

**JULY 2023 PROFESSIONAL EXAMINATION
INTRODUCTION TO MANAGEMENT ACCOUNTING (PAPER 1.4)
CHIEF EXAMINER'S REPORT, QUESTIONS AND MARKING SCHEME**

STANDARD OF THE PAPER

The paper was administered in this July 2023 examinations. The paper covered all relevant topics of the syllabus and the questions were standard and comparable to other accountancy examining bodies. Marks allocation to the questions followed the weighting in the syllabus: the actual marks allocated to the questions in the paper were significantly in line with the syllabus as follows:

PERFORMANCE OF THE CANDIDATES

The general performance of candidates was below average with a reasonable number of passes. High performers were very few and spread across all centres. Low performers were also spread in all centres but certain centres registered more low performers than the others. Candidates general performance in Question 1,2, and 4 were average but their performance in Question 3 and especially Question 5 was very poor.

NOTABLE STRENGTH AND WEAKNESSES OF CANDIDATES

All of the strong performers exhibited accuracy, precision and better understanding in answering the questions.

However, a good number of candidates did not adequately understand the costing principles required very well to enable them successfully write the exams. Some candidates did not take adequate time and effort to understand the requirements of the questions and therefore did not do well in questions relating to budgeting, plan-wide (blanket) overhead absorption rates, and forecasting production levels.

QUESTION ONE

- a) Adom Ltd manufactures Omicron vaccine for the treatment of COVID 19 in Africa. The manufacturing process uses two raw materials (M & W) which are mixed in the proportions (2:3). Materials are priced: M = GH¢10 per kg and W = GH¢3.2per kg. Normal weight loss of 5% of material input is expected during the process and material losses recorded in the manufacturing process have no saleable value. At the end of production, 18,260kg of Omicron vaccine were manufactured from 19,320kg of raw materials. Conversion costs in the period were GH¢57,316. There was no work in process at the beginning or end of the period.

Required:

Prepare the Process Account of the Omicron vaccine for the period.

(10 marks)

- b) Manna Industries sold 150,000 units of its product at GH¢20 per unit. Variable costs are GH¢15 per unit (manufacturing cost of GH¢12 and selling expenses of GH¢3). Fixed costs are incurred uniformly throughout the year and amount to GH¢972,000, that is, manufacturing costs of GH¢600,000 and selling expenses of GH¢372,000.

Required:

- i) Calculate the break-even point in units and Ghana cedi. **(4 marks)**
- ii) Calculate the number of units that must be sold to earn an income of GH¢75,000 before income tax. **(2 marks)**
- iii) Calculate the number of units that must be sold to earn an after tax profit of GH¢100,000 if the income tax rate is 40% **(4 marks)**

(Total: 10 marks)

QUESTION TWO

- a) Explain the following:
- i) Incremental Budgeting (2 marks)
 - ii) Zero-Based Budgeting (2 marks)
 - iii) Activity Based Budgeting (2 marks)
- b) Cox Ltd is a manufacturing company that produces a body shaping drink for the African market. The company employs marginal costing system as an integral part of its reporting systems. During the reporting period there was no opening or closing inventory. The company produces its budgeted and actual results for December 31, 2022, as follows:

	Budget	Actual
Production /sale unit	2,000	1,400
	GH¢	GH¢
Sales	60,000	42,400
Variable cost:		
Direct material	(20,000)	(13,200)
Direct labour	(10,000)	(7,600)
Variable overhead	<u>(6,000)</u>	<u>(4,400)</u>
Contribution	24,000	17,200
Fixed cost	<u>(20,000)</u>	<u>(20,800)</u>
Net profit/loss	<u>4,000</u>	<u>(3,600)</u>

Required:

Prepare a budget that will be useful for management cost control purpose and briefly comment on the company's performance in December 2022. (14 marks)

(Total: 20marks)

QUESTION THREE

- a) Public Sector in Ghana includes the Metropolitan, Municipal and District Assemblies (MMDA's) and the Ministries, Departments and Agencies (MDA's). The private sector dominates in terms of numbers and are significantly different in operations from the public sector.

