CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATION

A2.2: STRATEGIC PERFORMANCE MANAGEMENT

DATE: THURSDAY 28, AUGUST 2025

MARKING AND ANSWER GUIDE

SECTION A

QUESTION ONE
Marking Guide

Qn	Description	Marks Allocation	Marks
1.a	Calculation of total cost per unit using conventional method	Award 0.5 marks for the calculation of total cost per unit for each product. Max:1.5 Marks	1.5
	Calculation of total production overheads	Award 1 mark for the calculation of total production overheads. Max:1 Marks	1
	Allocation of total production overheads across cost pools	Award 0.5 marks for the allocation of total production overheads across cost pools. Max:0.5 Marks	0.5
	Material cost	Award 0.5 marks for total material cost per unit for each product. Max 1.5 Marks	0
	Direct labour costs	Award 0.5 marks for total direct labour cost per unit for each product. Max 1.5 Marks	1.5
	Calculation of Overhead Absorption rate (OAR)	Award 0.5 marks for each well calculated OAR. Max 2 marks	2
	Costs relating to set up	Award 0.5 marks for each well calculated OAR. Max 2 marks	1.5
	Costs relating to machinery	Award 0.5 marks for each well calculated OAR. Max 2 marks	1.5
	Costs relating to materials handling	Award 0.5 marks for each well calculated OAR. Max 2 marks	1.5
	Costs relating to inspection	Award 0.5 marks for each well calculated OAR. Max 2 marks	1.5
	Calculation of total cost per unit using ABC method	Award 0.5 marks for each well calculated OAR. Max 2 marks	1.5
1.b	application of benchmarking will be of the benefits to Buganza Tech Ltd	Award 1 Mark for each well explained benefits of benchmarking. Max: 5 marks	5
1.c	Calculation of material mix variance		
	Calculation of material 1 variance	Award 0.5marks for a well calculated material 1 variance. Max 0.5 Marks	0.5
	Calculation of material 2 variance	Award 0.5marks for a well calculated material 2 variance. Max 0.5 Marks	0.5
	Calculation of material 3 variance	Award 0.5marks for a well calculated material 3 variance. Max 0.5 Marks	0.5
	Calculation of material 4 variance	Award 0.5marks for a well calculated material 4 variance. Max 0.5 Marks	0.5
	Calculation of total material mix variance	Award 1 marks for a well calculated total material mix variance. Max 1 Marks	1
	Calculation of material yield variance		
	Calculation of material 1 variance	Award 0.5marks for a well calculated material 1 variance. Max 0.5 Marks	0.5
	Calculation of material 2 variance	Award 0.5marks for a well calculated material 2 variance. Max 0.5 Marks	0.5
	Calculation of material 3 variance	Award 0.5marks for a well calculated material 3 variance. Max 0.5 Marks	0.5
	Calculation of material 4 variance	Award 0.5marks for a well calculated material 4 variance. Max 0.5 Marks	0.5

	Calculation of total material yield variance	Award 1 marks for a well calculated total material mix variance. Max 1 Marks	1
1.d	**Sales variance**		
	Sales price Variance	Award 0.5marks for a well calculated sales price variance. Max 0.5 Marks	1
	Sales Volume variance	Award 0.5marks for a well calculated sales volume variance. Max 0.5 Marks	1
	Material Price Variance		
	Material 001	Award 0.5marks for a well calculated material 001 price variance. Max 0.5 Marks	1
	Material 002	Award 0.5marks for a well calculated material 002 price variance. Max 0.5 Marks	1
	Material Quantity Variance		
	Material 001	Award 0.5marks for a well calculated material 001 qty variance. Max 0.5 Marks	1
	Material 002	Award 0.5marks for a well calculated material 001 qty variance. Max 0.5 Marks	1
	Labour variance		
	Labour Rate Variance	Award 0.5marks for a well calculated labour rate variance. Max 0.5 Marks	1
	Labour usage Variance	Award 0.5marks for a well calculated labour usage variance. Max 0.5 Marks	0.5
	Expenditure variance	Award 0.5marks for a well calculated fixed expenditure variance. Max 0.5 Marks	0.5
	Explanation of building block and its dimensions	Award 1 mark for a well explained building block model	1
1.e	Dimensions of building block model	Award 2 marks for a well calculated and explained dimension.1 Mark for calculation, 1 Mark for interpretation. Max 12 marks	12
1.f	Principles of Value Based Management	Award 1 mark for each well explained principle. Max: 4 marks	4
	Total		**50**

Model Answer

a)For each product of Buganza Tech Ltd, compute the cost per unit using conventional product costing and activity-based costing (ABC) system

Calculation of product cost per unit using the conventional/ traditional costing systemusing the machine hours as the basis of absorbing the totalproduction costs.

Cost per unit using the conventional costing system

Details/Product	**AX412**	**BY132**	**CZ987**
	FRW	**FRW**	**FRW**
Material cost	800	480	1,000
Direct labour costs-W1	250	750	500
Production overhead-W2	1,500	1,000	3,000
Total cost per unit	**2,550**	**2,230**	**4,500**

Calculation of product cost per unit using the Activity Based Costing (ABC) system using different cost drivers as the basis of absorbing the total production costs.

Firstly, we need to calculate the totalproduction overheads to be allocated into different cost pools. The o0verhead absorption rate (OAR) was accurately calculated as FRW 500. The OAR is calculated by taking the total production costs which we are looking for and we divide it by total absorption basis which is in our case the totalmachine hours.

