CERTIFIED PUBLIC ACCOUNTANTS

ADVANCED LEVEL 2 EXAMINATIONS

A2.2: STRATEGIC PERFORMANCE MANAGEMENT

DATE: THURSDAY 29, AUGUST 2024

INSTRUCTIONS:

1. **Time Allowed: 3 hours 45 minutes** (15 minutes reading and 3 hours 30 Minutes writing).
2. This examination has **two** sections: **A & B**.
3. Section **A** has **one Compulsory Question** while **section B** has **three optional questions** to choose any **two**.
4. In summary attempt **three questions**.
5. Marks allocated to each question are shown at the end of the question.
6. Show all your workings where necessary.
7. The question paper should not be taken out of the examination room

SECTION A

QUESTION ONE

Muhima Group Ltd (MGL) is a company located at the Rwanda special economic zone. Muhima Group Ltd(MGL) produces export quality body cream and lotion. Recently the top executives met in a Musanze hotel and resolved to be comparing their internal operations with Sohpyriah Ltd, a French conglomerate that has been in operation since the year 1972. Sohpyriah Ltd is located in Asian pacific island. Sohpyriah Ltd processes are automated with cut edge technology. Most of the operations are run by robots. To bring down energy costs, Sohpyriah recently invested in its own solar power plant bringing down its power cost by a whopping 60%. Last year, Sohpyriah spent $10,000 on energy. To cut of storage costs, Sohpyriah produces on demand. The core management team and the production team are regularly trained. This training is meant to ensure zero wastage. Sohpyriah Ltd`s policy is to satisfy all their stakeholders' interests. In fact payment to suppliers is done on delivery. Salaries to their staff is processed a bit early. The few staff are advised to work in teams of five. The top management advocate for Kaizen as the main principle that guides the organization`s operations.
The table below shows the costs incurred by Sohpyriah Ltd in reference to turnover before automation of the processes obtained from notes of its year 2022 financial statements

	$	**Percentage on sales**
Turnover	1,800,000	
Energy costs	200,000	11%
Labor costs	295,000	16%
Operation costs	780,000	43%

The table below shows the costs incurred by Sohpyriah Ltd in reference to turnover after automation of the processes obtained from notes of the year 2023 financial statements.

	$	**Percentage on sales**
Turnover	1,800,000	
Energy costs	10,000	1%
Labor costs	55,000	3%
Operation costs	465,000	26%

The cream and lotion processed by Muhima Group Ltd are packed in a quarter a litre glass bottles imported from Ghanzouh region in the Peoples republic of China. Each bottle of cream and lotion is sold at FRW 23,200 and FRW 16,800 respectively. The key ingredients for the products are silk powder, silk amino acid and aloe Vera extract obtained from small scale farmers' cooperative societies across Rwanda. These cooperative societies can supply a maximum of 8,000 kgs of aloe Vera. The silk based ingredients are supplied by National Agricultural Export Development Board(NAEB) research station situated at Mulindi. The huge demand of silk based products by other competing firms from America and Europe has recently affected the operations of Muhima Group Ltd (MGL) causing a drastic drop in quantities of cream and lotions produced and massive job cuts.

The chief executive officer, Patrice Mambo, recently met the production manager, Benitha Uwitonze, and they came to a conclusion that the production department should increase production by utilizing the limited resource appropriately to maximize profitability.

Due to the job cuts made earlier, the availability of skilled workers is limited to 160,000 hours per production season. The unskilled labor is unlimited. The production manager is quite confident that National Agricultural Export Development Board(NAEB) can supply 5,000 kgs of silk powder and 1,600 kgs of silk amino acid in the current production season. Each bottle of cream and lotion sold generates a contribution of FRW 9,000 and FRW 8,000 respectively. The maximum demand of lotions is 2,000,000 bottles per production season, although the demand for cream is unlimited. Fixed cost total FRW 1,800,000 per production season. Muhima group limited utilizes just in time inventory management. Any work in progress is completed first in the following production season.

