed EGP amount into the FRW at a spot rate

Receipt = EGP 47,573,739 * 3.5212 = FRW 167,516,650

- Invest in FRW

Receipt = FRW 167,516,650 *[1+ (0.074/2)] = FRW 173,714,766

Forward hedging

- Receipt = EGP 50,000,000 * 3.5276 = FRW 176,380,000

Forward Hedging will provide better receipt that looking into money market hedge

ii) **The three foreign currency risks that RCL has been exposed to**

- **Economic risk**

Economic risk is the variation in the value of the business (i.e. the present value of future cash flows) due to unexpected changes in exchange rates. It has a long-term impact.

For an export company it could occur because:

- The home currency strengthens against the currency in which it trades
- A competitor's home currency weakens against the currency in which it trades.

RC would face problems if the Egyptian Pound strengthens against the Rwandan Francs. The company would then have to consider either decreasing the profit margin on products, or increasing the sales price to maintain profit levels. The second option could result in a loss of sales. The likelihood of this would be increased if RC faced more competition from local companies who are not exposed to the same risk.

- **Translation risk**

Translation risk is an accounting risk rather than a cash-base done. It arises when the reported performance of an overseas subsidiary is translated into the home-based currency terms in order that they can be consolidated into the group's financial statements and is distorted because of a change in exchange rates.

Unless managers believe that the company's share price will fall as a result of showing a translation exposure loss in the company's accounts, translation exposure will not normally be hedged. The company's share price, in an efficient market, should only react to exposure that is likely to have an impact on cash flows.

In the case of RC, if the subsidiary company were established, a variation in the Egyptian Pound to Rwandan Francs exchange rate would cause a variation in the reported valuation of the subsidiary. For example, if the Egyptian Pound strengthened against the Rwandan Francs, the reported value of the subsidiary would decrease.

- **Transaction risk**

Transaction risk is the risk of an exchange rate changing between the transaction date and the subsequent settlement date, i.e. it is the gain or loss arising on conversion. This type of risk is primarily associated with imports and exports. If a company exports goods on credit then it has a figure for receivables in its accounts. The amount it will finally receive depends on the foreign exchange movement from the transaction date to the settlement date.

Transaction risk has a potential impact on the cash flows of a company. The degree of exposure involved is dependent on:

- The size of the transaction if it is material
- The time period before the expected cash flows occurs
- The anticipated volatility of the exchange rates.

In the case of RC, if the Egyptian Pound strengthens against the Rwandan Francs during the six months before it pays the supplier for purchases from the Rwanda, the company will make a gain. If the Egyptian Pound strengthens against Rwandan Francs before it is paid by customers, the company will make a loss.

b) **Solution**

Interest payment

Kazi Ltd will borrow FRW 700,000,000 at the prevailing interest rate of 12.5% for six months as per FRA.

Interest payment at the end of the six months will be FRW700, 000,000 * 0.125/2 = FRW 43,750,000.

If the interest rate increases to 13.5%

The Finance Manager believes that the interest rate of the six – month loan could rise to 13.5% per year. At this rate, the interest payment on the loan at the end of six months would be FRW700, 000,000 * 0.135/2 = FRW 47,250,000.

If Kazi Ltd goes for the FRA, then it would receive a compensating payment of FRW 3,500,000 (FRW 47,250,000 - FRW 43,750,000) from the bank. This would help Kazi Ltd to be protected from the rising interest rate leaving the company to pay only FRW 43,750,000.

If the interest rate falls to 11.5%

The Finance Manager is also concerned that the interest rate of the six – month loan could fall to 11.5% per year. At this rate, the interest payment on the loan at the end of six months would be FRW700, 000,000 * 0.115/2 = FRW 40,250,000.

Under the FRA, Kazi Ltd would make a compensating payment of FRW 3,500,000 (FRW 47,250,000 - FRW 43,750,000) to the bank effectively leaving the company to pay an interest of FRW 43,750,000. Kazi would not benefit from the lower interest rate if it enters into an FRA.