Required:

In reference to the above statement, explain **FOUR (4)** key differences between a private sector entity and a public sector entity. (10 marks)

- b) Konka Ltd produces a product – “the telescope”.
- Actual results for the period were:
- Production: 430 units made
- Materials: 1,075 kg were used.
- 1,200 kg of materials were purchased at a cost of GH¢17,700
- Direct labour: 1,700 hours were worked at a cost of GH¢14,637
- Variable production overheads expenditure: GH¢3,870.

The standard cost card for the product is as follows:

		GH¢
Direct material	2 kg × GH¢15	30
Direct labour	4hrs × GH¢8.50	34
Variable overhead	4hrs × GH¢2.00	8

The cost card is based on production and sales of 450 units in each period.

The company values its inventories at standard cost.

Required:

Calculate the following variances for Konka Ltd:

- i) Material price variance
- ii) Material usage variance
- iii) Labour rate variance
- iv) Labour efficiency variance
- v) Variable overhead expenditure variance

(10 marks)

(Total: 20 marks)

QUESTION FOUR

- a) The statement below shows the summary of overheads that have been apportioned to the four departments operating in MMS Ltd with additional information.

Department	1	2	3	4
Total overheads (GH¢)	45,000	35,000	20,000	40,000
Labour hours	1,200	1,000	800	1,500
Units produced	8,000	6,000	4,000	7,000
Machine hours	2,500	3,000	1,800	4,000
Prime cost per unit (GH¢)	42	25	30	34

Required:

- i) Calculate **THREE (3)** plant-wide (blanket) overhead absorption rates. **(6 marks)**
- ii) Calculate **TWO (2)** overhead absorption rates for department 1. **(3 marks)**
- b) Explain under and over absorbed overheads. **(3 marks)**
- c) State the effect of over absorbed overhead on reported profit. **(3 marks)**
- d) State **FOUR (4)** assumptions underlying cost volume profit (CVP) analysis. **(5 marks)**

(Total: 20 marks)

QUESTION FIVE

- a) Balan Ltd is engaged in manufacturing and selling a single product and in the process of preparing its budget for 2024. The following information is available:

Sales

Balan Ltd has developed the linear relationship $Y = 20,000 + 4,000X$, where X represents the time period ($X = 1$ for the 1st quarter of 2024) and Y represents the sales trend in units.

The following seasonal variations are required to be adjusted to the sales trend in order to arrive at the sales forecast.

Quarter	Jan – Mar	Apr - Jun	Jul – Sep	Oct – Dec
Index value	110	90	80	120

A unit of product can be sold at GH¢1,000 during the first three quarters and this price will be increased by 10% in the fourth quarter of 2024.

Production Overheads

Based on the past 6 quarters' results, the following statistical data has been gathered:

$n = 6$ (where 'n' is number of quarters considered)

$\sum x = 306$ (where 'X' is the production quantity in thousands of units)

$\sum Y = 146,400$ (where 'Y' is the total production overheads in GH¢. thousands)

$\sum XY = 7,578,400$

$\sum X^2 = 15,886$

Balan Ltd estimates a linear relationship between output (X) and production overheads (Y), and the total production overheads can be expressed as $Y = a + bX$.

Balan Ltd does not maintain finished goods inventories.

You are one of the Management Accounting executives of Balan Ltd and have been requested to assist in compiling budget figures.

Required:

- i) Prepare the seasonally adjusted quarterly sales forecast in unit and in value for the calendar year 2024. **(4 marks)**
- ii) Prepare the quarterly production overheads budget for the calendar year 2024. **(5 marks)**
- b) Explain the following terms
 - i) Trend – Cycle (C)
 - ii) Seasonal Components (S)
 - iii) Irregular components (I) **(6 marks)**
- c) The purpose of Management Accounting is to provide information for planning, control and decision making. Information for control of the performance is an important management task.

