CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATIONS

A2.2: STRATEGIC PERFORMANCE MANAGEMENT

DATE: THURSDAY, 30 NOVEMBER 2023

MARKING GUIDE AND MODEL ANSWERS

SECTION A

QUESTION ONE

Marking guide

	Marks
a) i) Calculation of sales price variance of Zahara star	1
Calculation of sales variance of Zahara super	1
calculation of sales volume variance for Zahara star	1
Calculation of sales volume variance for Zahara super	1
Subtotal	4
ii) Material price planning variance	1.5
Material price operating variance	1.5
Subtotal	3
iii) Total hours required if staff were efficient	1
Permanent staff hours.	1
Temporal staff hours	1
Labor efficiency variance	1
Subtotal	4
Explanations 1 mark for each point	6
	17
(b) Stating that planning variances are uncontrollable	2
(c) Stating that operating variances are controllable Chinese case 1 mark, maximum 3 points	3
(d) Stating that TQM is a continuous process and stating its aim	2
Stating that in precence of TQM there cannot be any variance	1
	3
(e) Identify the four key standards	4
(f) Formulation of inequalities 0.5 marks each	4
Drawing the problem on Cartesian plane	
Scale	1
Plotting	2
Neatness	1
(g) Optimum point	1
(h) Calculate maximum contribution	2
(i) Meaning of external benchmarking	2
(j) Steps in benchmarking 0.5 marks for 8 steps	4
(k) Four points for difficulties of benchmarking	4
Total	**50**

Models answer

(a)

(i) Sales price variance and sales volume variance

Sales price variance = (Actual price – Standard price) Actual volume

Particulars	Actual price	Standard price	Difference	Actual volume	Variance
Zahara super	290,000	350,000	-60,000	750,000	(45,000,000,000) A
Zahara star	330,000	300,000	30,000	650,000	19,500,000,000 F
Total					**(25,500,000,000) A**

(ii) Sales volume contribution variance = (Actual sales volume –Standard sales volume) Standard margin

Particulars	Actual units	Standard Units	Difference	Standard Margin	Variance
Zahara super	750,000	590,000	160,000	180,000	28,800,000,000 F
Zahara star	650,000	590,000	60,000	190,000	11,400,000,000 F
Total					**40,200,000,000 F**

(iii) Material price planning variance

Material price planning variance = (Original target price-Actual market price at the time of purchase) Quantity purchased

(FRW60,000 – FRW85,000) 1,400,000=FRW35,000,000,000 A

(iv) Material price operating variance

Material price operating variance = (General market price at the time of purchase-Actual price paid) Quantity purchased

(FRW85, 000 –FRW80, 000) 1,400,000 = FRW 7, 000,000,000 F

(v) Labor rate variance and labor efficiency variance

Labor rate variance = (Standard labor rate-Actual labor rate) Actual hours worked

Total hours required if staff were efficient (650,000*2) +(750,000* 1.5) =2,425,000 hours

Permanent staff work for 2,200,000 hours. The excess 2,425,000-2,200,000=225,000 hours.

Temporal staff worked thrice as long i.e., 225,000*3 = 675,000 hours

Labor rate relates only to temporal staff. Permanent staff are efficient

(FRW14,000 –FRW18, 000) 675,000=FRW 2,700,000,000 A

Labor efficiency variance

Labor efficiency variance = (Standard labor hours for actual production – Actual labor hours worked) Standard labor rate

(225,000 -675,000) * FRW 14,000= FRW 6,300,000,000A

(iv) For each variance calculated above, give one reason of its occurrence

Variance	**Reason for occurrence**
Sales price variance	Actual price differing from standard price
Sales volume contribution variance	Actual contribution differing from standard contribution
Material price planning variance	Managerial decision-making skills
Material price operating variance	Operational issues specific to a firm
Labor rate variance	Good bargaining power of trade unions
Labor efficiency variance	Motivation or training employees

(b) The total material price variance given is FRW 28,000,000A. The purchasing department will be evaluated on the basis of it. This variance was calculated before computing material planning and operational variance. Breaking the price variance into planning and operational provides a good basis of assessing performance. Planning variances are uncontrollable while operational variances are controllable. Planning variance provides feedback how managers are skilled in making forecasts while operational variance provides feedback how the purchasing department are making decisions.

