CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATION

A2.2: STRATEGIC PERFORMANCE MANAGEMENT

DATE: THURSDAY 27, NOVEMBER 2025

MARKING AND ANSWER GUIDE

SECTION A

QUESTION ONE
Marking Guide

Sub question	Details	Marks
a. Throughput analysis		
Total conversion costs per product	Award 0.5 marks for each product	1.5
Contribution per product	Award 1 mark for each	3
Sales value per product	Award 1 mark for each	3
Direct material cost per product	Award 0.5 marks for each product	1.5
Throughput per product	Award 1 mark for each	3
Total factory hours	Award 0.5 mark for each	1.5
Return per factory hour for each product	Award 1 mark for each	3
Operating expenses	Award 2 marks	2
Cost per factory hour	Award 2 marks	2
TAR per product	Award 1 mark for each	3
Advice/ decision	Award 0.5 mark for the right decision for each product	1.5
b. Pricing and market segmentation		
i. Determination of price to charge in each market 1 mark	1 mark for price of mark, (2 market *1)	2
Determination of quantity of square meter in each market 1 mark	1 mark for correct quantity obtained (2 market *1 mark)	2
ii. revenue function for each market	1 marks for correct revenue function (2 market)	2
Total revenues	1 mark for a well calculated revenue	1
Monthly profit	1 mark for a well calculated profit	1
iii. Max Quantity in each country @ uniform price	0.5 mark for a well calculated quantity in each country	1
Total revenue for each country	0.5 mark for a well calculated total revenue in each country	1
Total profit for each country	0.5 mark for a well calculated profit in each country	1
Interpretation	1 mark for a valid comment	1
c. Just in time and Total quality Management		
Reasons why the JIT System Failed	1 mark for a well explained reason	4
How TQM Created Conditions for JIT to Work	1 mark for a well explained	4
d. Balanced scorecard		
Adoption of balanced scorecard in addressing performance measurement challenges in NEL	1 mark for a well explained point	5
Total		**50**

Model Answer

a) Throughput analysis

i) Throughput per product

Details	**Product A**	**Product B**	**Product C**
Sales revenue (A)= D/K	530,000,000	600,000,000	540,000,000
Direct material costs (B)=A*GIVEN %	53,000,000	60,000,000	81,000,000
Throughput per product ©=A-B	477,000,000	540,000,000	459,000,000
Contribution (D)= I+J	318,000,000	420,000,000	378,000,000
Conversion costs			
Factory manager's salary (E)	68,000,000	80,000,000	92,000,000
Factory rent(F)	40,000,000	45,000,000	50,000,000
Factory building depreciation(G)	38,000,000	35,000,000	27,000,000
Factory insurance(H)	92,000,000	140,000,000	74,000,000
Total conversion costs (I)= E+F+G+H	238,000,000	300,000,000	243,000,000
Profit (J)	80,000,000	120,000,000	135,000,000
Contribution/sales ratio (K)	60%	70%	70%

ii) return per factory hour for each product

Details	**Product A**	**Product B**	**Product C**
Factory hour per product	5,000	3,000	2,000
Factory hour per units	2	1	2
Total factory hours	10,000	3,000	4,000
Throughput per factory hour	47,700	180,000	114,750

iii) cost per factory hour

Profit= Throughput-Operating expenses

Operating expenses= Throughput-profit

Throughput	1,476,000,000
Profit	335,000,000
Operating expenses	1,141,000,000
Factory hours	20,000
Cost per factory hours	57,050

iv) throughput accounting ratio (TAR) for each product

TAR	**A**	**B**	**C**
Throughput per factory hour	47,700	180,000	114,750
Cost per factory hours	57,050	57,050	57,050
TAR	0.84	3.16	2.01

Optimal production decision

Rank	Description	Units	Hours
1	Produce B 3000@1hrs	3,000	3,000
2	Produce C 2000@2hrs	2,000	4,000
3	Produce A 5000@2hrs	5,000	10,000
Total factory Hours utilized			17,000
Factory hours Available			20,000
Spare Capacity			**3,000**

Because capacity is not binding and every product yields positive throughput, produce the full demand for all three products:

Hours used: 17,000 hours (3,000 hours remain unused).

Even though NEL should produce A to meet demand now (it increases total throughput and profit because throughput is positive), Product A has TAR < 1. That means if hours become constrained in future, A should be dropped first (it is the least efficient user of the bottleneck).