Total machine hours and total production overheads

Details/Product	**AX412**	**BY132**	**CZ987**	**Total**
Machine hours per unit	3	2	6	
Total production-Units	30,000	50,000	280,000	
Total machine hours (A)	90,000	100,000	1,680,000	1,870,000
OAR-FRW (B)				500
Total production overheads (C=A*B)-FRW				**935,000,000**

Therefore, the total production overheads can be allocated into the following cost pools

Fixed Costs details	**Percentage (%)**	**Amount-FRW**
Costs relating to set-ups	20	187,000,000
Costs relating to machinery	40	374,000,000
Costs relating to materials handling	15	140,250,000
Costs relating to inspection	25	233,750,000
Total production overheads	**100**	**935,000,000**

Cost per unit using the Activity Based Costing (ABC) System

Details/Product	**AX412**	**BY132**	**CZ987**
Material cost-W3-FRW	24,000,000	24,000,000	280,000,000
Direct labour costs-W4-FRW	7,500,000	37,500,000	140,000,000
Production Overheads-W5			
Costs relating to set-ups-FRW	19,278,351	32,773,196	134,948,454
Costs relating to machinery-FRW	18,000,000	20,000,000	336,000,000
Costs relating to materials handling-FRW	15,355,839	23,033,759	101,860,401
Costs relating to inspection-FRW	34,801,489	43,501,861	155,446,650
Total Cost-FRW	118,935,679	180,808,816	1,148,255,505
Total Production-Units	30,000	50,000	280,000

Cost per unit	**3,965**	**3,616**	**4,101**

Workings

Working 1: Calculation of direct labour cost per unit

Details/Product	**AX412**	**BY132**	**CZ987**
Direct labour cost per hour-FRW	250	250	250
Labour hours per unit	1	3	2
Direct labour cost per unit-FRW	250	750	500

Working 2: Calculation of production overhead coct per unit

Details/Product	**AX412**	**BY132**	**CZ987**
Overhead absorption rate	500	500	500
Machine hours per unit	3	2	6
Production overheads per unit	1,500	1,000	3,000

Working 3: Calculation of total material costs

Details/Product	**AX412**	**BY132**	**CZ987**
Material cost-FRW	800	480	1,000
Total production-Unit	30,000	50,000	280,000
Total material costs-FRW	24,000,000	24,000,000	280,000,000

Working 4: Calculation of total direct labour costs

Details/Product	**AX412**	**BY132**	**CZ987**
Direct labour cost per hour-FRW	250	250	250
Labour Hours per unit	1	3	2
Total production-Unit	30,000	50,000	280,000
Total direct labour cost -FRW	7,500,000	37,500,000	140,000,000

Working 5: Calculation of Overhead Absorption rate (OAR)

Production Overheads-W5	**Amount-FRW**	**Cost drivers**	**Units of cost drivers**	**OAR**
Costs relating to set-ups	187,000,000	Number of set ups	970	192,784
Costs relating to machinery	374,000,000	Number of machine hours	1,870,000	200
Costs relating to materials handling	140,250,000	Number of requisitions	5,480	25,593

Costs relating to inspection	233,750,000	Number of inspections	8,060	29,001
Total production overheads	**935,000,000**			

b) Advise how the application of benchmarking will be of the benefits to Buganza Tech Ltd

Traditionally, control involves the comparison of actual results with an internal standard or target. The practice of setting targets using external information is known as benchmarking. Benchmarking. 'The establishment, through data gathering, of targets and comparators, through whose use relative levels of performance (and particularly areas of underperformance) can be identified. By the adoption of identified best practices it is hoped that performance will improve.

The adoption of benchmarking will help Buganza Tech Ltd in the following ways:

- As currently, the company lacks a clear understanding of its standing at the national, regional, and international levels, making it difficult to conduct meaningful comparisons and internal evaluations, benchmarking would help Buganza Tech Ltd to make a position audit. It can help them to assess a firm's existing position, and provide a basis for establishing standards of performance.
- Benchmarking would be an effective method of implementing change, people being involved in identifying and seeking out different ways of doing things in their own areas.This will help the company to handle the struggles to implement certain changes that could have enhanced its efficiency and effectiveness,
- Benchmarking would help Buganza Tech Ltd to make a cross comparisons (as opposed to comparisons with similar organizations) which is more likely to expose radically different ways of doing things
- The adoption of benchmarking would help Buganza Tech Ltd to It identifies the processes to improve and different strategies to improve them
- Benchmarking would help Buganza Tech Ltd to get a warning of competitive disadvantages
- Its flexibility means that it can be used in both the public and private sectors and by people at different levels of responsibility

c)For the smartphones production unit of Buganza Tech Ltd, calculate the total material mix and the total material yield variances for the month of March

Material mix variance

Materials	**Kilograms per unit**	**Stand. Mix**	**AQAM ***	**AQSM**	**Difference**	**Stand. Price/unit**	**Variance**	**Comment**
	Kg	**%**	**Kgs**	**Kgs**	**Kgs**	**FRW/Kg**	**FRW**	
Material 1	0.25	17%	34,080	34,885	(805)	2,500	(2,013,333)	F
Material 2	0.6	40%	83,232	83,725	(493)	1,200	(591,360)	F
Material 3	0.5	33%	72,000	69,771	2,229	6,150	13,710,400	A