Required:

Outline **THREE (3)** activities involved in providing information for control purposes.

(5 marks)

(Total: 20 marks)

SUGGESTED SOLUTION TO QUESTIONS

QUESTION ONE

a) Computation of Equivalent unit		kg
Output	18,260	18,260
Normal loss (5% x 19,320kg)	966	-
Abnormal loss	94	+94
Input	19,320	18,354*

*18,354kg represent the equivalent units

(2 marks)

The process cost	(GH¢)
Direct material cost	
M (2/5 x 19,320 x GH¢10)	77,280 (0.5 marks)
W (3/5 x 19,320 x GH¢3.2)	37,094 (0.5 marks)
Conversion cost	57,316
Scrap value (8 x GH¢5)	-
Total process cost	<u>171,690</u>

Cost per unit = GH¢171,690/18,354*kg
= GH¢9.35per kg

(2 mark)

Omicron Vaccine process account

Material input		Process A/c			
	Kg	Cost		Kg	Cost
		(GH¢)			(GH¢)
M GH¢10	7,728	77,280	Output	18,260	170,731
W GH¢3.2	11,592	37,094	Normal loss	966	0.00
Conversion cost	-	57,316	Abnormal loss	94	878.9
	<u>19,320</u>	<u>171,690</u>		<u>19,320</u>	<u>171,609</u>

(Marks are evenly spread using ticks = 6 marks)

b)

i) Break-even point

$$\begin{aligned}
 \text{(Units)} &= \frac{\text{Fixed cost}}{\text{Selling price} - \text{variable cost (unit)}} \\
 &= \text{GH¢}972,000 / (\text{GH¢}20 - \text{GH¢}15) \\
 &= \mathbf{194,400 \text{ units}}
 \end{aligned}$$

$$\begin{aligned}
 \text{(cedi)} &= \frac{\text{Fixed cost}}{\text{Contribution margin ratio}} \\
 &= \underline{\text{GH¢}972,000} / (\text{GH¢}(20 - 15)/20)
 \end{aligned}$$

$$= \text{GH¢}3,888,000$$

(2 marks each = 4 marks)

ii) Units required to earn GH¢75,000 Profit

$$= \frac{\text{Fixed cost} + \text{Target profit}}{\text{Selling price} - \text{variable cost (units)}}$$

$$= \text{GH¢} (972,000 + 75,000) / \text{GH¢} (20 - 15)$$

$$= \text{209,400 units}$$

(2 marks)

iii) Units required to earn GH¢100,000 after tax profit

$$= \frac{\text{Fixed cost} + \text{Target profit}}{\text{Selling price} - \text{variable cost (units)}}$$

$$= \frac{\text{GH¢}972,000 + \left(\frac{100,000}{1-0.4}\right)}{\text{GH¢}(20 - 15)}$$

$$= \frac{\text{GH¢}972,000 + 166,667}{5}$$

$$= \text{227,733 units}$$

(4 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

The a) part was on process costing. It was not straight-forward to many candidates and the average prepared candidates were not able to tackle question. Most candidates could not calculate the normal loss, abnormal loss cost per unit of the final output; and as such could not prepare the process account. The average score for this question was below average.

On the b) part, majority of candidates did not struggle to do the calculations on breakeven analysis. Many scored high marks on breakeven point in units and Ghana cedis; number of units that must be sold to earn a certain income tax etc. On the whole candidates performed averagely to a fairly good standard question.