Evaluation

Therefore, FRA effectively hedges Kazi Ltd from paying high interest above 12.5%. This is because if the interest increases beyond 12.5% the company would be compensated by the bank but if it goes below 12.5% the company would compensate the bank for this change in interest.

c) **Discussion the following approaches to managing / hedging transactions exposure:**

Leading and Lagging

Leading and lagging are means used to alter the time period between the transaction and settlement dates to avoid exchange rate losses or increase the likelihood of a gain.

If an exporter expects that the currency it is due to receive will depreciate over the next few months, it may try to obtain payment immediately, perhaps by offering a discount for immediate payment. This is leading.

Lagging is an attempt to delay payment if the importer expects that the currency it is due to pay will depreciate. This may be achieved by agreement or by exceeding credit terms.

Matching

When a company has receipts and payments in the same foreign currency due at the same time, it can simply match them against each other. It is then only necessary to deal on the foreign exchange (forex) markets for the unmatched portion of the total transactions.

Where a firm has regular receipts and payments in the same currency, it may choose to operate a foreign currency bank account. This operates as a permanent matching process and the exposure to exchange risk is limited to the net balance on the account.

The scope for matching is limited unless there are flows in both directions.

Forward exchange contracts

Forward exchange contracts are the most frequently used method of hedging. Such a contract is a binding agreement to buy or sell currency at a fixed future date for a predetermined rate, the forward rate of exchange.

Advantages are that companies have flexibility with regard to the amount to be covered and that the contracts are relatively straightforward both to comprehend and to organize. The agreement on a fixed rate eliminates downside risk.

However, there are disadvantages when the company makes a contractual commitment that must be completed on the due date and has no opportunity to benefit from favorable movements in exchange rates. They are not available in all currencies.

Currency options

Options are similar to forwards, but with one key difference is that they give the right, but not the obligation, to buy or sell currency at some point in the future at a predetermined date. A company can therefore exercise the option if it is in its interests to do so, or let it lapse if the spot rate is more favorable or there is no longer a need to exchange currency.

The advantage of options is that they eliminate downside risk but allow participation in the upside. Options are most useful when there is uncertainty about the timing of the transaction, or when exchange rates are very volatile.

D) Explanation of currency swaps

Currency swaps effectively involve the exchange of debt from one currency to another. A swap is a formal agreement whereby two organizations contractually agree to exchange payments on different terms, for example in different currencies, or one at a fixed rate and the other at a floating rate. Currency swaps can provide a hedge against exchange rate movements for longer periods than the forward market, and can be a means of obtaining finance from new countries. Swaps are **easy to arrange** and are **flexible** since they can be arranged in any size and are reversible.

Transaction costs are low, only amounting to legal fees, since there is no commission or premium to be paid.

QUESTION THREE

Marking guide	*Marks*
a) i) Valuation of the firm	
Computation of EBIT (0.5 marks each, max 1)	1
Computation of Earnings available (0.5 marks each, max 1)	1
Computation of value of equity (0.5 marks each, max 1)	1
Computation of EBIT value of firm (0.5 marks each, max 1)	1
Investment and borrowing – computations of the following:	
Sale of shares in levered company	0.5
Borrowing money	0.5
Buying shares in unlevered company	0.5
Change of return – computations of the following:	
Income from shares of unlevered company	0.5
Interest on loan	0.5
Income from Kanombe	0.5
Income from Kabeza	0.5
Incremental Income	0.5
Maximum marks	**8**
ii) M –M Approach without tax-Propositions (1mark each, 3)	3
M –M Approach with tax-Formula (1mark each, 3)	3
Maximum marks	**6**
b) i) Computation of ratios (1 Mark each, max 4)	4
Discussion (1 Mark each, max 3)	3
Maximum marks	**7**
ii) Causes and remedies of overtrading	
Causes of overtrading (1 Marks each, max 2)	2
Remedies of overtrading (1 Marks each, max 2)	2
Maximum marks	**4**
Total marks	**25**