(c)

China has affordable energy the supports production

Presence of state of art technology

Land is cheap

China labor rates are lower as compared to other places elsewhere

(d) Total quality management (TQM) is a continuous process of eliminating, reducing or detecting manufacturing errors on timely basis, efficient management of supply chain and getting maximum production from employees. Its application will make organizations not to realize any variances.

(e)
Standards
Ideal standards-standards based on perfect conditions. No room for mistakes.
Attainable standards-this are standards which can be achieved. Give room for mistakes
Basic standards-standards which have been in use for a long time.
Current standards-standards based on current working condition
The answer should not include current standards

(f) Formulation of LP model
The objective is to maximize contribution or profitability

Let the number of cakes produced be X
Let the number of cookies produced be Y
Maximize contribution or profit
Z=CMX + CMY
CM is the unit contribution margin of either Cakes or Cookies
CM of cake 5,400-2,800=2,600
CM of cookies 4,900-3,150=1,750

Subject to the following constraints

Zen units available $3X+2Y \leq 3,400$
Chan units available $2X +5Y \leq 6,500$
Time available $X+1.2Y \leq 1,200$

Non negativity constraint for Cakes $X \geq 0$
Non negativity constraint for cookies $Y \geq 0$

Calculation of coordinates

$3X+2Y=3,400$
$2X+5Y=6,500$
$X+1.2Y=1,200$

Solve using any method of solving simultaneous equations: Matrix, elimination substitution methods.