Priority order under a binding constraint remains B first, then C, then A

b) Pricing and market segmentation

i) Calculate the price to charge in each mark and the quantity of square meters to sell per month to maximize profit

Demand

Rwanda : P1= 75,000-5.5Q1

Tanzania: P2= 72,000-10.5Q2

Total revenue and MR

TR1= (75,000-5.5Q1)Q1= 75,000Q1-5.5Q_1^2 Lead to MR1= 75,000-11Q_1

TR2= (72,000-10.5Q2)Q2= 72,000-10.5Q^2_2 Lead to MR2= 72,000-21Q_2

Set MR1=MC

MC=50,000 (Given)

Rwanda: 75,000-11Q1=50,000 Lead to Q1= 25,000/11=2,272 m^2

P1= 75,000-5.5Q1= FRW 62,500 per m^2

Tanzania: 72,000-21Q2=50,000 Lead to Q2=22,000/21= 1,047 m^2

P2= 72,000-10.5Q2= FRW 61,000 per m^2

ii) Determine the revenue function for each market and compute the maximum monthly profit in total

Revenue functions:

R1(Q1)= 75,000Q1-5.5$Q^2$1

R2(Q2)=72,000Q2-10.5$Q^2$2

At the optimal Q1. Q2:
R1= FRW 142,045,455
R2= FRW 63,094,762
Total revenues= FRW 205,950,216
Variable costs= 50,000 (Q1+Q2)= FRW 166,017,316
Maximum monthly profit= Revenues-VC-FC
=205,950,216-166,017,316-25,000,000
=14,932,900

iii) Using the current uniform price of FRW 55,000, calculate quantities and total monthly profit and comment on the change in total profitability and prices compared with part (ii)

Quantities
Q1=$\frac{75,000-55,000}{5.5}=\frac{40,000}{11}=$ m^2 3,636

Q2= $\frac{72,000-55,000}{10.5}=\frac{34,000}{21}$= m2 1,619
Total quanitity= 3,636+1,619= 5,255 m^2
Revenues= 5,255*55,000= FRW 289,025,000
Variable cost= 5,255*50,000= FRW 262,750,000
Profit= 289,025,000-262,750,000-25,000,000= FRW 1,257,000

Comments

- Profit rise with discrimination from FRW 1,257,000 to FRW 14,932,900
- Optimal discriminatory prices are higher than uniform price: Rwanda FRW 62,500 for FRW 55,000. Tanzania FRW 61,000 for FRW 55,000
- Quanitites fall in both markets (Rwanda 3,636 to 2,273 while for Tanzania 1,619 to 1,048) but profits increase because prices are aligned to the MR=MC rule with MC=50,000

c) Just-In-Time and Total Quality Management

Reasons why the JIT System Failed

- Unreliable suppliers: Raw materials often arrived late because suppliers had transport and cash-flow problems. This caused stockouts and stopped production.
- Frequent power cuts and long setup times: Power interruptions and long changeover times in glazing and finishing disrupted the smooth flow required for JIT.
- High defect rates and unstable processes: Defect rates of 4%, 3%, and 6% showed poor process control. Problems such as inconsistent clay moisture, uneven glaze thickness, and unstable heating chamber temperatures made production unpredictable.

- Lack of worker training: Staff were not trained in JIT or continuous improvement, so they could not support the new system.

How TQM Created Conditions for JIT to Work

- Finding and fixing root causes of defects: Quality teams used tools such as fishbone diagrams and the 5 Whys to understand why defects were happening.
- Introducing standard procedures and SPC: New Standard Operating Procedures and Statistical Process Control charts helped stabilise clay moisture, glaze thickness, and heating chamber temperatures. This reduced variation.
- Better training and communication: Workers were trained in quality, problem-solving, and continuous improvement, which improved discipline and involvement.
- Early detection of problems: Quality checks were added, and workers were allowed to stop production if they found defects.

d) The Balanced Scorecard

The Balanced Scorecard (BSC) can help NEL address the weaknesses in its current performance measurement system by providing a more balanced, strategic, and future-focused approach. The BSC expands performance assessment beyond financial results and ensures that all areas affecting long-term success are measured and improved.