Model Answers

a) i) **Valuation of the firms**

Sources of capital	**Kabeza Ltd (FRW)**	**Kanombe Ltd (FRW)**
EBIT	50,000,000	50,000,000
Less interest (10% of debt)	(20,000,000)	
EBT	30,000,000	50,000,000
Less tax (30%)	(9,000,000)	(15,000,000)
Earnings available to Equity Shareholder	21,000,000	35,000,000
Cost of equity	12.5%	12.5%
Value of equity	168,000,000	280,000,000
Debt	200,000,000	Nil
Value of firm	**368,000,000**	**280,000,000**

The value of Kabeza Ltd is more than that of Kanombe Ltd therefore Mutoni should sell her shares in the levered company and buy shares in unlevered company. To maintain the level of risk she should borrow a proportionate amount and invest that amount also in shares of unlevered company.

Investment and Borrowings

Sell shares in levered company (Kabeza Ltd) (FRW) (168,000,000 * 15%)	25,200,000
Borrow money (200,000,000 * 15%)	30,000,000
Buy shares in unlevered company (Kanombe Ltd)	55,200,000

Change in the return

Income from shares in unlevered company FRW (55,200,000* 12.5%)	6,900,000
Less: interest on loan (30,000,000 * 10%) FRW	(3,000,000)
Net income from Kanombe Ltd (FRW)	3,900,000
Less: Income from levered company (Kabeza Ltd) (25,200,000 *12.5%) FRW	(3,150,000)
Incremental income due to arbitrage (FRW)	750,000

ii) **Modigliani – Miller Approach explained**

MM Approach – 1958: without tax: This approach describes, in a perfect capital market where there is no transaction cost and no taxes, the value and cost of capital of a company remain unchanged irrespective of change in the capital structure. The approach is based on further additional assumptions like:

- ✓ Capital markets are perfect. All information is freely available and there are no transaction costs.
- ✓ All investors are rational.
- ✓ Firms can be grouped into 'Equivalent risk classes' on the basis of their business risk.
- ✓ Non-existence of corporate taxes.

Based on the above assumptions, Modigliani-Miller derived the following three propositions:

(i) Total market value of a firm is equal to its expected net operating income divided by the discount rate appropriate to its risk class decided by the market.

$$\text{Value of a firm} = \frac{\text{Net Operating Income (NOI)}}{K_0}$$

(ii) A firm having debt in capital structure has higher cost of equity than an unlevered firm. The cost of equity will include risk premium for the financial risk.

The cost of equity in a levered firm is determined as under:

$$Ke = Ko + (Ko - Kd)\frac{Debt}{Equity}$$

(iii) The structure of the capital (financial leverage) does not affect the overall cost of capital. The cost of capital is only affected by the business risk. It is evident from the above diagram that the average cost of the capital (Ko) is a constant and not affected by leverage.

MM Approach- 1963: with tax

In 1963, MM model was amended by incorporating tax, they recognized that the value of the firm will increase, or cost of capital will decrease where corporate taxes exist. As a result, there will be some difference in the earnings of equity and debt-holders in levered and unlevered firm and value of levered firm will be greater than the value of unlevered firm by an amount equal to amount of debt multiplied by corporate tax rate.

MM has developed the formulae for computation of cost of capital (Ko), cost of equity (Ke) for the levered firm.

