

**MAY 2021 PROFESSIONAL EXAMINATION
INTRODUCTION TO MANAGEMENT ACCOUNTING (PAPER 1.4)
CHIEF EXAMINER'S REPORT, QUESTIONS AND MARKING SCHEME**

STANDARD OF THE PAPER

The paper covered all relevant topics in the syllabus, and the questions were standard and comparable to other accountancy examining bodies.

Mark 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.

PERFORMANCE OF THE CANDIDATES

The general performance of the candidates was average with a reasonable number of passes. However, the May 2021 diet witnessed a higher pass rate of 51.38% compared to 49.08% for the November 2020 diet.

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. There were no signs of copying at a particular centre identified.

NOTABLE STRENGTH AND WEAKNESS OF CANDIDATES

Candidates exhibited sufficient knowledge in areas such as apportionment of overhead costs of service centres to production centres, budgeting, preparation of operating statements under marginal and absorption costing methods, and forecasting. All of the strong performers exhibited accuracy, precision and a better understanding of these areas.

Many candidates did not adequately understand the costing principles required very well to enable them to write the exams successfully. Many candidates did not take adequate time and effort to understand the requirements of the questions and therefore did not perform well in questions on cash operating cycle and calculation of number of batches, machine setups per batch, total number of setups and budgeted cost per set up.

QUESTION ONE

The following data has been extracted from the operating records of QQQ Ltd for the last two quarters of the year to 31 December, 2020:

Quarter	3	4
Production units	7,000	8,500
Sales units	5,500	9,500

	GH¢
Selling price per unit	100
Variable manufacturing cost per unit:	
Direct material cost	20
Direct labour cost	15
Variable overheads	10

Fixed production overheads are budgeted at GH¢120,000 for a budgeted production of 8,000 units per quarter. These overheads are absorbed on per unit of production basis.

Non-production overheads comprised:

Fixed administration expenses GH¢40,000 per quarter.

Selling and distribution expenses 10% of sales.

Required:

Prepare a statement of profit or loss for each quarter using:

- a) The Marginal Costing technique (10 marks)
- b) The Absorption Costing technique (10 marks)

(Total: 20 marks)

QUESTION TWO

- a) QR uses an activity based budgeting (ABB) system to budget product cost. It manufactures two products, product Q and product R. The budget details for these two products for the forthcoming period are as follows:

	Product Q	Product R
Budgeted production (units)	80,000	120,000
Number of machine setups per batch	4	3
Batch size (Units)	5,000	4,000

The total budget cost of setting up the machine is GH¢74,400

Required:

- i) State and explain **THREE (3)** objectives of budgeting. (6 marks)
- ii) Calculate the budgeted machine set up cost per unit of product Q and R. (5 marks)
- iii) State **THREE (3)** benefits and **TWO (2)** limitations of using an activity based budgeting system. (5 marks)

- b) A company has annual sales revenues of GH¢30 million and the following working capital periods:

Inventory conversion period	2.5 months
Accounts receivable collection period	2.0 months
Accounts payable payment period	1.5 months

Production costs represent 70% of sales revenue.

Required:

Calculate the total amount held in working capital excluding cash and cash equivalents.

(4 marks)

(Total: 20 marks)

QUESTION THREE

- a) Kwame Adjei has been invited to bid for a contract to construct a place of convenience for a school at Gorlu in the Upper East Region. He has estimated the following expenses to be incurred to execute the contract.

- Cost of concrete mixer bought at GH¢ 70,000 three years ago, has a written down value of GH¢52,000.
- Stones bought six months ago at GH¢1,800 per trip currently sells at GH¢2,200 per trip. The contractor constantly uses the stones.
- 200 bags of cement bought three months ago at GH¢40 per bag, currently sells at GH¢45 per bag.
- Sand to be bought at GH¢900 per trip.
- Each mason is to be paid GH¢80 per day.
- 600 pieces of 5” blocks sells at GH¢3 per piece.