- Reducing overemphasis on financial measures: NEL currently focuses mainly on output, cost control and profit. The BSC introduces three additional perspectives Customer**,** Internal Process**,** and Learning & Growth which help the company measure customer satisfaction, retention, and service quality; process efficiency, defect rates, waste levels, and delivery times; staff skills, training, innovation, and organisational culture. This reduces the imbalance and ensures performance reflects both short-term financial goals and long-term strategic priorities such as innovation and sustainability
- Overcoming departmental resistance to monitoring and targets: A well-designed BSC helps departments understand how their work contributes to the overall strategy**.** This increases ownership because KPIs become clearer and more meaningful; employees see the link between their efforts and strategic goals; targets are negotiated and aligned with responsibilities. The transparency of the BSC encourages teamwork and reduces resistance to performance evaluation.
- Improving tracking of non-financial indicators: NEL struggles to track defect rates, delivery time, energy use, and similar measures. The BSC requires organisations to identify, define, and consistently track non-financial metrics. This encourages NEL to improve its data systems; standardise performance reporting; introduce regular monitoring of operational and sustainability indicators. As a result, the company can better understand performance drivers, not only outcomes.

- Aligning departmental key performance indicators with corporate strategy: The BSC uses a strategy map to translate strategic objectives into measurable departmental KPIs. This ensures each department has goals that clearly support the corporate strategy; duplication and conflicting objectives are eliminated; all units work toward the same long-term outcomes (e.g., export growth, sustainability, quality improvement). The BSC therefore strengthens vertical and horizontal alignment throughout the organisation.
- Measuring sustainability and innovation more effectively: The BSC helps NEL link sustainability projects (solar energy, recycling, waste reduction) to measurable outcomes by placing them under Internal Process perspective (e.g., energy efficiency, waste reduction, cleaner processes); Learning & Growth perspective (e.g., worker capability in green technology, innovation culture). Clear KPIs such as energy consumption per square meter, percentage of recycled waste used, or carbon reduction per batch produced can be added. This supports national goals like Vision 2050 and Rwanda's industrial sustainability agenda.

SECTION B

QUESTION TWO

Qn	Subquestion	Details	Marks
2	Identification of incremental budgeting	Award 2 Marks for calculation incremental percentage and 2 Marks for the issues with incremental budgeting	4
	Top-down budgeting	Award 1 Mark for issue with top down budgting	1
	Zero based budgeting	Award 1 mark for each advantage of ZBB Max 3 Marks	3
	Variance analysis and operating statement		
	Sales Revenues	Award 1 Mark for flexed std, 0.5 Mark for variance and 0.5 Mark for comment	2
	Material purchased and used	Award 1 Mark for flexed std, 0.5 Mark for variance and 0.5 Mark for comment	2
	Labor	Award 1 Mark for flexed std, 0.5 Mark for variance and 0.5 Mark for comment	2
	Contribution	Award 1 Mark for flexed std, 0.5 Mark for variance and 0.5 Mark for comment	2
	Fixed overheads	Award 1 Mark for correct fixed overhead, 0.5 Mark for variance and 0.5 Mark for comment	2
	Operating Profit	Award 1 Mark for calculation, 0.5 Mark for variance and 0.5 Mark for comment	2
	Calculation of sales mix variance	Award 1.5 Marks for a well calculated Sales mix variance	1.5
	Calculation of sales quantity variance	Award 1.5 Marks for a well calculated Sales quantity variance	1.5
	Interpretation	Award 1 mark for each well interpreted result	2
	Total		**25**

Question 2.a)

Using the data provided and the managerial reactions, critically assess the current budgetary systems and assess how the use of Zero-Based Budgeting system will improve the budgetary systems at Nara Phone Ltd

Incremental budgeting

Considering the provided current budgetary system data, Nara Phone Ltd adopts the incremental budgetary system**.** In incremental budgeting the process starts with the previous period's budget or actual results, incremental amounts are added/subtracted to cover any known changes to the business or/and Inflation. In this case it can appear that Nara Phone adds 6% to the next quarter's budget.

Details	Q 1	% Change	Q 2	% Change	Q 3	% Change	Q 4
	FRW'000		FRW'000		FRW'000		FRW'000
Direct materials	175,000	106%	185,500	106%	196,630	106%	208,428
Indirect materials	62,500	106%	66,250	106%	70,225	106%	74,439
Direct labor	130,000	106%	137,800	106%	146,068	106%	154,832
Indirect labor	49,750	106%	52,735	106%	55,899	106%	59,253
Fixed production overheads	25,000	100%	25,000	100%	25,000	100%	25,000
Other expenses	69,650	106%	73,829	106%	78,259	106%	82,954

This budgetary system has the following issues:

- Unnecessary costs will remain in the budget because they were in the previous year's budget. Inefficiencies will therefore be compounded.
- It does not encourage a detailed examination of where improvements could be made to increase efficiency.
- Budgeted expenditure is not related to the activities that the organization wishes to perform.