Material 4	0.15	10%	20,000	20,931	(931)	2,200	(2,048,640)	F
Total	1.5	100%	209,312	209,312			**9,057,067**	**A**

Material Yield variance

Materials	**AQSM***	**SQSM***	**Difference**	**Stand. Price/unit**	**Variance**	**Comment**
	Kgs	**Kgs**	**Kgs**	**FRW/Kg**	**FRW**	
Material 1	34,885	34,000	885	2,500	2,213,333	Adverse
Material 2	83,725	81,600	2,125	1,200	2,549,760	Adverse
Material 3	69,771	68,000	1,771	6,150	10,889,600	Adverse
Material 4	20,931	20,400	531	2,200	1,168,640	Adverse
Total	**209,312**	**209,312**			**16,821,333**	**Adverse**

AQAM: Standard quantity at Actual Mix
AQSM: Actual Quantity at Standard Mix
SQSM: Standard Quantity at Standard Mix

d)For the smart home gadgets unit of Buganza Tech Ltd, calculate on all relevant variances and briefly explain the possible reasons for inter-relationships between material variances and labour variances

Sales variances

Details	**Calculation**	**Variance-FRW**	**Comment**
Sales price Variance	(AP-SP) *AQ		
	(1,400-1,382.5) *16,400 units	(287,000)	Adverse
Sales Volume variance	(AQ-BQ) *Stand. Margin*		
	(16,400 units-17,200 units) *191	(152,800)	Adverse
Total Sales variance		**(439,800)**	**Adverse**

Calculationof standard margin per unit as the company uses marginalcosting system

Details	FRW	FRW
Selling price		1400
Variable costs		
Material 001	735	
Material 002	96	
Labour	378	1,209
Standard margin per unit		**191**

Material Variances

Calculation	Calculation	Variance-FRW	Comment
Material Price Variance	(AP-SP) *AQ		
Material 001	(122.5-127.5) *9,856 Kg	(49,280)	A
Material 002	(32-31.4) *4,235 Kg	2,541	F
Total Material Price Variance		(46,739)	A
Material Quantity Variance	(AQ-SQ) *SP		
Material 001	(98,560 Kg-103,200 Kg) *FRW 122.5	4,133,150	F
Material 002	(42,350 Kg-51,600 Kg) * FRW 32	(296,000)	A
Total Material Volume Variance		3,837,150	F
Total Material Variance		3,790,411	F

Labour variance

Calculation	Calculation	Variance-FRW	Comment
Labour Rate Variance	(AR-SP) *Ahrs		
	(FRW 84-FRW 86.5) *70,840 hours	(177,100)	Adverse
Labour usage Variance	(Ahrs-Shrs) *SR		
	(70,840 Hrs-77,400 Hrs) *FRW84	551,050	Favourable
Total Labour Variance		**373,950**	**Favourable**

Fixed overhead expenditure variance

Details	FRW	Comment
Budgeted fixed overhead costs	7,612,800	
Actual fixed overhead costs	8,266,400	
Expenditure variance	**(653,600)**	**Adverse**

e)For each of the dimensions of the building block model, calculate one performance indicator for BSC and one for the OSCW average using the data available.

The Building Block Model is a performance management framework developed by Lynch and Cross, particularly useful in the service sector. It helps organizations design and manage effective performance measurement systems that align employee behavior with strategic goals. It has the following dimesnions: Financial,Customer Satisfaction, Internal Efficiency,Quality of Service and Innovation and Learning.

Competitiveness

Details	BSC-%	OSCW Average-%
Percentage of website hits converted into orders		
(9,506/14,000) *100	67.9	

(11,870/18,260) *100		65.01

This ratio undicates whether BSC's services are attractive compared to its competitors, which is important if it is going to survive in such a competitive market. It has performed substantially better than OSCW service centers on average, having converted 67.9% of website hits into jobs, compared to the 65% converted by other service centres. This is a very good result.

Financial Performance

Details	BSC-%	OSCW Average-%
Gross profit margin		
(FRW 304,200/FRW 760,500) *100	40	
(FRW 328,146/FRW 890,365) *100		36.9

Gross profit margin is te preferred measure for financial performance from the data presented. It shows that the percentage of revenue which exceeds the total cost of goods sold. BSC's gross profit margin is almost 3percentage points higher than the average, which is a good result. This could be partly because they did relatively well on their new service pack sales but it is also likely to be because their ratio of senior therapists to junior therapists is lower than the average, and junior therapists will invariably be paid less than senior ones.

Quality of service

Details	BSC-%	OSCW Average-%
Percentage of jobs from repeat customers		
(1,500/9,506) *100	15.8	
(1,660/11,870) *100		13.98

Quality is a key element of BSC's service to customers and if it is poor, customer will not return. Again, BSC has outperformed the other service centers on average by 1.8 percentage points. This could be because it has higher ratio of senior therapists to junior therapits than other service centers,so the quality of work is probably better, hence the higher levelof repeat customers.

Flexibility

Details	BSC-hours	OSCW Average-hours
Time taken per job		
(23,100/9,506)	2.43	
(24,800/11,870)		2.09

The time taken to complete each job is important as important many customer will use BSC because they can sit and wait for the work to be done. The comparison shows that BSC takes longer to complete a job than the OSCW average. This is not really a good thing and is probably because

they have slightly less experienced staff on the whole, but it could also be that they do amore though job than other service centres. Given the fact that they have a higher level of return customers than the average and they are graded 9 or 10 by their customers (10 percentage points higher than the average), this is presumably not viewed negatively by customers.