(i) Value of a levered company = Value of an unlevered company + Tax benefit

$$Vg = Vu + TB$$

(ii) Cost of equity in a levered company (Keg) = $Keu + (Keu - Kd)\frac{Debt}{Debt+Equity}$

Where,

Keg = Cost of equity in a levered company

Keu = Cost of equity in an unlevered company

Kd = Cost of debt

t = Tax rate

(iii) WACC in a levered company (Kog) = Keu (1-tL)

Where,

Kog = WACC of a levered company

Keu = Cost of equity in an unlevered company

t = Tax rate

$L = \frac{Debt}{Debt+Equity}$

b) i) Calculations

	2022	**2021**
Inventory days	5,400/54,600 × 365 = 36 days	3,400/42,620 × 365 = 29 days
Receivables days	5,200/58,200 × 365 = 33 days	3,400/45,750 × 365 = 26 days
Payables days	5,850/54,600 × 365 = 39 days	3,400/42,620 × 365 = 29 days
Current ratio	10,600/9,680= 1.10 times	6,600/5,900 = 1.12 times
Quick ratio	5,400/9,680 = 0.56 times	3,400/5,900 = 0.58 times
Sales/net working capital	58,200/(10,600 – 9,680) = 63.26 times	45,750 /(6,600 – 5,900) = 65.35 times

Increase in sales	(58,200 – 45,750)/ 45,750 × 100% = 27%
Increase in non-current assets	(15,620 – 14,750)/ 14,750 × 100% = 6%
Increase in inventory	(5,400 – 3,400)/ 3,400 × 100% = 59%
Increase in receivables	(5,200 – 3,200)/ 3,200 × 100% = 63%
Increase in payables	(5,850 – 3,400)/ 3,400 × 100% = 72%
Increase in overdraft	(4,530– 2,500)/ 2,500× 100% = 81.2%

Symptoms of overtrading are as follows.

An increase in turnover

Blessing Co has experienced a 27% increase in turnover from 2021 to 2022 and working capital has not increased in line. The sales/net working capital ratio has slightly decreased from 65.35 times to 63.26 times.

An increase in the volume of current assets

Inventories have increased by 59% and receivables by 63%. Inventory turnover and accounts receivable turnover have slowed down so the rate of increase in inventories and accounts receivable has been even greater than the rate of increase in sales. Inventory may have been stockpiled in anticipation of a further increase in turnover. The increase in sales could have partly arisen due to a relaxation of credit terms for receivables.

Most of the increase in assets is financed by credit

The payment period for accounts payable has lengthened from 29 days to 39 days and there has been an overall increase of 72% in payables. The bank overdraft has also increased by 63%.

Falling liquidity ratios

Both the current ratio and the quick ratio have deteriorated.

Conclusion: There is clear evidence that Blessing Co is overtrading.

General Symptoms of Overtrading

- The increased investment in current assets needed to support the increased sales are financed mainly form short-term sources like creditors and bank overdraft, resulting in a declining current ratio and quick ratio.
- Sales tend to increase very quickly in relation to equity, resulting in sharp increases in the ratio of sales to equity.
- The increase in debt would lead to higher gearing ratios
- The net working capital will tend to decline, and may even become negative. A negative net working capital implies a current ratio less than equity (current assets less than current liabilities), and a business in such a position is likely to face considerable difficulty in meeting its current liabilities. Even where the current ratio is satisfactory, any erosion of net working capital would worsen the liquidity of the business and make it more vulnerable to cyclical risk.

ii) **Possible causes**

- It is not only physical increase in sales that can strain liquidity. In periods of high inflation, sales turnover and the corresponding working capital requirements can increase very sharply in nominal terms, resulting in the symptoms of overtrading.
- Repayment of a loan without raising sufficient long-term funds (either in the form of profit accruals or a fresh loan) can drain cash form the firm, creating symptoms.
- Excessive dividend payout can result in depressing the equity and creating similar symptoms.
- Using short-term sources of funds to finance long-term investments will depress net working capital, resulting in overtrading symptoms.