On the other hand, this budgetary system can be supported that only the increment needs to be justified and it is easy and quick to prepare the budgets.

Top-Down Budgeting System

Considering the reaction from management, the following issues could be noted:

- **Lack of participation in budget setting and performance appraisal:** This can be evidenced by the reaction from managers that Last months' budgets were impossible to achieve. My department operated at its most efficient level for months, and still didn't make the target. It shows that managers do not participate in budgetary preparation hence setting the overly ambitious budgets. I addition, it is being claimed that managers don't even know where the budgets are prepared, what we do is just to implement them
- **Performance measures ignoring interdependencies and uncontrollable factors:** This could be evidenced by the reaction from managers that their results totally ignore the interruptions to production in their main supplying department.
- Too much budgetary pressure linked to high performance targets.
- No budgetary feedback: The only response I got to last and other previous month's performance was no bonus and a nasty memo.

On the other hand, the top-down budgetary system has the following advantages

- The budgets prepared are likely to be consistent with the longer-term objectives of the organization.

- Interdependencies of the various departments will have been taken into account the budgets of all departments will be coordinated.
- The budget will not be manipulated by the managers responsible for achieving it (e.g. by adding budgetary slack).

Zero Based Budgeting (ZBB)

Zero-based budgeting attempts to overcome the weakness inherent in incremental budgeting namely that some spending is included in a budget because it was in the previous year's budgets, regardless of whether it is useful. Zero based budgeting is the budgetary system where the next period's budget is prepared from scratch (zero base).

Adoption of ZBB will improve the budgetary system in Nara Phone Ltd in the following ways:

- The ZBB should reduce budgetary slack as costs must be justified based on their related activities.
- It is very useful for discretionary spending and support activities such as advertising and research and development, where management can choose how much to spend on a particular item.
- With the adoption of ZBB, resources will be allocated to the programmes that best achieve the organization's objectives.

Question 2.b)

i)Prepare an operating statement for Nara Pro.II in the month of August 2024

Items	**Flexed Standard (212 phones)**	**Actual (212 Phones)**	**Variance**	**Remark**
Sales Revenues	1,272,000	1,260,000	12,000	Adverse
Less: Variable costs				
Material purchased and used	84,800	85,000	(200)	Adverse
Labor	636,000	620,000	16,000	Favorable
Total variable costs	(720,800)	(705,000)	(15,800)	Favorable
Contribution	551,200	555,000	(3,800)	Favorable
Less: Fixed overheads	(400,000)	(380,000)	(20,000)	Favorable
Operating Profit	151,200	175,000	(23,800)	Favorable

OR

Budgeted contribution(180units*2600)-FRW			468,000
Sales volume contribution variance-FRW			83,200
Standard contribution on actual sales (212 units* 2,600)-FRW			551,200
Sales price variance-FRW			-12,000
			539,200
Variable cost variances			
	Favourable	**Adverse**	
Material Price Variance-FRW	120		
Material Usage Variance-FRW		-320	
Labour Rate variance-FRW		-8,000	
Labour Efficiency Variance-FRW	24,000		
Var. Overh. Efficiency variance-FRW	0	0	
Var. Overh. Expenditure variance-FRW	0	0	15,800
Actual contribution			555,000
Budgeted fixed production overhead-FRW	(FRW 4000*100/200phones) *180		360,000
Fixed overhead expenditure variance-FRW			-20,000
Actual profit/Loss-FRW			**175,000**

Workings

			Calculations		**Comments**
Sales Variance	Sales Price Variance	(AP-SP)*AQ			
		AP	FRW 1,260,000/212	5,943	
		SP (Budgeted)		6,000	
		AQ		212	
		SPV	**(5,943-6,000)*212units**	**12,000**	**Adverse**

Sales Volume Variance		**Calculations**		**Comments**
Sales volume contribution variance	(AQ-BQ)*S.Margin	FRW		
	AQ	212		
	BQ	180		
	S.Margin/Unit			
	Selling Price	6,000		
	Material cost	400		
	Labor cost	3,000		
	Variable overhead	-		
	Total VC	**3,400**		
	S. Margin/Unit	**2,600**		
	SVCV	**(212-180)*2600**	**83,200**	**Favorable**