For $3X+2Y=3,400$
When X=0, Y=1,700
When Y=0, X=1,133.3

For $2X+5Y=6,500$

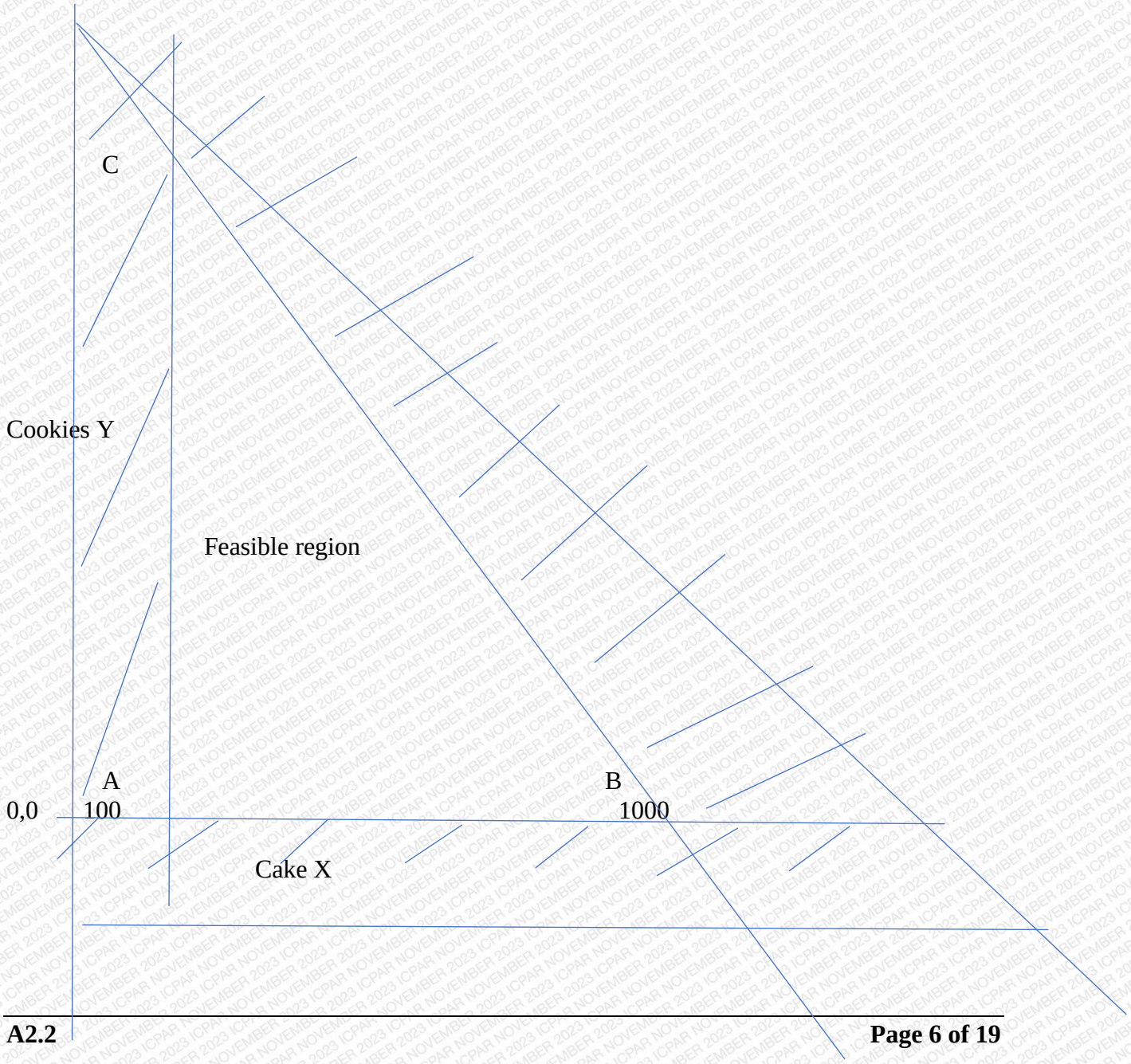
When X=0, Y=1,300
When Y=0, X=3,250

For X+1.2Y=1200
When X=0, Y=1000
When X=1200, Y=0

Plot the data on a graph paper provide and identify the corner points
Zen is non -binding constraint

Zahara Limited

GRAPH OF CAKES X AGAINST COOKIES



(g) and h Calculation of Optimum point and Maximum contribution

A (0;1000)
B (1133;0)
C (????)

3X+2Y=3,400
X+1.2Y=1,200

3X=3400-2Y
X= (3400-2Y)/3
Replace in second formula

(3400-2y)/3+1.2y=1200
3400-2y+3.6y=3600
1.6y=3600-3400
1.6y =200
Y =200/1.6
Y=125

X+1.2Y=1,200
X+(1.2*125) =1200
X=1200-150
X=1,050
C (1050 ;125)

Replace in objective function Z=2,600X +1,750Y

A (0;1000) contribution is 1,000*1,750= FRW 1,750,000
B (1133;0) contribution is 2600*1133= FRW 2,945,800
C (1050 ;125) contribution is FRW (1,050*2,600) +(125*1,750) = FRW 2,948,750
(g) Optimum point is C (1050 ;125)
(h) Maximum contribution is FRW 2,948,750

(i) Explain the meaning of external benchmarking
External benchmarking is making a comparison of performance of a firm that represents best practice in an industry. The compared firms are not related in any manner.

(j) Steps in benchmarking

The benchmarking exercise can then be divided into 7 stages.
Step 1 Set objectives and determine the areas to benchmark –reasons for benchmarking
Step 2 Establish key performance measures -to support performance evaluation
Step 3 Select organizations to study –this is a firm that will be compared with your firm
Step 4 Measure own and others' performance -Conduct performance evaluation
Step 5 Compare performances -Compare the result of key metrics of comparison

Step 6 Design and implement an improvement program -respond to divergences
Step 7 Monitor improvement -continuous monitoring and evaluation

(k) State the difficulties of external benchmarking

Difficulties of external benchmarking
Its counter-productive, it may lead to resistance to change by employees and management
It may stunt innovation-a firm cannot entirely use the benchmarking data obtained to completely design its production and marketing plan
It may lead to complacency-firms may relax on their core competencies and instead map and copy the firm that represents best practice
Some firms are so secretive thus it's difficult to obtain sufficient data or information to be used in benchmarking.