Overcoming overtrading

- However, if the management of the tenanted-pub firms feel that overtrading is the root cause of their condition then they must as a matter of urgency tackle the situation.
- The instant solution for an overtrading situation is to take more trade credit and bank overdraft finance; however, this is likely to be only a short-term fix that ultimately exacerbates the situation and worsens the liquidity crisis.
- Better short-term solutions would be to either restrict the growth in turnover to manageable proportions; or improve working capital management so that the investment in current assets required to support the level of sales is reduced (i.e. better inventory control, credit policy and debt collection).
- The long-term solution is to provide more long-term funds for working capital purposes – i.e. improve the Net Working Capital position of the firm

QUESTION FOUR

Marking Guide		*Marks*
a) i) Price Earnings Ratio		
Number of the shares		
Formula		0.5
Computation		1.5
Earnings per share		
Formula		0.5
Computation		1.5
P/E Ratio		
Formula		0.5
Computation		1.5
Maximum marks		**6**
ii) Earnings after acquisition		
Formula		0.5
Computation		1.05
Formula		0.5
Computation		1.05
		1
Recommendation		1
Maximum marks		**7**
iii) Arguments for M&A	(1 Mark each, max 3)	3
Arguments against M&A	(1 Mark each, max 3)	3
Maximum marks		**6**
b) Assessment of liquidity		2
Assessment of solvency and leverage		2
Assessment of solvency and leverage		2
Maximum marks		**6**
Total marks		**25**

Model Answers

a)

i) Calculations of Price Earnings Ratios:

Particulars	Abeza Ltd.	Baho Ltd.	Cyuma Ltd.
Earnings (FRW "Million")	120	24	24
Number of shares ("Million")	60	24	12
Earnings per share	2	1	2
Market price of each share (FRW)	90	44	54
P/E Ratio	**45**	**44**	**27**

- **Computation of number of shares of each company**

$$\text{Number of shares} = \frac{Equity\ Share\ Capital}{Price\ per\ share}$$

$$\text{AL; Number of shares} = \frac{600{,}000{,}000}{10} = 60{,}000{,}000 \text{ shares}$$

$$\text{BL; Number of shares} = \frac{240{,}000{,}000}{10} = 24{,}000{,}000 \text{ shares}$$

$$\text{CL; Number of shares} = \frac{120{,}000{,}000}{10} = 12{,}000{,}000 \text{ shares}$$

- **Computation of Earnings per share of each company**

$$\text{Earnings Per Share (EPS)} = \frac{Earnings}{Number\ of\ shares}$$

$$\text{AL; EPS} = \frac{120{,}000{,}000}{60{,}000{,}000} = FRW\ 2\ /share$$

$$\text{BL; EPS} = \frac{24{,}000{,}000}{24{,}000{,}000} = FRW\ 1\ /share$$

$$\text{CL; EPS} = \frac{24{,}000{,}000}{12{,}000{,}000} = FRW\ 2\ /share$$

- **Computation of Price Earnings Ratio of each company**

$$\text{Price Earnings Ratio (P/E)} = \frac{\text{Market price of each share}}{Earnings\ Per\ Share}$$

$$\text{AL; P/E} = \frac{90}{2} = 45$$

$$\text{BL; P/E} = \frac{44}{1} = 44$$

$$\text{CL; P/E} = \frac{54}{2} = 27$$

ii) Computation of Earnings per share (EPS) of AL after acquisition of BL and CL.

Particulars	Formula	Baho Ltd.	Cyuma Ltd.
Exchange ratio in A Ltd	Target's market price/Acquirer's market price	0.49	0.60
New shares in A Ltd	Acquirer's shares + (Target's shares* exchange ratio)	60+(24*0.49) = 71.76	60+(12*0.60) = 67.20
New earnings (FRW "Million")	Acquirer's earnings + target's earnings	120 + 24 = 144	120 + 24 = 144
EPS after acquisition (FRW)	New earnings/New number of shares	144/71.76 = 2.01	144/6.20 = 2.14

Recommendation:

After the merger of B Ltd with A Ltd, the new EPS (2.01) is higher than that of A Ltd. The new EPS after acquisition of C Ltd by A Ltd (2.14) is also higher than A Ltd. Therefore, it is recommendable that AL can take over both companies.

iii) Advantages and disadvantages of mergers and acquisition

Advantages of mergers and acquisition

1. Increase market share - When companies merge, the new company gains a larger market share and gets ahead in the competition.