1.The management accountant provided the following additional information;

Materials required	**Cream**	**Lotion**
Silk powder @FRW2,200 per gram	3 grams	2 grams
Silk amino acid@800 per gram	1 gram	0.5 grams
Aloe Vera @ FRW 1,400 per gram	4 grams	2 grams
Labour hours		
Skilled labour @ 12,000 per hour	4 minutes	5 minutes
Unskilled labour @ 8,000 per hour	3 minutes	1.5 minutes

2.Extract of board of director's resolutions

		Date
001/2024	Start a new production line-To produce Nguvu power	1/8/2024
002/2024	Borrow a loan from bank of Kigali to fund new production line	1/7/2024
003/2024	Sign marketing contract with Rwanda broadcasting corporation	1/9/2024
004/2024	Get clearance and license from Rwanda standards board	1/6/2024
	Prepared by Mujawayezu-Company secretary	

In an extra ordinary board meeting, the board of directors of Muhima Group Ltd (MGL) agreed to hire Kipepeo consult Ltd to assist in doing market research. Kipepeo consult Ltd did the research, made conclusions and then presented a detailed report about their findings to the board of directors of Muhima Group Ltd(MGL) on 30/06/2024.The main findings that surprised all the directors is that Nguvu power will have a useful life of four years, A further disputed analysis by Kipepeo consult Ltd using Cambridge analytical software generated the following data:

Year	2024	2025	2026	2027	2028
	FRW	FRW	FRW	FRW	FRW
Cost of planting tree after decommission the project					1,400,000
Special equipment and additives used in research	85,000,000	25,500,000			
Designing costs and remodeling costs	5,500,000	5,000,000			
Original design and development of the of Nguvu power	40,000,000	8,000,000			
Contingencies	35,000,000	4,000,000			
Cost of disassembling equipment					1,000,000
Project management costs	14,000,000				
Staff costs for the lead research consultant	7,000,000	3,000,000			
Transporting equipment to their final storage point					1,400,000
Finance costs that directly funded the research and development	10,000,000	2,000,000			
Enhancement costs of Nguvu power	3,000,000	2,000,000			

Payment paid to a laboratory that tested the product quality	500,000	500,000			
Cleanup costs after decommissioning the project					1,200,000
Production cost per unit					
Material cost per unit(FRW)	200	200	200	200	200
Labor cost per unit (FRW)	1500	1500	1500	1500	1500
Overhead cost per unit(FRW)	300	280	220	250	450
Clients additional cost per unit (FRW)-Marketing costs	190	170	170	170	170
Production and sales quantities	5,000	25,000	60,000	1,500	500

Further analysis using least squares by Kipepeo consultants Ltd modelled the profitability function into a quadratic equation of the form for10X^2-50000X+144,000=0
the third year, where X is the units of Nguvu power produced and sold.

3. Basis of board disagreement

Of the ten directors, two youthful directors were of a contrary opinion that Kipepeo consult Ltd should have compared costs based on activities that consume them or theory of constraints and not life cycle costings. The two said, `Life cycle costing is complex due to advancement in technology``. They further argued that the bulk of costs incurred by most firms that are in production or processing are overheads. Finding the correct basis of absorption is difficult and subjective. Nguvu power will be sold at FRW 3,800. The expected markup is 10% in the period under analysis.
1 Kg=1,000 grams

Required:

(a)

i. **Evaluate the maximum profitability of Muhima Group Ltd (MGL) based on the quadratic model and the relevant lowest profit or loss at the end of year 2028. Advise the management on the strategies to put in place between end of year 2023 and 2028.** (8 Marks)

ii. By reclassifying the main cost elements together, **determine the price gap and then advise the management whether or not to launch Nguvu power**. (11 Marks)

(b)

i. **Advise the management of Muhima Group Ltd (MGL) on the optimum quantities of each product to be produced per production season in order to minimize losses using a diagram approach**.

ii. **Hint**: For optimal solution use simultaneous equation (12 Marks)

iii. Comment on the non-binding constraint, shadow price and slack as used in the approach you used in solving (b)(i) above. (Do not calculate) (3 Marks)

(c) Critically analyze the costing approaches suggested by the two opposing youthful directors. Indicate their short comings if used. (10 Marks)

(d) ``Recently the top executives met in a Musanze hotel and resolved to be comparing their internal operations with Sohpyriah Ltd, a French conglomerate that has been in operation since the year 1972.Sohpyriah is located in Asian pacific island``. **Critically analyze the difficulties of trying to achieve the facts in this statement.** (Answers to 2 decimal places) (6 Marks)

(Total: 50 Marks)

SECTION B

QUESTION TWO

Nyamagabe construction Ltd (NCL) is the oldest cross listed construction firm whose headquarter is in the Remera. Its shares are currently trading in Rwanda stock exchange, London stock exchange and New York stock exchange. The company is structured in two divisions dimension: the building construction division (BCD) whose head office in Kamonyi district and the Railway construction division (RCD) whose head office is in Kirehe district. The two divisions are semi-autonomous. Major decisions are made by the central committee that seats on a quarterly basis at Nyamagabe construction Ltd (NCL) headquarter. Currently Nyamagabe construction Ltd (NCL) won a tender to refurbish the Tazara railway line which has stalled for the last 10 years. The railway line is in bad condition and passes through places which are not easily navigable.