Material Variance	Material Price Variance		**Calculations**		**Comments**
		(AP-SP)*AQ			
		AP-FRW	79.89		
		SP-FRW	80.00		
		AQ-Kg	1,064.00		
		MPV	**(AP-SP)*AQ**	**120**	**Favorable**
	Material Usage Variance	(AQ-SQ)*SP			
		AQ	1,064		
	SQ=Actual prod*Stand qty/unit	SQ	1,060	Stand Qty/unit	5kg/unit
		SP	80.000		
		MUV	**(AQ-SQ)*SP**	**320.000**	**Adverse**

Labor cost variance	Labour Rate variance		**Calculations**		**Comments**
		(AR-SR)*AH			
		AR-FRW	151.96		
		SR-FRW	150.00		
		AH	4,080.00		
		LRV	(AR-SR)*AH	8,000	Adverse
	Labour Efficiency Variance	(AH-SH)*SR			
		AH	4,080		
		SH	4,240	Stand Hrs per unit	20hrs/unit
		SR	150		
		LEV	(AH-SH)*SR	24,000	Favorable

Fixed Overhead	Fix Oh. EX Var.		**Calculations**		**Comments**
		Budg. F.O- Actual F.O			
		Budg. F.O-FRW	360,000	(100*4000)/200	2,000
		Actual F.O-FRW	380,000		
		F.O.EXP. VAR	20,000	Adverse	

Question 2.b.ii)

Sales mix contribution variance

	Standard mix	AQAM	AQSM	Difference	Standard Contr. Per unit-FRW	Variance-FRW	Comment
Nara S	8,000	9,500	8,200	1,300	50,000	65,000,000	F
Nara S Plus	12,000	11,000	12,300	-1,300	60,000	-78,000,000	A
Total	20,000	20,500	20,500	0		-13,000,000	

A sales mix variance indicates the effect on profit of changing the mix of actual sales from the standard mix. This means that Nara Phone Ltd will suffer a loss of FRW 13 millin resulted from changing the sales mix.

Sales quantity/yield contribution variance

	AQSM	BQSM	Difference	Standard Contr. Per unit-FRW	Variance-FRW	Comment
Nara S	8,200	8,000	200	50,000	10,000,000	Favorable
Nara S Plus	12,300	12,000	300	60,000	18,000,000	Favorable
Total	20,500	20,000	500		28,000,000	

A sales quantity variance indicates the effect on profit of selling a different total quantity from the budgeted total quantity. This means that Nara Phone Ltd will get an additional profit of FRW 28 million resulting from selling 8,200 units and 12,300 units instead of 8,000 and 12,000 units as budgeted.

QUESTION THREE

Marking Guide

Details	Details	Marks
Mission statement question		
Success measurement	Award 1 Mark for measurement of success Max. 3 Marks	3
Impact on performance measurement	Award 1 Mark for each well explained impact Max. 2 Marks	2
Calculation of target cost	Award 2 mark for a well calculated target cost	2
Calculation of target cost gap	Award 1 marks for a well calculated target cost gap	1
Ways to close target cost gap	Award 1 Mark for each well explained way to close target cost gap	5
Ratios and interpretation		
Memo format `	Award 1 mark for a well provided memo format	1
Current ratio	Award 0.5 mark for calculation and 1 Mark for comment	1.5
Receivable days	Award 1 mark for calculation and 1 Mark for comment	2
Payable days	Award 1 mark for calculation and 1 Mark for comment	2
Inventory days	Award 1 mark for calculation and 1 Mark for comment	2

Debt to Equity ratio	Award 1 mark for calculation and 1 Mark for comment	2
Return on Assets	Award 0.5 mark for calculation and 1 Mark for comment	1.5
Total		**25**

Model Answer

a)Considering the mission statement of CRYPTO Ltd in the exhibit 1. Discuss how the company can measure whether it is succeeding in achieving its mission

We aim to maximize our shareholders' value through the continuous growth of our business: To measure if the company is achieving this mission, the management should ensure that it undertake all positive NPV projects which would result in either improvement in share price or dividend payments. The company can measure how much shareholders' wealth increases using techniques such as total shareholder return or economic value added.

We grow and prosper together with our customers, by providing services of greater value to them at the cheaper prices. Prices can be benchmarked against competitors to ensure the company provides the best prices.

We create a work environment that encourages and rewards diligent and highly motivated employees: Benchmarking with competitors in the same sector/industry would help the company to measure if this mission is being achieved. The employees survey would also help to measure this.