QUESTION TWO

a)

- i) **Incremental Budgeting:** This is the system of budgeting where the previous periods or year's budget is used as basis for preparing the current periods' budget by making incremental adjustments as may be influenced by factors such as inflation, expansion needs and growth. It is simple to apply in practice because you need not develop a decision package and to justify the inclusion of the cost of an item into the budget. The budget perpetuates past inefficiencies and does not lead to the optimal and efficient allocation of budgetary resources.
- ii) **Zero Based Budgeting:** This is a process of budgeting whereby all activities contained in the budget is re-evaluated each time the budget is being prepared. Every item of expenditure must be justified in its entirety in order to be included in the next year's budget. The budget preparation process adds a psychological impetus to employees to avoiding wasteful expenditure. It creates extra paperwork as the process of preparing the decision packages under the ZBB are repetitive and can be cumbersome.
- iii) **Activity based budgeting:** This is a method of budgeting based on activity framework and utilization of a cost driver data in the budget-setting and variance feedback process. It involves defining activities that drive cost and using the level of activity to decide how much resource should be allocated and to determine how well an activity is being managed and to explain variances from budget. The process of preparing budgets using ABB helps managers to identify the cost of an activity and facilitating cost reduction. Sometimes, it can be difficult to trace objectively the cost of an activity to a product.

(2 marks each = 6 marks)

b) Cox Limited

Cost card	GH¢
Selling price (GH¢60,000/2,000units)	30
Direct material (GH¢20,000/2,000units)	10
Direct labour (GH¢10,000/2,000)units)	5
Variable overhead (GH¢6,000/2,000 units)	3
Budgeted production cost	18

(2 marks)

Flexible budget for the month, 31 December, 2022

Areas of performance	Fixed budget 2,000 (GH¢)	Flexible budget 1,400 (GH¢)	Actual result 1,400 (GH¢)	Variance (GH¢)
Production / sales				
Sales (30 x 2,000)	60,000	42,000	42,400	400F
Variable cost:				
Direct material	20,000	14,000	13,200	800F
Direct labour	10,000	7,000	7,600	600A
Variable overhead	6,000	4,200	4,400	200A
Total variable cost	(36,000)	(25,200)	(25,200)	0.00
Contribution	24,000	16,800	17,200	400F
Fixed cost	(20,000)	(20,000)	(20,800)	800A
Net profit or loss	4,000	(3,200)	3,600	400A

(Marks are evenly spread for flexed budget and variance = 10 marks)

Commentary:

Sales variance was GH¢400F. This means that budgeted selling price is (GH¢60,000/2,000units) GH¢30 and actual selling price is (GH¢42,400/1,400 units) GH¢30.285. The overall performance is GH¢400 worse than budgeted. That is, the flexible budget is GH¢3,200 compared with actual loss of GH¢3,600. Control of direct material cost has been very good as this has been GH¢800 better than expected. Direct labor cost is overspent as does fixed overhead by GH¢600 and GH¢200 respectively.

(2 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

This was a standard question that was appropriate for the level. The question was in two parts. The a) part on explanation on classification of budgeting was fairly handled by some of candidates. Others could not proffer any tangible explanations of incremental, zero-based and activity-based budgeting. The b) part on the preparation of flexible budget and variance was challenging to some candidates as they could not determine the flexed budget and the subsequent variances. Overall, some candidates understood the question and answered it appropriately; however, some showed poor knowledge of budgeting.

QUESTION THREE

- a) Key differences between a private sector company and a public sector organization are as follows

	Private Sector (Limited Company)	Public Sector Organisation
Ownership	Shareholders	The people (through the government)
Management	The owners or managers appointed by the owners	Government appointees
Objectives	To make a profit	To provide a service
Funding	From shareholders or borrowing from financial institutions	By grant from the government

(10 marks)

b)

i) **Materials price variance**

	GH¢	
1,200 kg of materials should cost (×GH¢15)	18,000	
They did cost	17,700	
Materials price variance	<u>300</u>	(F)

ii) **Materials usage variance**

	kg	
430 units of output should use (× 2)	860	
They did use	1,075	
Materials usage variance in kg	<u>215</u>	(A)
Standard price per kg of materials	GH¢15	
Materials usage variance (GH¢)	<u>3,225</u>	(A)

iii) **Labour rate variance**

	GH¢	
1,700 labour hours should cost (×GH¢8.50)	14,450	
They did cost	14,637	
Labour rate variance	<u>187</u>	(A)

iv) **Labour efficiency variance**

	hours	
430 units of output should take (× 4)	1,720	
They did take	1,700	
Labour efficiency variance (hours)	<u>20</u>	(F)
Standard rate per labour hour (GH¢)	<u>8.50</u>	