QUESTION TWO

Marking guide

QUESTION TWO	**Marks**
(a)	
Applying discount on price 0.5 per each tender maximum 1	1
Calculation of Discounted Price 0.5 per each tender maximum 1	1
Applying discount on cost of sand 0.25 per each tender maximum 0.5	0.5
Calculation of Discounted cost of sand 0.25 per each tender maximum 0.5	0.5
Applying discount on cost of ciment 0.25 per each tender maximum 0.5	0.5
Calculation of Discounted cost of ciment 0.25 per each tender maximum 0.5	0.5
Applying discount on cost of iron sheet 0.25 per each tender maximum 0.5	0.5
Calculation of Discounted cost of iron sheet 0.25 per each tender maximum 0.5	0.5
Calculating total Material cost	1
Calculating total Labour cost	1
Calculating total cost	1
Contribution Per Unit	2
Maximum Marks	**10**
(b) Appicability of customer profitability 1 for each applicability maximum 3	**3**
c) Reasons for customer profitability	**2**
D) Stating fremowork	1
Describing the framework	2
Maximum MARKS	**3**
e) Shadow Price	
Calculating quantity of Cement	1
Calculating quantity of iron sheet	1
Contribution without extra cement	2

Contribution witht extra cement	2
Shodow Price	1
	7
Total Marks	**25**

Model Answer

Analyzing the financial performance of each tender in western and southern provinces

(a)	Southern province	Western province
Quoted Price Frw	30,000,000	35,000,000
Discount Rate	3%	2.50%
Discount	900,000	875,000
Discounted Price	29,100,000	34,125,000
Quantity Built	250	350
Costs		
Bricks	7,500,000	6,800,000
Sand	2,000,000	2,000,000
Discount Rate for Sand	10%	10%
Discount	200,000	200,000
Discounted Price	1,800,000	1,800,000
Cement	3,850,000	3,100,000
Discount Rate	5%	5%
Discount	192,500	155000
Discounted Price	3,657,500	2,945,000
Iron Sheets	4,000,000	4,500,000
Discount Rate	2.50%	2.50%
Discount	100,000	112,500
Discounted Price	3,900,000	4,387,500
Other Material Costs	500,000	700,000
Total Material Cost	17,357,500	16,632,500
Labour %	30%	30%
Labour Cost	5,207,250	4,989,750
Total Cost	22,564,750	21,622,250
Contribution Per Unit	6,535,250	12,502,750
Contribution Per Tender	1,633,812,500	4,375,962,500

(b) **Applicability of customer profitability analysis**

- ✓ Production and delivery of product and/or service.
- ✓ Marketing and sales activities.
- ✓ Customer success and engagement activities.
- ✓ Salaries and operational costs.

(c) **Reason for conducting customer profitability analysis**

Customer profitability analysis can aid in decision making. Before accepting any tender from a client, Kajuga Construction Limited can undertake this analysis so as to make a decision of accepting or rejecting. This can also help identify the most profitable customer.

(d) **Description of a balanced score card (BSC)**

Balanced scorecard

This is an approach to performance management that focuses on performance based on four major perspectives. It applies both financial and non-financial performance indicators.
These perspectives include Financial, customer, internal business, and innovation and learning perspectives.

The leaner should explain each perspective in detail

(e) **Advice on the value the shadow price**

Formulation of inequalities
The aim is to maximize the contribution
Let X be number of kitchens built in Southern province
Let Y be the number of kitchens built in Western province.

Z=CMX +CMY

CM is the unit contribution margin of kitchen either built in Southern province or Western province.