2. Reduce the cost of operations - Companies can achieve economies of scale, such as bulk buying of raw materials, which can result in cost reductions. The investments on assets are now spread out over a larger output, which leads to technical economies.

3. Avoids replication - Some companies producing similar products may merge to avoid duplication and eliminate competition. It also results in reduced prices for the customers.

4. Expands business into new geographic areas - A company seeking to expand its business in a certain geographical area may merge with another similar company operating in the same area to get the business started.

5. Prevents closure of an unprofitable business – Mergers and acquisitions can save a company from going bankrupt and also save many jobs.

Disadvantages of mergers and acquisition

1. Raises prices of products or services - Mergers and acquisition result in reduced competition and a larger market share. Thus, the new company can gain a monopoly and increase the prices of its products or services.

2. Creates gaps in communication -The companies that have agreed to merge may have different cultures. It may result in a gap in communication and affect the performance of the employees.

3. Poor strategic fit - The two companies have strategies and objectives that are too different and they conflict with one another.

4. Cultural and Social Differences - It has been said that most problems can be traced to "people problems." If the two companies have wide differences in cultures, then synergy values can be very elusive.

5. Incomplete and Inadequate Due Diligence - Due diligence is the "watchdog" within the M & A Process. If you fail to let the watchdog do his job, you are in for some serious problems within the M & A Process.

6. Poorly Managed Integration - The integration of two companies requires a very high level of quality management. In the words of one CEO, "give me some people who know the drill." Integration is often poorly managed with little planning and design. As a result, implementation fails.

7. Paying too Much - In today's merger frenzy world, it is not unusual for the acquiring company to pay a premium for the Target Company. Premiums are paid based on expectations of synergies. However, if synergies are not realized, then the premium paid to acquire the target is never recouped.

8. Overly Optimistic - If the acquiring company is too optimistic in its projections about the Target Company, then bad decisions will be made within the M & A Process. An overly optimistic forecast or conclusion about a critical issue can lead to a failed merger.

b. Assessment

Liquidity

The answer should be focused on using the current and quick ratios. While the current ratio has steadily increased (increase from1.17 to 1.20 to 1.32 in 2020 to 2021 and 2022 respectively), it is to be noted that the liquidity has not resulted from the most liquid assets. Instead, from the quick ratio one could note that the increase in liquidity is caused by an increase in inventories. For a fresh food firm, one could argue that inventories are relatively liquid when compared to other industries. Also, given the information, the industry-benchmark can be used to derive that the firm's quick ratio (1.031) is very similar to the industry level (1.032) and that the current ratio (1.32) is indeed slightly higher (1.26) - again, this seems to come from inventories.

Asset Management

Inventory turnover, days' sales in receivables, and the total asset turnover ratio are to be mentioned here. Inventory turnover has increased over time and is now above the industry average. This is good - especially given the fresh food nature of the firm's industry. Days' sales in receivables ratio have gone down over time, but is still better than the industry average. So, while they are able to turn inventories around quickly, they seem to have more trouble collecting on these sales, although they are doing better than the industry. Finally, total asset turnover has gone down over time, but it is still higher than the industry average. It does tell us something

about a potential problem in the firm's long term investments, but again, they are still doing better than the industry.

Solvency and leverage

Solvency and leverage is captured by an analysis of the capital structure of the firm and the firm's ability to pay interest. Capital structure: Both the equity multiplier and the debt-to-equity ratio tell us that the firm has become less levered. From the numbers it is hard to give a qualitative judgment beyond observing the drop in leverage. In terms of the firm's ability to pay interest, 1999 looks pretty bad. However, remember that interest coverage ratio uses EBIT as a proxy for the ability to pay for interest, while we know that we should probably consider cash flow instead of earnings.

END OF MARKING GUIDE AND MODEL ANSWERS