Required:

- i) Identify and explain **TWO (2)** costs that cannot be used in bidding for the contract. **(4 marks)**
- ii) Identify and explain **THREE (3)** costs that can be used to bid for the contract. **(6 marks)**
- b) Outline **FIVE (5)** qualities of good management accounting information system. **(5 marks)**
- c) State and explain **FIVE (5)** uses of costs and management accounting information to a profit making organisation. **(5 marks)**

(Total: 20 marks)

QUESTION FOUR

- a) The summary of overheads for the three production departments and two service departments of a company have been provided below.

Department	A	B	C	S1	S2
Overheads (GH¢)	20,000	15,000	25,000	18,000	12,000

The service departmental costs are apportioned as follows

	A	B	C	S1	S2
S1	25%	30%	35%	-	10%
S2	30%	30%	25%	15%	-

Required:

Apportion the service center costs and determine the total production departments' overheads after the apportionment. **(15 marks)**

- b) Concrete Masters Ltd uses two main materials, Q and R in the manufacture of its concrete blocks for sale. The materials are combined in the ratio 3:2 respectively. The following information has been extracted from the operating records of the company for the half-year ended 31 December, 2020:

Standard prices:

	GH¢
Material Q	50
Material R	30

Actual Results:

Quantities bought and used:		GH¢
Material Q	9,000 kg @ Total cost of	405,000
Material R	8,000 kg @ Total cost of	256,000

Required:

Compute the Direct Materials Price Variance for each material and the total for the company. **(5 marks)**

(Total: 20 marks)

QUESTION FIVE

- a) A company is preparing its annual budget and it is estimating the number of units of Product W that would be sold in each quarter of year 2. Past experience has shown that the trend for sales of the product is represented by the following relationship:

$y = a + bx$ where:

y = quantity of sales units in the quarter

a = 15,000

b = 3,000

x = the quarter number where 1 = quarter 1 of year 1

Actual sales of Product W in year 1 were affected by seasonal variations and were as follows:

Quarter 1: 20,250 units

Quarter 2: 19,425 units

Quarter 3: 25,200 units

Quarter 4: 24,300 units

Required:

Calculate the expected unit sales of Product W for each quarter of year 2, after adjusting for seasonal variations using the multiplicative model. **(6 marks)**

- b) The records of direct labour hours and total factory overhead cost of Cooper Limited over the first six months of its operations are given below:

	Direct labour Hours	Total factory Overheads GH¢000
September 2020	50,000	14,800
October 2020	80,000	17,000
November 2020	120,000	23,800
December 2020	40,000	11,900
January 2021	100,000	22,100
February 2021	60,000	16,150

Management is interested in distinguishing between the fixed and variable portions of the overheads.

Required:

Using the least square regression method, estimate the variable cost per direct labour hour and the total fixed cost per month. **(9 marks)**

- c) State and explain the methods used in setting:
Direct Material Cost Standard. **(2.5 marks)**
Direct Labour Cost Standard. **(2.5 marks)**

(Total: 20 marks)

SOLUTION TO QUESTIONS

QUESTION ONE

Marginal and Absorption Costing

- a) Marginal Costing Statement of Profit or Loss for the two Quarters to 31st December, 2020

	<u>Quarter 3</u>		<u>Quarter 4</u>	
	<u>GH¢</u>	<u>GH¢</u>	<u>GH¢</u>	<u>GH¢</u>
Sales (W1)		550,000		950,000
Variable cost of goods sold:				
Production cost:				
Opening Inventory		-	67,500	
Production (W2)	315,000		382,500	
Closing Inventory	<u>(67,500)</u>		<u>(22,500)</u>	
	247,500		427,500	
<u>Non-Production Cost:</u>				
Selling & Dist. Cost	<u>55,000</u>	<u>(302,500)</u>	<u>95,000</u>	<u>(522,500)</u>
Contribution		247,500		427,500
<u>Fixed Costs:</u>				
Production	120,000		120,000	
Non-production	<u>40,000</u>	<u>(160,000)</u>	<u>40,000</u>	<u>160,000)</u>
Net profit		<u>87,500</u>		<u>267,500</u>