Resource utilisation

Details	**BSC-FRW**	**OSCW Average-FRW**
sales per therapist		
FRW 760,500/12	63,375	
FRW 890,365/13		68,490

The key resource in a service company is its staff and so these indicators measure how this resource is being utilised. BSC's utilisation of its staff is lower than that of the other service centers by FRW 5,115 per therapist. This clearly ties in with the fact that the average time to complete a job is longer at BSC than other service centres. However,given that they use a slightly less experienced staff on average than other centres and the fact that their gross margin is higher than average, this shoyuld not be viewed too negatively.

Innovation

Details	**BSC-%**	**OSCW Average-%**
Percentage revenue generated from new service packs		
[(FRW66,000+FRW 58,000+FRW54,000)/FRW 760,500]	23	
[(FRW44,000+FRW 42,000)/FRW 890,365]		9.66

BSC wants to offer a wide variety of service packs to its customers and needs to be innovative in delivering service up. The 23.4% indicates that BSC is indeed innovative in their approach to their customer's needs, offering an innovative mix of services.BSC has really outperformed other service centres on this front, generating a far larger part of its revenue by the introduction of new service packs, which must have attrracted customers. This is a really strong performnace.

f)Support the statement made by the panellist emphasizing on key principles of VBM in performance management and measurement perspectives

Value Based Management aligns an organisation's overall aspirations, analytical techniques, and management processes with the key drivers of value.

The panellist emphasized that: the Value Based Management shifts performance measurement from being accounting driven to being management driven. This is true because, performance measurement and incentive systems will track progress in achieving targets and motivate managers and other employees to achieve them. VBM may force a company to modify its traditional

approach to these systems by linking performance measures to long-term value creation and strategy.

The follwong are the key principles of VBM in performance management and measurement perspectives:

- Value based management tailors performance measurement to the business unit. Each business unit should have its own performance measures which it can influence.
- Value based management links performance measurement to a unit's short- and long-term targets. Performance measurement systems are often based almost exclusively on accounting results.
- Value based management combines financial and operating performance in the measurement. Financial performance is often reported separately from operating performance, whereas an integrated report would better serve managers' needs.
- Value based management identifies performance measures that serve as early warning indicators. Early warning indicators might be simple non-financial indicators such as market share or sales trends. Once performance measurements are an established part of corporate culture and managers are familiar with them, it is time to revise the compensation system

SECTION B

QUESTION TWO

Marking Guide

Qn	Description	Marks Allocation	Marks
2.a	Total wood meter needed	Awrad 1 mark for a well calculated wood meters needed. Max 1 mark	1
	Total metallic bars needed	Awrad 1 mark for a well calculated metallic bars needed. Max 1 mark	1
	Total skilled labors needed	Awrad 1 mark for a well calculated skilled labour hours needed. Max 1 mark	1
	Total unskilled labors needed	Awrad 1 mark for a well calculated unskilled labour hours needed. Max 1 mark	1
	Identifying the limiting factor and shortage	Award 1mark for the well identified limiting factor	1
	To calculate the contribution per unit for each product	Award 0.5 marks for each well calculated contribution per unit. Max 1.5 marks	1.5
	Contribution per unit of limiting factor (skilled labour)	Award 0.5 marks for each well calculated contribution per unit of limiting factor Max 1.5 marks	1.5
	To rank the products in order of their contribution per unit of the scarce resource	Award 0.5 marks for each well ranked products Max 1.5 marks	1.5
	To allocate resources using this ranking (production plan)	Award 0.5marks for well calculated units to be produced and 1markfor conclusion. Max 3.5marks	3.5
2.b	The four strategic options available in response to price cut in pricing decisions	Award 1mark for each well explained strategic option. Max: 4 marks	4
2.c	Total sales	Award 0.5 marks for calculated sales to each option. Max 1.5 marks	1.5
	Variable costs	Award 0.5 marks for calculated variable cost to each option. Max 1.5 marks	1.5
	Fixed costs	Award 0.5 marks for calculated fixed cost to each option. Max 0.5 marks	0.5
	Probabilities	Award 0.5 marks for allocating probabilities to each option. Max 0.5 marks	0.5
	Expected Profit	Award 0.5 marks for calculated expected profit to each option. Max 0.5 marks	1.5
	Sum of Expected profits	Award 0.5 marks for the well calculated sum of expected profits	0.5
	Initial Investment	Award 0.5 marks for well recorded initial investment. Max 0.5.5 Marks	0.5
	Net expected profit	Award 0.5 marks for the calculation of total expected profit. Max 0.5 Mark	0.5
	Conclusion	Award 0.5 marks for the conclusion. Max: 0.5 marks	1
	Total		**25**

Model answer

a)Compute the optimum production level of bed, chairs and tables and advise on the increase in value which would be created by having one additional unit of the limiting factor at the original cost