Its impact on performance management

Those who favour the use of mission statements claim the following advantages:

- Mission statements provide focus for an organisation's strategy development by providing a benchmark against which to measure proposed strategies.
- It guides departments and individuals within the organisation. They will ensure that they work towards achieving the organisation's mission rather than working towards other objectives.
- Mission statements also contain information about the organisation's values – and as such, they ensure that staff behave in a way that is consistent with the organisation's values.
- Various studies have concluded that having a mission statement improves the organisation's profitability.

b)Using data provided in the exhibit 2. Advise on the target costs and how the target cost gap can be closed by CRYPTO Ltd.

Target costing is a marketing approach to costing. It attempts to achieve an acceptable margin in a situation where the price of a product is determined externally by the market. This margin is

achieved by identifying ways to reduce the product's costs. It is achieved by subtracting a desired profit margin from a competitive market price to determine the maximum acceptable cost.

Details	**FRW**
Direct materials	11,300
Direct Labor	5,760
Indirect labor	4,660
Other expenses	2,780
Total costs	**24,500**
Target total cost (FRW 24,500/1.25)	19,600
Target cost gap	**4,900**

There are various methods to reduce product cost; an important consideration when using these techniques is to ensure that the perceived value of the final product/service is not reduced (which would lead to lower effective selling prices).

Some methods which may be used are:

- Reconsider the design to eliminate non-value-added elements. For example, snap-together fasteners and automated glue dispensing may be used instead of screws (which require high labour manipulation)
- Reduce the number of components or standardize components. For example, multiple separate components that need to be welded together in car assembly may be cast as a single piece, reducing welding costs and improving structural integrity.
- Use less expensive materials. Using cheaper materials may reduce overall unit cost, but there is a significant risk of reducing perceived value.
- Employ a lower grade of staff on production. Using a lower staff grade may reduce labour costs. However, management must closely monitor quality costs. It might be suitable if the production process does not require specialist skills.
- Invest in new technology. This usually involves a significant upfront cost to acquire the technology, and its value may be related to how effectively the new technology is utilised. Lifecycle costing may be used to have better insight into the actual cost of the investment
- Outsource elements of the production or support activities. Outsourcing activities is a common cost reduction action; however, care must be taken to ensure outsourced components and services are of the required quality and that crucial value drivers and capabilities are not lost in the outsourcing process.
- Reduce manning levels or redesign the workflow. Redesigning workflows and processes (using Kaizen, for example) helps reduce production costs. Ensure dysfunctional shortcuts disguised as cost-cutting measures are not built into the redesigned workflow. For example, removing supposedly non-value-adding activities such as precision measurement and quality tests might lead to deterioration in the consistency of quality.

Question 3.c

Internal Memo

From: Financial consultant

To: The Chief Executive Officer

Date: 10 April 2025

Subject: Analysis of performance of CRYPTO Ltd

Introduction

This memo will analyze the performance of CRYPTO comparing the year 2024 against the sector benchmark. Current ratio, receivable days, payable days, inventory days, debt to equity ratio and return on assets shall be used to make this analysis and compare them against the industry benchmark**.**

Current Ratio

Current ratio is one of the liquidity ratios which measures the ability of CRYPTO Ltd to cover its current liabilities using its current assets. CRYPTO Ltd has a current ratio of 1.5x which fall below the industry benchmark of 3x. This means that CRYPTO Ltd is performing very badly in terms of liquidity. To improve performance, CRYPTO Ltd should ensure that the current assets are improved (cash, inventory and receivables) or try to minimize current liabilities.

Receivable days

Receivable days/ debtors' days or receivable collection period is one of activity ratios which shows a time taken by CRYPTO Ltd to collect its receivables. As calculated, CRYPTO takes only 12 days to collect the debtors which is far below the industry average of 36 days. The performance of CRYPTO Ltd can be seen into two perspectives: Good performance as it is quickly collecting its debts which is good as it reduces the risks of bad debts and improves liquidity position of the company. On the other hand, collecting quickly the debts would upset the customers and shift to competitors due to much pressure in collecting their debts…

Payable days

Payable days is one of activity ratios which shows a time taken by CRYPTO Ltd to pay its creditors. As indicated in the appendices, payable days are 16 days, meaning that it takes CRYPTO Ltd only 16 days to pay off its creditors. This would be considered as fine as CRYPTO Ltd is collecting debtors in 12 days and pay off its creditors in 16 days. This is below the industry average of 32 days. On one hand, paying your suppliers quickly may improve their relationship with CRYPTO Ltd which may improve better working relationship and business. On the other hand, this may worsen the liquidity position of CRYPTO Ltd. The balance and finding optimum days to pay off the suppliers is crucial to the CRYPTO Ltd management.