(10 marks)

- b) Absorption Statement of profit or loss for the two Quarters to 31st December, 2020

	<u>Quarters 3</u>		<u>Quarters 4</u>	
	<u>GH¢</u>	<u>GH¢</u>	<u>GH¢</u>	<u>GH¢</u>
Sales		550,000		950,000
<u>Cost of Sales:</u>				
Opening Inventory		-	90,000	
Production	420,000		510,000	
Closing Inventory	<u>(90,000)</u>	<u>(330,000)</u>	<u>(30,000)</u>	<u>(570,000)</u>
		220,000		380,000
Expense:				
Selling & Dist.	55,000		95,000	
Admin. Expenses	<u>40,000</u>	<u>(95,000)</u>	<u>40,000</u>	<u>(135,000)</u>
		125,000		245,000
Over / (Under) Absorption		<u>(15,000)</u>		<u>7,500</u>
Net Profit		<u>110,000</u>		<u>252,500</u>

(10 marks)

WORKINGS

Computation of Product Cost/unit

	<u>Marginal Costing</u>	<u>Absorption</u>
<u>Costing</u>		
	GH¢	GH¢
Direct Material Costs	20	20
Direct Labour	15	15
Variable Overheads	10	10
Fixed Overheads	-	<u>15</u>
Product cost/unit	<u>45</u>	<u>60</u>

Computation of over/ (under) absorption of overheads

	Quarter 3	Quarter 4
	GH¢	GH¢
Overheads absorbed	105,000	127,500
Overheads incurred	<u>(120,000)</u>	<u>(120,000)</u>
Over/ (under) absorption	<u>(15,000)</u>	<u>7,500</u>

(Total: 20 marks)

CHIEF EXAMINER'S COMMENT

Most candidates answered the question convincingly. The question was well understood with just a few candidates unable to solve or find the under/over absorption cost component and the closing inventory figure.

QUESTION TWO

a)

i) **Objectives of a budgetary control system**

- **To compel planning**

Budgeting makes sure that managers plan for the future, producing detailed plans to ensure the implementation of the company's long term plan. Budgeting makes managers look at the year ahead and consider the changes in conditions that might occur and how to respond to those changes in conditions.

- **To co-ordinate activities**

Budgeting is a method of bringing together the activities of all the different departments into a common plan. Suppose an advertising campaign is due to take place in a company in three months, for example. In that case, the production department must know about the expected increase in sales to scale up production accordingly. Each different department may have its ideas about what is good for the organisation.

- **To communicate activities**

Through the budget, top Management communicates its expectations to lower-level Management. Each department has a part to play in achieving the company's desired results, and the annual budget is the means of formalising these expectations. The whole process of budget setting, whereby information is shared between departments, facilitates this communication process.

- **To motivate managers to perform well.**

The budget provides a basis for assessing how well managers and employees are performing. In this sense, it can be motivational.

- **To establish a system of control.**

Expenditure within any organisation needs to be controlled, and the budget facilitates this. Actual results are compared to expected results, and the reasons for any significant, unexpected differences are investigated. Sometimes the reasons are within the control of the departmental manager, and he/she must be held accountable; at other times, they are not.

- **To evaluate performance**

Often, managers and employees will be awarded bonuses based on achieving budgeted results. This makes more sense than evaluating performance by simply comparing the current year to the previous year. The future may be expected to be very different from the past as economic conditions change. Also, events happen that may not be expected to reoccur.