Step 1: To identify the limiting factor

School	**Table**	**Bed**	**Chair**	**Total wood meter needed**	**Total wood meter available**	**(Shortage)/Surplus**
Abeza & Sons Nursery and Primary School-Units	400	320	240			
Gasabo Secondary School-Units	180	220	-			
Nyarugenge Institute of Political Science-Units	500	120	75			
Total expected production-Unita	1,080	660	315			
Material						
Woods-meters	1.5	2	1			
Total woods meters needed	1,620	1,320	315	3,255	4,000	745
Metallic bars-cubic meters	2	3	1.5			
Total metallic bars needed	2,160	1,980	473	4,613	5,000	388
Labour						
Skilled-hours	3	5	4			
Total skilled labors needed	3,240	3,300	1,260	7,800	6,000	-1,800
Unskilled-hours	6	9	7			
Total unskilled labors needed	**6,480**	**5,940**	**2,205**	**14,625**	**26,000**	**11,375**

The skilled labor was found to be the limiting factor the company has only 6,000 skilled labour hours while it needs 7,800 hours to meet the available maximum demand.

Step 2: To calculate the contribution per unit for each product

Description	**Table**	**Bed**	**Chair**
	FRW	**FRW**	**FRW**
Unit Selling Price	70,000	140,000	28,000
Woods costs-W1	(26,250)	(32,000)	(9,600)
Metallic bars costs	(22,000)	(43,500)	(8,700)
Skilled Labour costs	(3,600)	(12,500)	(2,200)
Unskilled Labour costs	(2,100)	(9,000)	(1,750)
Other variable costs	(600)	(1,450)	(675)

Contribution	**15,450**	**41,550**	**5,075**

Step 3: Contribution per unit of limiting factor (skilled labor)

Description	**Table**	**Bed**	**Chair**
Contribution-FRW	15,450	41,550	5,075
Units of limiting factor-skilled labor	3	5	4
Contribution per unit of skilled labour-FRW	**5,150**	**8,310**	**1,269**

Step 4: To rank the products in order of their contribution per unit of the scarce resource

Description	**Table**	**Bed**	**Chair**
Contribution-FRW	15,450	41,550	5,075
Units of limiting factor-skilled labor	3	5	4
Contribution per unit of skilled labour	5,150	8,310	1,269
Ranking	Second	First	Third

Step 5: To allocate resources using this ranking (production plan)

Product	Demand	Skilled labor hours per unit	Total skilled hours required	Total skilled labor hours available	Skilled labor hours balance
Abeza & Sons Nursery and Primary school					
Table	400	3	1,200	6,000	4,800
Bed	320	5	1,600	4,800	3,200
Chair	240	4	960	3,200	2,240
Remaining hours should be allocated base on the ranks in step 5					
Product	Demand	Skilled labor hours per unit	Total skilled hours required	Total skilled labor hours available	Skilled labor hours balance
Table	680	3	2,040	2,240	200
Bed	40	5	200	200	-
Chair	75				

Considerring the units of scarce resources, Murasanyi Manufacturing Co (MMC) should produce 1,080 unit, 520 units and 240 units of tables, beds and chairs respectively to maximize the contribution.

b) If a competitor reduces its prices in expectation to gain market share, the following are the four strategic options available to MMC in response:

- The company will maintain its existing prices if the expectation is that only a small market share would be lost, so that it is more profitable to keep prices at their existing level. Eventually, the rival firm may drop out of the market or be forced to raise its prices.
- The company may maintain its prices but respond with a non-price counter-attack. This is a more positive response, because the firm will be securing or justifying its current prices with a product change, advertising, or better back-up services.
- MMC may reduce its prices. This should protect the firm's market share so that the main beneficiary from the price reduction will be the consumer.
- MMC may raise its prices and respond with a non-price counter-attack. The extra revenue from the higher prices might be used to finance an advertising campaign or product design changes. A price increase would be based on a campaign to emphasize the quality difference between the firm's own product and the rival's product.

c) Advise if MCC should undertake the new project based on expected value analysis

Description	**High**	**Medium**	**Low**	**Total**
Sales quantity	5,000 units	3,500 units	2,000 units	
Selling price per unit-FRW	200,000	200,000	200,000	
	FRW'000	FRW'000	FRW'000	FRW'000
Total sales	1,000,000	700,000	400,000	
Variable costs-80%	(800,000)	(560,000)	(320,000)	
Contribution-20%	200,000	140,000	80,000	
Fixed costs	(98,000)	(98,000)	(98,000)	
Net Operating Income	102,000	42,000	(18,000)	
Probabilities	0.33	0.33s	0.33	
Expected Profit	34,000	14,000	(6,000)	
Sum of Expected profits				42,000
Initial Investment				(150,000)
Net expected profit				**(108,000)**

Conclusion: The Expected Net Value of the project is negative (FRW -108 million). This means that, on average, the project is expected to result in a significant **loss.**