Nyamagabe construction Ltd won this competitive tender because of its many years of experience in similar contracts, its experienced staff and ability to raise funds worth billions of Rwanda Francs.

The building division manufactures special kiln and factory building materials for the local market and partly excess production is exported to several European nations. Nyamagabe construction Ltd (NCL) major local and international customers are Virunga super house Ltd and Paris smart city Ltd. Recently. Virunga super house Ltd board made a resolution to buy a new building block making machine from Kathmandu, Nepal at a cost of USD10,000. Virunga super house Ltd anticipated to spent the following amounts in manufacturing each building block:

Material cost is FRW 3,500

Labor cost is recovered at a rate of 60% of the material cost.

Overhead cost is 180% of the labor rate. Thirty-five percent of this is actually fixed.

Virunga super house Ltd is doing this in line to their long quest to bring down industrial building costs in Rwanda by producing and internally using the building stones in their construction projects.

Each of the special cabro stone manufactured by Nyamagabe construction Ltd (NCL), building block and tile are sold at FRW 14,000, FRW 18,500 and FRW 20,400 respectively. The management accountant found out that seventy percent of the overheads are actually fixed. The general hourly labor rate is FRW 2,000 while the maximum production capacity as per Cambridge analytical labor software is 200,000 hours per production period. The budgeted production(units), prices and cost structures of each of the three products is as shown below:

	Cabro	Building stone	Tile
Production	20,000	30,000	50,000
	FRW	FRW	FRW
Direct material cost	3,000	4,000	5,000
Overhead cost	10,000	15,000	18,000
Direct labour cost	6,000	8,000	4,000

Required:

(a)

i. Using well illustrated explanations, **advice the management of Nyamagabe construction Limited the loss minimizing production mix and the product that they should cease producing (if any).** (16 Marks)

ii. Should the management of Nyamagabe construction Ltd (**NCL) be worried of Virunga smart house Limited board thought? Briefly describe two costs and two non-cost factors used in such decisions.** (9 Marks)

(Total: 25 Marks)

QUESTION THREE

Rukundo Public Ltd Company (RPLC) is a manufacturing company to operate in Rwanda. It is located at Mossoro and it manufactures a range of products ranging from domestic to industrial products. The shares of Rukundo Public Ltd Company (RPLC) are currently the best performing at Rwanda stock exchange causing the directors to resolve to cross list the company. The directors have further agreed to introduce a new export product line that will manufacture a product branded Riggy. Rukundo Public Ltd Company (RPLC) research and development departmental committee together with the management accounting departmental committee under the chair ship of Erick Munyaneza prepared the following budget statement using attainable standard.

	Fixed budget	**Actual**	**Variance**
Produced and sold units of Riggy	100,000	190,000	90,000
Sales (FRW)	200,000,000	390,000,000	190,000,000
Material cost (FRW)	80,000,000	285,000,000	205,000,000
Labor cost (FRW)	40,000,000	95,000,000	55,000,000
Variable overhead cost	20,000,000	-	-
Fixed cost	-	50,000,000	-

The committee had to work extra hours in order to put the above statement together in order to give a management consultant ample time to finalize annual performance evaluation exercise.

Additional information.

1.The actual labor minutes paid were 400,000 while the actual minutes actually worked were 425,000.

2.The Management accountant of Rukundo Public Ltd Company (RPLC) is so unhappy, angry and frustrated with Erick Munyaneza in regard to the variance analysis she conducted. The management accountant thinks this will make him be adversely rated putting his job at stake.

3.The standard labor rate for the period under analysis was FRW 2,000 per hour. This rate has remained unchanged for quite some time. Last year the production staff went on a go slow. This affected the operations. Some staff members resigned causing the management to adjust the rate to FRW 2,500.

4.The overhead costs in various activity levels is as shown below:

Month	Units	Cost
January	175,000	90,000
February	165,000	50,000
March	125,000	40,000
April	170,000	64,000

5. The firm's policy is disintegrating the costs using least squares method. However, when the actual production is above 150,000 units, there is an additional FRW 20,000 fixed cost for every 10,000 increase in units.