Z= 6,535,250 X + 12,502,750 Y

Subjected

Quantity of cement for southern province =Total discounted price / Price per unit = 3,657,500/12,500=292.6

Quantity of cement for western province =Total discounted price / Price per unit =2,945,000/12,500=235.6

Quantity of iron sheet for southern province =Total discounted price / Price per unit = 3,900,000/8,000=487.5

Quantity of iron sheet for western province =Total discounted price / Price per unit =4,387,500/8,000=548.4

Subject to the following constraints
Bags of cement 292.6 X +235.6 Y≤10,000
Iron sheets 487.5 X +548.4 Y≤ 9,000

292.6 X +235.6 Y=10,000
487.5 X +548.4 Y=9,000

X=(10,000-235.6y)/292.6

Replace value of X in equation 2

= 487.5 *(10,000-235.6y)/292.6)+548.4Y=9,000

- (487.5*10,000- 487.5*235.6Y)=(9000-548.4Y)*292.6
- 4,875,000-1148,667.8Y=2,633,400-160,461.84Y
- 4,875,000-2,633,400=- 160,461.84Y +1,148,667.8Y
- 2,241,600=988,205.96Y
- Y=2.2683

Replace y in 292.6 X +235.6Y=10,000

- 292.6 X+534.41=10,000
- 292.6 X=10,000-534.41
- X = 9465.59/292.6
- X=32.35

Z= 6,535,250 X + 12,502,750 Y
Z = (6,535,250 * 32.35) + (12,502,750*2.2683)
Z =211,415,337.5+28,359,987.825
Z=239,775,325.325

Let's adjust the available cements by one bag to 10,001 and reformulate our equation and solve it.

292.6 X +235.6 Y≤10,001
487.5 X +548.4 Y≤ 9,000

292.6 X +235.6 Y=10,001
487.5 X +548.4 Y= 9,000
X=(10,001-235.6y)/292.6

Replace value of X in equation 2

= 487.5 *(10,001-235.6y)/292.6) +548.4Y=9,000

- (487.5*10,001- 487.5*235.6Y) =(9000-548.4Y) *292.6
- 4,875,487.5-1148,667.8Y=2,633,400-160,461.84Y
- 4,875,487.5-2,633,400=- 160,461.84Y +1,148,667.8Y
- 2,242,087.5=988,205.96Y

- Y=2.26885

Replace y in 292.6 X +235.6Y=10,001

- 292.6 X+534.54=10,001
- 292.6 X=10,001-534.54
- X = 9466.46/292.6
- X=32.35

Z= 6,535,250 X + 12,502,750 Y
Z = (6,535,250 * 32.35) + (12,502,750*2.26885)
Z =211,415,337.5+28,366,864.3375
Z=239,782,201.837

Shadow Price = 239,782,201.837-239,775,325.325=6876.512 Is the shadow price of cement

Shadow price is the contribution earned from having one extra unit of limited resource available and is also the extra, on top of the existing cost for that limited resource, which a company would be willing to pay to acquire that extra resource.

QUESTION THREE

Marking Guide	MARKS
(a)	
Material Price Variance	2
Material mix Variance	2
Material Yield Variance	2
Overhead expenditure Variance	2
Overhead capacity Variance	2
Overhead efficiency Variance	2
Maximum Marks	**12**
(b)	
Activity usage variance Delivery	2
Activity usage variance Dispatch	2
Activity expenditure variance Delivery	2
Activity expenditure variance Dispatch	2
Maximum Marks	**8**
c) Step in calculating Material Mix Variance 1 for each Step	**5**
Total	**25**

Model Answer

a)

Calculate standard cost of materials per kilogram of output				
Materials	Weight	Cost per KG	Weighted Cost	
E	0.6	40,000	24,000	
F	0.25	60,000	15,000	
G	0.15	25,000	3,750	
Standard material cost per kilogram of output			42,750	
1. Material price variance = (Standard Price-Actual price) Actual quantity				
Actual cost of output				
Material			203,800,000	
			203,800,000	
Material	Standard price	Actual quantity		
E	40,000	2,840	113,600,000	
F	60,000	1,210	72,600,000	
G	25,000	860	21,500,000	
Total standard price			**207,700,000**	