QUESTION THREE

Marking Guide

Qn	Description	Marks Allocation	Marks
3.a	Objectives of budgetary controls	Award 1mark for each well explained objective of budget and budgetary control. Max 5 marks	5
3.b	Sales Revenue	Award 0.5 marks for well calculated sales for each level. Max: 1 mark	1
	Direct Material	Award 0.5 marks for well calculated direct material for each level. Max: 1 mark	1
	Direct Labour	Award 0.5 marks for well calculated direct labour for each level. Max: 1 mark	1
	Patent Royalty	Award 0.5 marks for well calculated patent royalty for each level. Max: 1 mark	1
	Marketing Commission	Award 0.5 marks for well calculated marketing communication for each level. Max: 1 mark	1
	Contribution Margin	Award 0.5 marks for well calculated contribution for each level. Max: 1 mark	1
	Manufacturing Overhead	Award 0.5 marks for well calculated manufacturing overhead for each level. Max: 1 mark	1
	Marketing (incl. salary incr.)	Award 0.5 marks for well calculated marketing for each level. Max: 1 mark	1
	Operating Profit	Award 0.5 marks for well calculated operating profit for each level. Max: 1 mark	1
3.c	Establish the objective function	Award 1 mark for a well-established objective function. Max 1 mark	1
	Constraints formulation	Award 0.5 marks for each well-defined constraint. Max 2 marks	4
	Convert to standard form equation	Award 0.5marks for each well-placed variable including slacks. Max.1.5marks	1.5
	Initial Simplex Tableau	Award 0.5 marks for each well-placed variable including slacks. Max	4.5
	Total		**25**

Model Answer

a) Briefly discuss six ways in which the use of budget and budgetary controls should have saved Rukumberi Airlines from insolvency.

Below are the objectives of a budgetary planning and control system and how they should have saved Rukumberi Airlines from bankruptcy.

- **Ensure the achievement of the organisation's objectives**: Rukumberi Airways should have considered the achievement of organizational objectives. Contrary, the company failure was mainly caused by the failure to ensure organizational objectives whereby Rukumberi Airways lacked a cohesive long-term vision. Aggressive international expansion and price wars with low-cost carriers like RwaGo diluted its premium brand. Its objective of sustaining profitability was never clearly translated into operational strategy.

- **Compel planning**: Rukumberi Airways experienced a lack of compelled planning. This was because company's leadership failed to anticipate rising fuel costs and increasing debt burdens. No contingency planning was in place, and the acquisition of Air Rugobagoba in 2007 proved to be a strategic blunder without clear integration planning. Rukumberi should have planned of time all activities and plan and it could avoid such insolvency.
- **Communicate ideas and plans**: One of the objectives of budgets and busgetary control is to effectively communicate ideas and plans, therefore Rukumberi Airways should have properly ensured proper communication to its employees. Contrary to this, Rukumberi Airways failed to effectively communicate ideas and plans prompted the comapny to suffer from poor internal communication between departments. Employees were often unaware of management's changing priorities. Critical information around cost-cutting and restructuring never reached operational teams effectively.This demotivate employees and feelundervalued.
- **Coordinate activities**: Budgets and budgetary control helps to coordinate different business functions in a business and ensure aligned operational efficiency. Contrary, Rukumberi Airways' multiple business units operated in silos, and there was minimal coordination between flight operations, customer service, and finance. This led to scheduling conflicts, under-utilization of fleet, and chaotic service delivery. All these issues were attributed to the poor coordination of activities.
- **Provide a framework for responsibility accounting:** The budget and budgetary control helps to ensure the establishment of a framework for responsibility accounting**.** The absence of responsibility accounting mainly due to there was no structured performance evaluation tied to responsibility centers. Department heads weren't held accountable for financial targets or service KPIs, leading to unchecked spending and underperformance. Internal control systems of Rukumberi Airways were weak, particularly in financial reporting and procurement
- **Establish a system of control**: The budget and budgetary contol should have helped Rukumberi Airways to establish a system of control as auditors highlighted irregularities, and the company lacked a real-time dashboard to monitor performance indicators. Over the years, the company failed to motivate employees with salary delays, poor communication, and mass layoffs, employee morale plummeted
- **Motivate employees to improve their performance**: Usually, the budget and budgetary control helps to motivate employees toimprove their perfroamce through setting targets and a budget working as a motivation and monitoring tool. The absence of such budgetary framework prompted company's workforce became disengaged, resulting in declining service quality and frequent strikes

b) Prepare a flexible budget for October 2025, showing budgeted amount at each of the two output levels of music boxes: 4,000 and 6,000 units

Biryogo Music Box Fabricators, Flexible Budget– October 2025

Item	Unit cost/FRW	At 4,000 units	At 6,000 units
Sales Revenue	770	3,080,000	4,620,000
Variable Costs:			
Direct Material	220	880,000	1,320,000
Direct Labour	150	600,000	900,000
Patent Royalty	20	80,000	120,000
Marketing Commission	55	220,000	330,000
Total Variable Costs		1,780,000	2,670,000
Contribution Margin		1,300,000	1,950,000
Fixed Costs:			
Manufacturing Overhead		517,000	517,000
Marketing (incl. salary incr.)		93,850	93,850
Total Fixed Costs		610,850	610,850
Operating Profit		**689,150**	**1,339,150**

Workings:

Step 1: Determine Variable Costs per Unit (based on August 2025 actuals)

1. Direct Material Costs

- August: FRW 900,000 for 4,500 units : FRW 900,000 ÷ 4,500 = FRW 200/unit
- October: 10% increase: FRW 200 + 10% = FRW 220/unit

2. Direct Labour Costs

- August: FRW 675,000 for 4,500 units: FRW 675,000 ÷ 4,500 units = FRW 150/unit
- No change expected: FRW 150/unit in October

3. Patent Royalty

- Fixed rate: FRW 20/unit

4. Marketing Commission

- Given: FRW 55/unit

Step 2: Fixed Costs (October 2025)