Required:

(a) Critically justify the behaviour of the Management accountant.

(Hint; **Prepare both the budgeted and actual profit statements through contribution margin basis. Compare and contrast the two statements).** (15 Marks)

(b) Evaluate the labor idle time variance if any. (2 Marks)

(c) Briefly advice Erick Munyaneza the four types of predetermined estimated costs that he can apply in budgeting and the benefit or drawback of using each. (8 Marks)

(Total:25 Marks)

QUESTION FOUR

Cardel Industrial Soap Company Ltd (CSCL) is the largest supplier of industrial soap and related products in Eastern and Central Africa. The shareholders have been complaining of the shrinking dividend payout for the last three years. The main factory is located in Shinyanga district in the Republic of Tanzania and the processing is entirely automated with current cut-edge technology. Cardel Industrial Soap Company Ltd (CSCL) main costs are materials and overheads. The factory is located along Shinyaga –Dar el Salaam road near the lush thick Sungunya eucalyptus forest. Eucalypso Company Limited (ECL) is a subsidiary of Cardel Industrial Soap Company Ltd (CSCL) extracts eucalyptus oil, branded Bee, the main ingredient used in liquid massage oil manufacturing. The eucalyptus extract is sourced from local farmers at a meagre price. Some farmers have started uprooting these trees and replacing them with food crops. Due to market disruptions of the supply of material Bee, the average market price of this material during the period was FRW45,000 per liter, and the management decided to revise the material standard cost to allow for this. During this period the firm required 2,600 liters of Bee with cost of FRW 115,400,000. A survey done the Ministry of agriculture has found that Cardel industrial soap company Ltd (CSCL) is involved in massive deforestation. The staff are ever complaining of salary cuts and delays. Recently they lost key staff to a competitor in Zambia. These two companies operate under a just-in-time inventory system, a concept they leant from Tungistu pure synthetic automobile oil manufacturing company Ltd of Japan. The eucalyptus oil is internally transferred at market based transfer price. Previously, they were using variable cost based transfer price but the main board decided to discontinue this basis. Cardel industrial soap company Ltd (CSCL) produces liquid massage oil that is branded Amelia. The management board of Cardel industrial soap company Ltd (CSCL) recently met and resolved to produce 8,000 litres of Amelia in the coming month of August 2024.The budgeted labor rate per hour was FRW 45,000 but the company actually paid 10% higher because of depressed market of skilled workers. Amalie is loved by many for its excellent performance, its aroma and the relaxation brought after use despite the high prices charged.

The budgeted composition of a litre of Amelia are:
8/25 litres of ingredient Aye @ FRW 50,000 per litre.
1/2 litres of ingredient Bee @ FRW 40,000 per litre
4/10 litres of ingredient Cee @ FRW 35,000 per litre.

The following additional information is provided:

1. The budgeted overheads for the production of Amelia in the month of August 2024 were as follows:

Activity	Total amount (FRW)
Receiving of raw materials from suppliers (Standard delivery quantity is 800 litres)	40,000,000
Dispatching of finished goods to clients (Standard dispatch quantity is 400 litres)	80,000,000
Total	**120,000,000**

2. In August 2024, 8,200 litres of Amelia were produced and the cost details were as follows:

(i)Actual materials cost spent

Material Actual	Quantity in litres	Actual cost in FRW
Aye	2,850	100,000,000
Bee	1,250	35,000,000
Cee	2,000	50,000,000

(ii)Actual overhead costs

Activity	Amount in FRW
9.5 supply deliveries	50,000,000
22.5 customer dispatches	90,000,000

3. Although the management had budgeted to produce a litre of Amelia in 6000 seconds, the actual time halved.

The management accountant thinks that Total quality management and Standard costing cannot coexist. The board thinks that instead of rating Cardel industrial soap company Ltd (CSCL) performance using Fitzgerald and moons building block model, they should instead use the

performance prism.

Required:

(a) Provide variance analysis statement of Amelia for August 2024. (Hint; any three planning and operation variances, activity based variances and any other advanced variances of your choice). Make a comment in regard to each of the variance calculated above. (22 marks)

(b) Practically describe how the performance prism can be applied in performance evaluation at Cardel industrial soap company Ltd (CSCL). (3 Marks)

(Total: 25 Marks)

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