Inventory days

Inventory days is one of activity ratio which measures the average number of days a company holds its inventory before selling it. The lower the better. As calculated, CRYPTO Ltd possesses 14 days which is above the industry average of 10 days. CRYPTO is performing below the industry average in this matter. The production process should be fastened and speeded up to ensure the delays in production processes are eliminated.

Debt to equity ratio

Debt to equity ratio, a gearing ratio which shows the percentage of debts in CRYPTO Ltd's capital structure. As calculated, CRYPTO Ltd capital structure is made of 168% of debts and 36% of equity which is above the industry average of 36%. This may result in financial distress due to high financial and liquidity risks. CRYPTO Ltd should ensure the level of debts are reduced at optimal level to avoid unnecessary financial risks.

Return on Assets

Return on assets shows the ability of company's assets to make profit. The more the better. As calculated, CRYPTO Ltd has 42% while the industry average is 12%. CRYPTO is highly leveraged relative to the industry. Heavy debt increases interest cost (which rose from FRW 33.9 billion to 37.6 billion) and reduces financial sustainability.

Profitability efficiency remains acceptable compared to the benchmark, but downward trends highlight cost control weaknesses. Because ROA is slightly better than benchmark. However: Net income dropped significantly from 39,020,537 (2023) to 25,262,828 (2024) and EBIT fell despite an increase in sales (operating expenses grew sharply by 29%).

Conclusion

The performance of CRYPTO Ltd was relatively good in some aspects like receivable and payable days but slightingly bad in terms of liquidity and gearing. The management should ensure that the deep analysis is made so that the performance is improved, this is more specifically o gearing level as it may result into the financial distress.

Appendices

		CRYPTO Ltd	**Industry**
Ratio type	**Formula**	**2024**	**Ratio**
Current ratio	Current assets/Current liabilities	1.51:1	3:1
Receivable days	Average A/c Receivables/Sales *365 days	11.7	36 days
Payable days	Average A/c payable/cost of sales *365 days	16.0	32 days
Inventory days	Average inventory/cost of Sales*365 days	14.2	10 days
Debt to Equity ratio	Total Debts/equity*100	168%	36%
Return on Assets	EBIT/average total assets	42%	12%

QUESTION FOUR

Marking Guide

Qn	Description	Marks
a)	Calculating the correct profit per day	2
b)	Developing correct random number ranges	3
	Developing simulation worksheet	5
	Calculating the correct total cost and profit	3
c)	Calculating Expected value without perfect information	1
	Calculating Expected value with perfect information	1
	Calculating Expected value of perfect information	1
	Brief explanation that the firm should reject Xerox`s offer. Its above value of perfect information	1
d)	Calculating the correct NPV for Northern division	2
	Calculating the correct NPV for Western division	2
	Calculating correct annualized equivalent for the two divisions	2
	Advice that invest in Northern division. Has high equivalent	2
	Total marks	25

Model answer

a) Production function:

X= $\sqrt{}$ (A * B)
A= 320 units
B= 500 units
X= $\sqrt{}$ (320 * 500)= 400 bottles per day
Fixed costs per period= FRW 12,000,000 per day

Expected profit

Expected selling price= (40,000*0.15)+ (48,000*0.35)+(43,000*0.20)(55,000*0.30)
= FRW 47,900
Expected cost of ingredient A= (1,200*0.10)+(1,500*0.05)+(2,300*0.30)+(2,500*0.55)
=FRW 2,260
Expected cost of ingredient B= (1,500*0.20)+(1,800*0.20)+(3,500*0.15)+(3,000*0.45)
=FRW 2,535
Expected profit per day= (400*47,900)-(320*2,260)-(500*2,535)-12,000,000
Expected daily profit: 5,169,300

b)Simulation of profit for 10 weeks

We teat each week as one period, using the same structure as in (a) for each week
Profit= 400P-320CA-500CB-12,000,000
Rondom number intrvals, using 2 digits RN (00-99)

Selling price

Price (FRW)	Prob	Cum. Prob	RN range
40,000	0.15	0.15	00–14
48,000	0.35	0.50	15–49
43,000	0.20	0.70	50–69
55,000	0.30	1.00	70–99

Cost of ingredient A

Cost (FRW)	Prob	Cum. Prob	RN range
1,200	0.10	0.10	00–09
1,500	0.05	0.15	10–14
2,300	0.30	0.45	15–44
2,500	0.55	1.00	45–99