Labour efficiency variance (GH¢)

170 (F)

v) **Variable overheads expenditure variance**

1,700 hours should cost (×GH¢2)

GH¢

3,400

They did cost

3,870

Variable overhead expenditure variance

470 (A)

(2 marks each = 10 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

Most candidates scored high marks in this question than any other question in this diet. The reason was that the a) part of the question required the candidates to explain key differences between a private sector entity and a public sector entity for 10 marks. Surprisingly a few fumbled at answering this question even though it seems simple.

On the other hand, the b) part of the question was quite challenging to some of the candidates. Those who really understood this question scored very high marks and those who did not also scored very low marks. The latter candidates seem not to have any understanding of standard costing.

QUESTION FOUR

a)

i) Overhead Absorption Rate (OAR) computations:

Total overheads	GH¢140,000 (0.5)
Total labour hours	4,500 (0.5)
Units produced	25,000 (0.5)
Total machine hours	11,300 (0.5)
Prime cost	GH¢844,000 (0.5)

OAR	
Labour hour	$\text{GH¢}140,000 \div 4,500 = \text{GH¢}31.1 \text{ per labour hr. (1.5)}$
Unit produced	$\text{GH¢} 140,000 \div 25,000 = \text{GH¢} 5.6 \text{ per unit (1.5)}$
Machine hour	$\text{GH¢} 140,000 \div 11,300 = \text{GH¢}12.39 \text{ per machine hour (1.5)}$
Prime cost	$\text{GH¢} 140,000 \div \text{GH¢}844,000 = 0.17 \text{ times or } 17\% \text{ of prime cost (1.5)}$

(Any 3 OAR @ 2 marks each = 6 marks)

ii) Rates for department 1

OAR	
Labour hour	$\text{GH¢} 45,000 \div 1200 = \text{GH¢}37.5 \text{ per labour hour (1.5)}$
Unit produced	$\text{GH¢} 45,000 \div 8000 = \text{GH¢}5.625 \text{ per unit (1.5)}$
Machine hour	$\text{GH¢} 45,000 \div 2,500 = \text{GH¢}18 \text{ Per machine hour (1.5)}$
Prime cost	$\text{GH¢} 45,000 \div \text{GH¢}336,000 = 0.134 \text{ or } 13.4\% (1.5)$

(Any 2 OAR @ 1.5 marks each = 3 marks)

b) **Under absorbed overheads** occurs where the overhead charged to the actual work is less than the actual overhead incurred.

Over absorbed overhead occurs where the overhead charged to actual work is more than actual overhead incurred.

(1.5 marks each = 3 marks)

c) The effect of over absorbed overhead on profit is that, since the overhead cost charged would have been overstated the cost of goods sold would be overstated thus reducing the profit accordingly. (3 marks)

d) **Assumption in CVP analysis**

- Cost are either fixed or variable. The variable cost per unit is the same at all levels of activity (Output and sales). Total fixed cost are a constant amount in each period.
- Fixed costs are normally assumed to remain unchanged at all levels of output
- The contribution per unit is constant for each unit sold (of the same product).
- The sales price per unit is constant for every unit of product sold; therefore the contribution for sales ratio is also a constant value at all levels of sales.
- If sales per unit, variable cost per unit and fixed costs are not affected by volume of activity, sales and profits are maximised by maximising total contribution.

(Any 4 points @ 1.25 marks each = 5 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

The question was in 4 parts. The part a) expected candidates to calculate absorption rates. The question was quite straight forward but some could not answer it properly. The performance of candidates in sub-questions b) and c) was average. The answers of most candidates on the difference between under and over absorbed overhead and the effect of over absorbed overhead on reported profit were not quite convincing. The d) part was on the assumptions underlying CVP analysis. It was straight-forward and the average prepared candidates were able to state some of the assumptions underlying CVP analysis. A handful of candidates exhibited no understanding of the assumptions underlying CVP analysis.