- **Other possible objectives include:**

- To delegate authority to budget holders
- A formal budget permits budget holders to make financial decisions within the specified limits agreed, i.e. to incur expenditure on behalf of the organisation.
- To ensure achievement of the Management's objectives

(Any three well explained points @ 2 marks each = 6 marks)

ii)

	Product Q	Product R	Total
Number of batches	$80,000/5,000 =$	$120,000/4,000 =$	
	16	30	
Machine setups per batch	4	3	
Total number of setups	64	90	154
Budgeted cost of setups			GH¢74,400
Budgeted cost per set up			GH¢74,400/154 = GH¢483.12

Budgeted cost per unit of product Q:

Total number of setups = 64

Total budgeted set up costs = $64 \times \text{GH¢}483.12 = \text{GH¢ } 30,919.48$

Budgeted set up costs per unit = $\text{GH¢}30,919.48/80,000 \text{ units} = \text{GH¢}0.39 \text{ per unit}$

Budgeted cost per unit of product R:

Total number of setups = 90

Total budgeted set up costs = $90 \times \text{GH¢}483.12 = \text{GH¢ } 43,480.51$

Budgeted set up costs per unit = GH¢43,480.51/120,000 units = GH¢0.36 per unit
(5 marks)

iii) **Advantages of Activity-Based budgeting are as follows:**

- Activity-based budgeting provides a clear framework for understanding the link between costs and the level of activity.
- Activity-based budgeting allows the ranking of activities and the determination of how limited resources should be allocated across competing activities.
- Activity-based budgeting is helpful for the review of capacity utilisation. For example, if it is known that the resources devoted to a particular activity are above those currently required, then these resources can be reduced or redeployed.
- Activity-based budgeting allows the identification of value-added and non-value added activities and ensures that any budget cuts are made to non-value-added activities.

(Any three points @ 1 mark each = 3 marks)

Disadvantages related to the Activity-Based budgeting are as follows:

- Activity-Based budgeting is a lengthy and comprehensive process that requires a considerable amount of time and resources on an entity. Spending too much on analysing may prove to be counterproductive.
- It requires a well-groomed talented team of experts in finding gaps and are equally competent in reporting and using the necessary software as it is a complex process on which the direction of the company is dependent.
- While preparing an Activity Based Budget, the axis of focus may shift to immediate and short term results, and the bigger picture may be ignored, causing damage in the long term.
- It is based on forecasting using historical data and future expectations, which may sometimes prove unreliable if the situations or scenarios planned do not come out to be what was expected to lead to problems that can hamper the entity and its resources.
- Activity-Based budgeting provides only supplemental information.

(Any two points @ 1 mark each = 2 marks)

b)

Inventory GH¢30m × 0.7 × 2.5/12 = GH¢4.375m

Accounts receivable GH¢30m × 2/12 = GH¢5m

Accounts payable GH¢30m × 0.7 × 1.5/12 = GH¢2.625m

Total working capital is GH¢4.375m + GH¢5m - GH¢2.625m = GH¢6.75m

(4 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENTS

The question met standard requirements but proved difficult for candidates, especially sub-question 2aii); Calculate the budgeted machine set-up cost per unit of product Q and R. Almost all candidates could not get the correct answer. Question 2b

also proved a little difficult for candidates as they were unable to calculate the working capital using the given data. However, the question was straightforward and did not need much effort to score good marks.

QUESTION THREE

a)

i) **Irrelevant costs**

- Cost of the concrete mixer of GH¢70,000. This is sunk cost
- Written down value of concrete mixer GH¢52,000
- Purchase price of sand GH¢1,800; this is historical cost.
- The purchase price of the cement bought three months ago, GH¢ 40 per bag. Historical cost.

(Any two points @ 2 mark each = 4 marks)

ii) **Relevant costs**

- Replacement cost of the sand GH¢2,200. The sand should be replaced if used.
- Replacement cost of cement GH¢45. The cement will be replaced.
- Cost of sand GH¢900, this is yet to be bought it is avoidable.
- The cost of the 600 pieces of 5" blocks to be purchased at GH¢3 per piece. Future cost and avoidable.
- The payment to be made to the masons. This is a future cost and avoidable cost.