1. Depreciation and Other Fixed Manufacturing Costs

- August: FRW 507,000
- No change expected , remains FRW 507,000

2. Fixed Marketing Costs

- August: FRW 81,350
- Add sales manager salary increase:
- FRW 150,000 per year ÷ 12 months = FRW 12,500/month
- New total: FRW 81,350 + FRW 12,500 = FRW 93,850

3. Production Supervisor Salary Increase

- FRW 120,000 per year ÷ 12 months = FRW 10,000/month
- This is included in fixed manufacturing overheads: Adjust to:
- FRW 507,000 + FRW 10,000 = FRW 517,000

Step 3: Selling Price per Unit

- August: FRW 700
- October: 700 + 10% = FRW 770/unit

c) Using the simplex method of linear programming, Formulate the objective function, establish related constraint and draw up the initial simplex tableau for Burera Best Juice Ltd

Step 1: Define decision variables

Let:

- x = number of cups to produce per week
- y = number of plates to produce per week

Step 2: Establish the objective function

The objective is to maximize contribution:

- Contribution from cup = FRW 2,000 per unit
- Contribution from plate = FRW 1,600 per unit

Therefore, the objective function will be given by: Maximize Z=2000x+1,600y

Step 3: Constraints

From the problem, we have 3 and non negativity constraints:

1. Raw Materials (2 kg per cup, 3 kg per plate):

$$2x+3y\leq 6{,}000$$

2. Labour Hours (2 hrs per cup, 4 hrs per plate):

$$2x+4y\leq 3{,}500$$

3. Machine Hours (3 hrs per cup, 5 hrs per plate):

$$3x+5y\leq 4{,}2003$$

4. Also, the non-negativity constraints:

$$x\geq 0, y\geq 0$$

Step 4: Convert to standard form:Let us introduce slack variables to turn inequalities into equalities:

Constraint	Slack Variable	Standard Form Equation
$2x+3y\leq 6000$	s1	$2x+3y+s1=6000$
$2x+4y\leq 3500$	s2	$2x+4y+s2=3500$
$3x+5y\leq 4200$	s3	$3x+5y+s3=4200$

Step 5: Initial Simplex Tableau

Basic Variable	x	y	s_1	s_2	s_3	RHS
s1	2	3	1	0	0	6,000
s2	2	4	0	1	0	3,500
s3	3	5	0	0	1	4,200
Z (Profit Row)	-2,000	-1,600	0	0	0	0

QUESTION FOUR

Marking Guide

Qn	Description	Marks Allocation	Marks
4. a	Determine the machine hours required at 80% of maximum demand	Award 1 Mark for a well calculated machine hours required. Max 1 mark	1
	Calculate Variable cost per hour	Award 2 marks for a well calculated variable cost per unit. Max 2 marks	2
	Calculate Fixed Cost	Award 2 marks for a well calculated fixed cost per unit. Max 2 marks	2
	Estimate Maintenance Cost for 2,940 machine hours	Award 2 marks for a well calculated total cost. Max 2 marks	2
4. b	Calculate cumulative average time at 70 Units	Award 0.5marks for a well calculated cumulative average time at 70 units	0.5
	Calculate total labour hours used in first 50 Units	Award 0.5marks for a well calculated total labour hour at first 50 units	0.5
	Find labour hours for Q4 (20 units)	Award 1 marks for a well calculated labour hours for Q4 at first 50 units max 1 mark	1
	Compute standard cost per unit (Q4) with learning curve	Award 2 marks for well calculated total cost per unit. Max 2 marks	2
4. c	If the Learning Curve Had Reached Steady State (No further learning after 50 units)		
	Direct Material	Award 1 mark for well calculated direct material. Max 1 mark	1
	Direct Labour	Award 1.5 marks for well calculated direct labour. Max 1.5 marks	1
	Variable Overhead	Award 1.5 marks for well calculated variable overhead. Max 1.5 marks	1
	Total standard cost	Award 2 marks for well calculated total costs. Max .2 marks	2
4. d	Challenges of implementing balanced scorecard	Award 1 mark for an understanding of balanced score card and 2 marks for well four explained challenges. Max: 9marks	9
	Total		**25**

Model Answer

a)Calculate the estimated maintenance costs for production of the battery at 80% maximum demand

Step 1: Determine the machine hours required at 80% of maximum demand

Maximum demand = 262,500 units 80% of max demand = 262,500 units ×0.80=210,000 units

Given:

- 1,000 units require 14 machine hours,
- So, 1 unit = 14 ÷ 1,000 units = 0.014 machine hours

- Therefore, for 210,000 units will need,

  210,000 units ×0.014machine hours per unit =2,940 machine hours

Step 2: Use High-Low method to separate fixed and variable maintenance costs

We're told maintenance costs have both fixed and variable components, so we can use the High-Low Method. By choosing the two extreme points:

Year	Machine Hours	Cost (FRW '000)
High (Year 1)	5,000	850
Low (Year 4)	1,800	450

Step 2.1: Calculate Variable cost per hour

Variable cost per hour= FRW (5,000−1,800)/(850−450)

= FRW 3,200/400

= 0.125 FRW '000/hour, So, variable cost = **FRW 125/hour**

Step 2.2: Calculate Fixed Cost

You can year 1 or year 4 data, solet us use use year 1 data:

Total cost=Fixed cost+(Variable cost per hour×Hours)

FRW 850=F+(FRW 0.125×5,000 machine hours)