COST OF B

Cost (FRW)	Prob	Cum. Prob	RN range
1,500	0.20	0.20	00–19
1,800	0.20	0.40	20–39
3,500	0.15	0.55	40–54
3,000	0.45	1.00	55–99

Use the provided random numbers: random numbers (first 30 used, 3 per week)
48, 70, 86, 40, 14, 18, 46, 23, 35, 27, 85, 13, 89, 24, 34, 59, 19, 08, 79, 49, 75, 15, 32, 23, 02, 56, 88, 87, 59, 43

Asign per weeek
1st RN=PRICE
2nd RN=COST A
3rd RN=COST B
Simulated outcomes

Week	RN(P)	P (FRW)	RN(A)	Cost A (FRW)	RN(B)	Cost B (FRW)	Profit (FRW)	Profit (FRW) Per week
1	48	48,000	70	2,500	86	3,000	4,900,000	34,300,000
2	40	48,000	14	1,500	18	1,500	5,970,000	41,790,000
3	46	48,000	23	2,300	35	1,800	5,564,000	38,948,000
4	27	48,000	85	2,500	13	1,500	5,650,000	39,550,000
5	89	55,000	24	2,300	34	1,800	8,364,000	58,548,000
6	59	43,000	19	2,300	8	1,500	3,714,000	25,998,000
7	79	55,000	49	2,500	75	3,000	7,700,000	53,900,000
8	15	48,000	32	2,300	23	1,800	5,564,000	38,948,000
9	2	40,000	56	2,500	88	3,000	1,700,000	11,900,000
10	87	55,000	59	2,500	43	3,500	7,450,000	52,150,000

Sample check

Revenue = 400*48,000= 19,200,000

Cost A= 320*2,500= 800,000

Cost B= 500*3,000= 1,500,000

Total cost= 800,000+1,500,000+12,000,000=14,300,000

Profit = 19,200,000-14,300,000= 4,900,000

Total and average simulated profit

Total profit over 10 weeks= FRW 396,032,000

Average weekly profit= FRW 396,032,000/10= 39,603,200 Frw

c)Whether to hire Xerox Ltd

Payoffs (profits in million FRW) by demand and production level:

Demand	Prob	Level 1	Level 2	Level 3
High	0.30	80	100	55
Medium	0.50	(20)	30	35
Low	0.20	50	15	25

EMV1= (0.30*80)+(0.50*-20)+(0.20*50)= 24,000,000

EMV2= (0.30*100)+(0.50*30)+(0.20*15)= 48,000,000

EMV3= (0.30*55)+(0.50*35)+(0.20*25)= 39,000,000

Best EMV= 48,000,000 on production level 2

Expcted value with perfect information (EVwPI)

For each demand level, choose the best payoff

High demand= (80, 100, 55)= 100

Mediam demand= (-20, 30, 35)= 35

Low demand= (50, 15, 25) = 50

EV with PI= (0.30*100)+(0.50*35)+(0.2*50)= 57,500,000

Expcted value with perfect information (EVPI)

EVPI= EVwPI-max(EMV)= FRW 57,500,000-48,000,000= FRW 9,500,000

Research fee of Xerox Ltd= FRW 4,600,000

Net gain from perfect information= 9,500,000-4,600,000= FRW 4,900,000 (positive)

Decision: since EVPI of FRW 9,500,000 is greater than cost FRW 4,600,000, it is worthwhile

The board should hire Xerox Ltd**;** the expected value of the information exceeds its cost.

d)Evaluating projects with unequal lives using annualised equivalent

Northern division

year	cash flow	DF at 12%	Discounted CF in millions
1	100 000 000	0,893	89 300 000
2	65 000 000	0,797	51 805 000
3	90 000 000	0,712	64 080 000
4	70 000 000	0,636	44 520 000
5	150 000 000	0,567	85 050 000
6	95 000 000	0,507	48 165 000
Total PV			382 920 000
Less initial investment			350 000 000
Net present value			32 920 000
sum of discount factors			4,112
Annualised equivalent for American division			8 005 836,58

Western division

Year	cash flow	DF at 12%	Discounted CF in millions
1	105 000 000	0,893	93 765 000
2	35 000 000	0,797	27 895 000
3	80 000 000	0,712	56 960 000
4	120 000 000	0,636	76 320 000
Total PV			254 940 000
Less initial investment			248 000 000
Net present value			6 940 000
sum of discount factors			3,038
Annualised equivalent for European division			2 284 398

Advice: Invest in Northern division, it has the highest annualised equivalent value of FRW 8 million.

End of Model Answer and Marking Guide.