(Any three points @ 2 mark each = 6 marks)

b) **Qualities of good management information**

- **Completeness**; include all information necessary for decision making
- **Understandable**; users should understand it to be able to use it for decision making,
- **Relevance**; relate to the specific decision to be taken.
- **Reliability**; should not mislead users to take the wrong decisions.
- **Comparability**; information should be prepared on the same basis to make it comparable.
- **Timeliness**; the information should be ready at the time needed.
- **Accuracy**; should be free from material errors.

(Any five points @ 1 mark each = 5 marks)

c) **Uses of costs and management accounting information to a profit-making organisation.**

- Useful in ascertaining the cost of production per unit basis, such as cost per kg, cost per metre, cost per litre, cost per ton, etc.
- Cost and management accounting information help in the determination of product selling price. It enables the firm to determine the cost of production on a scientific basis, which helps fix the selling prices appropriately.
- Cost and management accounting information help in cost control and strategic cost management.

- Ascertainment of division wise, activity-wise and unit wise profitability becomes possible through cost accounting.
- Cost and management accounting information also help in locating wastages, inefficiencies and other loopholes in the production processes/services offered.
- Cost and management accounting information help in the presentation of relevant data to the Management, which helps in decision making. Decision making is one of the important functions of Management, and it requires the presentation of relevant data. Cost accounting enables the presentation of relevant data in a systematic manner so that decision making becomes possible.
- Cost and management accounting information also help in the estimation of costs for the future.

(Any 5 points @ 1 mark each = 5 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENTS

Some candidates found sub-questions 3ai) and 3aaii) difficult to attempt or even answer. The answers were clearly in the question given, but candidates introduced material outside the question to respond or try to answer. Some had difficulties distinguishing between relevant and irrelevant costs, historical cost and sunk cost.

QUESTION FOUR

- a) Apportionment of Service Centre costs to Production Centres.

$$S1 = 18,000 + .15 S2$$

$$S2 = 12,000 + .10 S1$$

$$S1 = 18,000 + .15(12,000 + .10 S1)$$

$$= 18,000 + 1,800 + .015 S1$$

$$0.985 S1 = 19,800$$

$$S1 = 20,102$$

$$S2 = 12,000 + .10(20,102)$$

$$S2 = 14,010$$

	A	B	C
Balance	20,000	15,000	25,000
S1 (20102)	5,026	6,031	7,036
S2 (14010)	4,203	4,203	3,503
TOTAL	29,229	25,234	35,539

ALTERNATIVELY

	A GH¢	B GH¢	C GH¢	S1 GH¢	S2 GH¢
Allocated Overheads	20,000	15,000	25,000	18,000	12,000
Apportion S1(W1)	4,500	5,400	6,300	(18,000)	1,800
Apportion S2(W2)	4,140	4,140	3,450	2,070	(13,800)
Apportion S1(W3)	517.50	621	724.50	(2,070)	207
Apportion S2 (W4)	73	73	61		(207)
	29,230.50	25,234	35,535.5		

Workings

Apportionment of S1

$$A = 25 / 100 \times 18000$$

$$= 4,500$$

$$B = 30 / 100 \times 18000$$

$$= 5400$$

$$C = 35 / 100 \times 18000$$

$$= 6,300$$

$$S2 = 10 / 100 \times 18,000$$

$$= 1,800$$

Apportionment of S2

$$A = 30 / 100 \times 13800$$

$$= 4,140$$

$$B = 30 / 100 \times 13800$$

$$= 4,140$$

$$C = 25 / 100 \times 13800$$

$$= 3,450$$

$$S1 = 15 / 100 \times 13800$$

$$= 2,070$$

Apportionment of S1

$$A = 25 / 100 \times 2070$$

$$= 517.50$$

$$B = 30 / 100 \times 2070$$

$$= 621$$

$$C = 35 / 100 \times 2070$$

$$= 724.50$$

$$S2 = 10 / 100 \times 2070$$

$$= 207$$

Apportionment of S2

$$A = 30 / 85 \times 207$$

$$= 73.06$$

$$B = 30 / 85 \times 207$$

$$= 73.06$$

$$C = 25 / 85 \times 207$$

$$= 60.88$$

(15 marks)

b) Concrete Masters Ltd

Material Price Variances

Material Q

9,000kg should have cost (9,000xGH¢50)