FRW 850=F+FRW 625

F=FRW (850−625)

Fixed costs= FRW 225,000

Step 3: Estimate Maintenance Cost for 2,940 machine hours

Use:

Total cost=Fixed cost+(Variable cost/hour×hours), therefore, the total costs to produce 210,000 units units will be given by:

Total costs= FRW 225+ (0.125*2,940 machine hours)

Total costs= FRW 592,500

b)Calculate the standard cost per unit for the fourth quarter assuming 80% learning curve

To calculate the standard cost per unit for the fourth quarter using an 80% learning curve, we must understand how learning curves impact labor (and potentially variable overheads)

Below is the given data

Cost Element	Quantity / Hours per unit	Rate (FRW)
Direct material	20 kg	3,000/kg
Direct labour	24 hours	2,800/hour
Variable overhead	15 hours	2,500/hour

- Learning curve: 80%
- Cumulative production to date: 50 units
- Quarter four production: 20 units
- Total Cumulative Production by End of Q4: 50 units + 20 units =70 units

The learning curve only applies to labour costs, and possibly to variable overheads if overheads are labor-driven. In this case, we will assume the learning curve applies only to direct labour unless stated otherwise.

Step 1: Use Cumulative average time per unit method

With an 80% learning curve:

$Y=aX^b$

Where:

- Y = cumulative average time per unit
- a = time for the first unit = 24 hours
- X = cumulative production units

$$b = \frac{\log(2)}{\log(\text{learning rate})}$$

$$b = \frac{\log(2)}{\log(0.8)}$$

$$\approx -0.3219$$

Step 2: Calculate cumulative average time at 70 Units

$Y_{70}=24 \text{ hours} \times (70 \text{ units})^{-0.3219}$

$\approx 24 \times 0.3610$

≈ 8.664 hours per unit

Total time for 70 units $=70 \text{ units} \times 8.664 \text{hours per unit}$
$= 606.5$ hours

Step 3: Calculate total labour hours used in first 50 Units

$Y50=24 \text{ hours} \times (50 \text{ units})^{-0.3219}$
$\approx 24 \text{ hours} \times 0.3885$
≈ 9.324 hours/unit

Total hours for first 50 units=50 units×9.324 hours per unit
= 466.2 hours

Step 4: Find labour hours for Q4 (20 units)

Labour hours for units 51–70=606.5−466.2=140.3 hours
Average labour hours per unit in Q4=140.3/20
≈7.015 hours per unit

Step 5: Compute standard cost per unit (Q4) with learning curve

Cost Component	Per Unit	Total-FRW
Direct Material	20 kg × FRW 3,000	60,000
Direct Labour	7.015 hrs ×FRW 2,800	19,642
Variable Overhead	15 hrs × FRW 2,500	37,500
Total		**117,142**

c)If the Learning Curve Had Reached Steady State (No further learning Ffter 50 units)

- That means labour hours per unit for Q4 = labour hours at 50th unit (i.e., no more reduction)
- Average time at 50 units = 9.324 hours per unit (from earlier)

Then:

Component	Cost	Total-FRW
Direct Material	20 kg × FRW 3,000	60,000
Direct Labour	9.324 hrs × FRW 2,800	26,107
Variable Overhead	15 hrs × FRW2,500	37,500
Total		**123,607**

d)As a performance management consultant, assess the challenges faced by KMC in implementing the Balanced Scorecard as a performance management tool

The Balanced Scorecard (BSC) is a strategic management tool developed by Robert Kaplan and David Norton in the early 1990s. It is used by organizations to measure and manage performance in a way that aligns daily operations with long-term strategic goals. The Balanced Scorecard is a framework that translates an organization's vision and strategy into a set of performance measures across four key perspectives: Financial, Customer, Internal Business Processes, and Learning & Growth.

The following are someof the issues encountered by Kayonza Manugacturing Company while implementing the balanced score card as a performancemanagement tool

- **Conflicting measures**: Different departments proposed KPIs that conflicted with one another. For example, the production unit prioritized output quantity (efficiency), while the quality control team emphasized defect reduction (effectiveness), creating tension and misaligned targets.In addition, identifying the right performance indicators for some areas like innovation

or employee morale was difficult. Many KPIs initially selected were vague, subjective, or not directly linked to strategic goals.

- **Data Collection issues**: There was no integrated system to collect real-time data on non-financial indicators such as employee learning or customer satisfaction. Manual tracking was time-consuming and prone to errors.
- **Cultural resistance**: Some employees perceived the BSC as a performance surveillance tool, rather than a strategic enabler. This led to passive resistance, particularly among long-tenured staff who were used to informal reporting.
- **Training needs**: Many staff members lacked basic knowledge of KPIs and strategic measurement tools. Departments required tailored training to understand the BSC's purpose and how to use it effectively in daily operations.
- **Integration with existing systems**: KMC's legacy ERP system was not designed to track non-financial metrics. Integrating BSC dashboards required additional investment in software upgrades and consulting support.
- **Lack of expertise**: KMC did not initially have internal BSC experts. External consultants were hired to guide the process, but dependency on them slowed internal ownership and learning.
- **Interpreting results**: Even after data was collected, managers found it hard to interpret some results. For instance, a drop in employee turnover was viewed positively by HR, but raised concerns about stagnation and lack of innovation from the R&D team.

End of Model Answer and Marking Guide.