Material price variance			3,900,000 F	
2. Material mix variance equals Actual quantity in actual mix at standard price less actual quantity in standard mix at standard price				
Material	**Actual quantity in actual mix**	**Weight**	**Actual qty in standard mix**	
	E	F	G	Total
Actual quantity in actual mix	2,840	1,210	860	4,910
Standard mix of input	0.6	0.25	0.15	1
Actual qty in standard mix	2,946	1,227.50	736.50	4,910
Difference	106	18	-124	-
Standard cost per KG	40,000	60,000	25,000	
Variance	**4,240,000**	**1,050,000**	**-3,087,500**	**2,202,500**
Comments	**Favourable**	**Favourable**	**Adverse**	**Favourable**
3. Material yield variance	(Actual yield-Standard yield) Standard material cost per unit of output			
Material	**Actual quantity in actual mix**	**Weight**	**Actual qty in standard mix**	
	E	F	G	Total
Actual quantity Total Input	2,840	1,210	860	4,910
Should Produce (4910/(0.60+0.25+0.15)				4,910
But did produce				4,200
Difference				-710
Standard Price				42,750
Variance	-	-	-	**-30,352,500**
Comments	**Adverse**	**Adverse**	**Adverse**	**Adverse**
4. Overhead expenditure variance equals budgeted cost less actual cost				
Budgeted overhead cost			120,000,000	
Actual overhead cost	78,000,000	48,000,000	126,000,000	

Overhead expenditure variance			-6,000,000	**Adverse**
5. Overhead capacity variance equals budgeted input of E less actual input multiplied with SOAR per kilo of E				
Calculate standard overhead rate				
Budgeted overhead			120,000,000	
Budgeted standard quantity of E	4,000	0.6	2,400	
OAR			**50,000**	
Budgeted overhead			120,000,000	
Budgeted standard quantity of Zed			4,000	
Standard overhead rate per kilogram of Zed			**30,000**	
Budgeted production			4,000	
Proportion of input material E			0.6	
Budgeted input material E			2,400	
Actual input material E			2,840	
Difference			-440	
SOAR			50,000	
Overhead capacity variance			-22,000,000	**Adverse**
6. Overhead efficiency variance equals Standard quantity of E less actual quantity multiplied with SOAR per Kilo of E				
Standard quantity	4200	0.6	2,520	
Actual quantity			2,840	
Difference			-320	
OAR			50,000	
Overhead efficiency variance			-16,000,000	**Adverse**

(c)

- ✓ Take the total actual quantity of materials used
- ✓ Divide the total quantity of materials into standard mix
- ✓ Calculate the mix variance-difference between actual quantity used and the quantity in the standard mix.
- ✓ Convert the mix variances into money by applying the standard price
- ✓ Sum the individual mix variances to arrive at the total material mix variance.

QUESTION FOUR

a) Calculation of ROI	**2**
b) Calculation of RI	**2**
c)Comment on ROI (0.5 for new combined traceable Profit,0.5 for combined investment and 1 for ROI and 1 for comment	**3**
d) Explanations on environmental costs 1.5 marks, maximum 3	**3**
e) Calculating NOPAT for two years	2
Calculating capital employed for two years	2
Calculating WACC for two years	2
Calculating EVA for two years	2
Maximum	**10**
f) Calculating ROI	**2**
g) calculating RI and comment	**3**
Total	**25**

Calculation of traceable profits

(a)	Soft Drink Division		Liquor Division	
	2022	2021	2022	2021
Revenue	103,000	100,000	140,000	125,000
Controllable costs	59,000	57,000	70,000	66,000
Traceable costs	13,000	12,000	31,000	16,000
Apportioned head office costs	17,000	14,000	21,500	18,000
Divisional profits	**14,000**	**17,000**	**17,500**	**25,000**
Add apportioned head office costs	17000	14000	21500	18000
Traceable profits	31000	31000	39000	43000
Net investment	185,000	125,000	275,000	265,000
ROI	17%	25%	14%	16%

(b) Residual income (RI)
ROI=Traceable profits/Net capital investment * 100
RI=Divisional profits-Imputed interest charge.