GH¢

450,000

Bud did cost

405,000

Variance

45,000 F

<u>Material R</u>	
8,000kg should have cost (8,000xGH¢30)	240,000
Bud did cost	<u>256,000</u>
Variance	<u>16,000</u> A

Total for the Company	
Material Q	45,000 F
Material R	<u>16,000</u> A
Total material price variance	<u>29,000</u> F

(5 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENTS

Another standard question that 70% of the candidates answered very satisfactorily. The answer had 2 different approaches and algebraic, apportionment sheet based on rates till zero amount. The candidates used all the methods, with the majority using the apportionment sheet sharing the service cost on the departments till it gets to zero.

QUESTION FIVE

a)

Quarter	Trend sales units	Actual sales units	Variation
1	18,000	20,250	+12.5%
2	21,000	19,425	-7.5%
3	24,000	25,200	+5.0%
4	27,000	24,300	-10.0%

Forecast sales

Year 2 Quarter 1 = $15,000 + (3,000 \times 5) = 30,000 + 12.5\% = 33,750$ units

Year 2 Quarter 2 = $15,000 + (3,000 \times 6) = 33,000 - 7.5\% = 30,525$ units

Year 2 Quarter 3 = $15,000 + (3,000 \times 7) = 36,000 + 5.0\% = 37,800$ units

Year 2 Quarter 4 = $15,000 + (3,000 \times 8) = 39,000 - 10.0\% = 35,100$ units

(6 marks)

b)

	Direct labour hour (x)	Overheads (y)	(Xy)	(x ²)
September 2020	50	14,800	740,000	2,500
October 2020	80	17,000	1,360,000	6,400
November 2020	120	23,800	2,856,000	14,400
December 2020	40	11,900	476,000	1,600
January 2021	100	22,100	2,210,000	10,000

February 2021	60	16,150	969,000	3,600
	450	105,750	8,611,000	38,500

$$\begin{aligned} \text{variable cost per unit} &= \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2} \\ &= \frac{6 \times 8,611,000 - 450 \times 105,750}{6(38,500) - (450)^2} \\ &= \frac{4,078,500}{28,500} = 143.1053 \end{aligned}$$

$$\begin{aligned} \text{Fixed costs per month} &= \frac{(\sum y) - b(\sum x)}{n} \\ &= \frac{105,750 - 143.11(450)}{6} \\ &= \text{GH¢ } 6,892 \end{aligned}$$

(9 marks)

c)

i) Direct material means a material used for manufacturing and forming a major portion of a product. A cost is predetermined for the direct material, i.e. Standard Cost for Direct Material.

The following are the three important standards fixed for direct material:

- Quality standard;
- Quantity standard;
- Price standard.

ii) Direct labour refers to the work done by employees who work directly on the goods being produced. (Indirect labour relates to the employees who work in the production area but do not work directly on the products. An example of indirect labour is the employees who set up or maintain the equipment.)

Unlike direct materials (which are obtained before being used), direct labour is obtained and used simultaneously. This means that for the given good output, we can compute the following at the same time (when goods are produced):

- Standard direct labour cost
- Direct labour rate variance
- Direct labour efficiency variance

(5 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENTS

This question proved to be the most difficult for May 2021 sitting since about 70% of the candidates were not successful in their response. Sub-question 5a on expected units of sales after adjusting for seasonal variation using the multiplicative model was poorly answered.

Sub question 5c) on state and explain the methods used in setting Direct Material cost standard and Direct labour cost standard was poorly answered. Most candidates didn't understand the question and its expected answer.

CONCLUSION

Recommendations for the observed weakness 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 to answer them.
- Candidates should attempt first the questions that relatively are straightforward to them.