QUESTION FIVE

a)

i)	Quarter	Quarter No	Trend	Seasonal index	Sales (Quantity)	Sales (GH¢. Million)	
	Jan-Mar	1	24,000	110	26,400	26.4	
	Apr-Jun	2	28,000	90	25,200	25.2	
	Jul-Sep	3	32,000	80	25,600	25.6	
	Oct-Dec	4	36,000	120	43,200	47.5	
						2	
ii)	Y = a + bX						
	$\sum Y = na + b\sum X$		146,400 = 6a + 306b ---->				①
	$\sum XY = a\sum X + b\sum X^2$		7,578,400 = 306a + 15,886b ---->				②
	Y = 4,000,000 + 400X						
	Alternatively;						
	$b = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2}$		= (6*7,578,400 - 306*146,400) / (6*15,886 - 306^2) = 400				
	$a = \frac{n(\sum Y)(\sum x^2) - (\sum x)(\sum XY)}{n(\sum x^2) - (\sum x)^2}$		(146,400/6) - (400*306/6) = 4000				
	Production Overheads budget	Sales (Quantity)	Overheads (GH¢ Million)				
	Jan - Mar	26,400	14.56				
	Apr - Jun	25,200	14.08				
	Jul - Sep	25,200	14.24				
	Oct - Dec	43,200	21.28				

(Marks are evenly spread = 9 marks)

- b) Seasonal adjustment separates a time series into trend-cycle, seasonal, and irregular components.
- i) **Trend-Cycle (C):** Level estimate for each month (or quarter) derived from the surrounding year-or-two of observations. This component shows the long-term movement of the time series.
- ii) **Seasonal component (S):** Effects that are reasonably stable in terms of annual timing, direction, and magnitude. Possible causes include natural elements (usual weather patterns), administrative measures (starting and ending dates of the school year), and social/cultural/religious traditions (fixed holidays such as Christmas). If the series is affected by trading day or moving holiday effects, we include adjustments for these with the seasonal component, even though they are

not strictly seasonal. We often publish the seasonal, trading day, and moving holiday effects as one combined factor, labeled simply as a seasonal factor.

- iii) **Irregular component (I):** Anything not included in the trend-cycle or the seasonal (or combined) component. Its values are unpredictable with respect to timing, impact, and duration. It can arise from sampling error, non-sampling error, unseasonable weather, natural disasters, strikes, etc.

(2 marks each @ 6 marks)

- c) Activities involved in providing information for control purposes include the following:
- Monitoring actual performance and comparing actual performance with the objective or plan
 - Evaluating actual performance and
 - Taking control action where appropriate

(3 points @ 1.667 marks each = 5 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

The question was in three parts. With the exception of the a) part which most candidates attempted and scored average marks the b) and c) were poorly answered by most candidates. There was a gross display of lack of understanding of simple regression equation vis-à-vis forecasting tools.

The b) part of the question required the candidates to forecast sales using a specific model i.e., trend analysis and subsequently use the sales figures to prepare budgets. Majority of the candidates could not calculate the expected forecast of quarterly sales and production overheads. This specific area still remains a difficult area and has seen poor candidates' performance over the last five sittings. In sub question b) some candidates could not explain terms given i.e. trend-cycle, seasonal components, and irregular components. Also, the performance of candidates in sub question (c) was average and quite surprising. Activities involved in providing information for control purposes are treated as part of the introductory topic for this course.

The question was clear but a little complicated and as such many candidates could not provide the required answers. Some of the candidates did not tackle this question at all. General performance was below average.

CONCLUSION

Recommendations for the observed weaknesses and advice to future candidates:

- Candidates should adequately prepare for the paper by ensuring that costing principles and methods are well understood.
- Candidates should ensure that they proficiently and capably know how costing principles and methods are applied.

- Candidates should take their time to understand the requirements of the questions before they start answering them.
- Candidates should attempt first the questions that relatively easier and straight-forward to them