Imputed interest charge = Net capital investment * weighted average cost of capital

RI	Soft Drink Division		Liquor Division	
	2022 "Million"	2021 "Million"	2022 "Million"	2021 "Million"
Traceable profits	31,000	31,000	39,000	43,000
Net investment	185,000	125,000	275,000	265,000
WACC	0.125	0.125	0.125	0.125
Imputed interest charge	(23,125)	(15,625)	(34,375)	(33,125)
RI	7,875	15,375	4,625	9,875

(c) Comment of new investment

	2022 "Million"	2021 "Million"	2022 "Million"	2021 "Million"	TOTAL
Total traceable profits	31,000	31,000	39,000	43,000	144,000
Sales of new product				45,500	
Less specific operation costs	50,000	0.805		40,250	
Profit generated from sale of new product					5,250
Total traceable profits					149,250
Existing investment	185,000	125,000	275,000	265,000	850,000
Add cost of the new machine					50,000
Total investment					900,000
Calculate the new ROI					**17%**

The current ROI is 16%. The recalculated ROI is 17%. There is an increase. Proceed with the new investment. Overall, Bulawayo`s profits will increase due to the new product launched

(d)
Environment costs include;

Environment –related costs-this can be directly traced
Environment driven costs-are costs hidden in the overall overhead of a firm

e) EVA is calculated as NOPAT minus Capital * Cost of capital (WACC)		
YEAR	2022	2021
	FRW 000	FRW 000
Operating profit	6,500,000	5,500,000
Add research cost expensed (Project Z)	500,000	500,000

Less amortisation of prior year expenses (Project X)	750,000	750,000
Add expenses relating to increase in allowance for doubtful debts	100,000	50,000
Add non cash expense	15,000	15,000
less interest expense	1,000,000	900,000
Profit before tax	5,165,000	4,415,000
Less cash taxes W1	1,664,550	1,435,050
NOPAT	4,670,450	3,749,950
Working 1		
Calculating net tax		
Operating profit as per EVA	6,165,000	5,315,000
less interest expense	1,000,000	900,000
Profit before tax	5,165,000	4,415,000
Tax rate	0.27	0.27
Tax charge as per income statement	1,394,550	1,192,050
Add tax relief on interest (Interest * tax rate)	270,000	243,000
Cash taxes	**1,664,550**	**1,435,050**
Calculation of Adjusted capital employed as at 1 January	2022	2021
Capital as at 1 January per statement of financial position	37,000,000	33,500,000
Less Allowance for doubtful debts	250,000	300,000
Add capitalization of research and development costs	0	0
Project Z	500,000	0
Project X	750,000	1,500,000
Adjusted capital employed as at 1 January	**38,000,000**	**34,700,000**
Weighted average cost of capital (WACC)		
	2021	2022
Cost of Debt -Pre tax	5%	5%
Tax Rate	27%	27%
After tax cost of Debt	4%	4%
Weight of debt	40%	40%
Cost of equity	12%	14%
Weight of equity	60%	60%
WACC	**8.7%**	**9.9%**
EVA	2022	2021
NOPAT	4,670,450	3,749,950

CAPITAL	38,000,000	34,700,000

f)

ROI=Operating profit (PBIT)/Capital employed * 100	2022
PBIT	6,500,000
Capital employed	38,000,000
ROI is	**17%**

g)

Calculating RI for year 2021

RI is Net operating Income (NOPAT) less imputed interest charge	
Profit before tax	5,500,000
Tax	1,485,000
Profit after tax	4,015,000
Capital	34,700,000
WACC	8.70%
Imputed interest charge	3,018,900
RI	**996,100**

Muzehe Ltd will remain with 996,100 million after paying the cost of acquiring capital to purchase operating assets

END OF MARKING GUIDE AND MODEL ANSWERS