



APPLICATION LEVEL EXAMINATION

2024-2029 Syllabus

Mock Exam

MANAGEMENT ACCOUNTING

Paper 2.2

QUESTION ONE

- a) Axim (White Goods) Limited manufactures three items of domestic equipment – fridge/freezers (FFs), washing machines (WMs) and dishwashers (DWs). It has been manufacturing these products and selling them to retail organisations for many years. As production technology has advanced and production lines have become automated, the direct labour requirements for manufacturing these products have fallen considerably.

Data about annual sales and costs for the three products are as follows.

Product	Annual output and sales	Annual direct labour hours	Raw materials and components per unit
	units		GH¢
FF	5,000	40,000	90
WM	8,000	40,000	40
DW	4,000	20,000	20

The direct labour employees are paid GH¢10 per hour.

Axim uses a system of absorption costing for measuring output costs and the profitability of each product. It is now considering whether to replace the traditional absorption costing system, using a single factory-wide direct labour hour absorption rate, with a system of activity based costing (ABC).

It has been decided that there are four main cost drivers that generate overhead costs. These are:

Activity	Cost driver
Deliveries to retailers	The number of deliveries to major retailer customers
Set-up costs	The number of times the production assembly line has to be set up for a new batch of output units
Order processing	The combined number of sales orders and purchase orders
Sales returns handling	The number of sales returns from customers

The annual volumes for each of these cost drivers and for each of the three products are as follows:

Product	Number of deliveries to customers	Number of set-ups	Number of orders handled	Number of sales returns
FF	600	300	600	40
WM	300	150	240	160
DW	100	50	60	80

The annual overhead costs for these activities are as follows:

	GH¢
Deliveries to retailers	2,400,000
Set-up costs	1,000,000
Order processing	1,500,000
Sales returns handling	700,000

Required:

- a) Calculate the cost per unit for each product using traditional methods, absorbing overhead on the basis of labour hours **(4 marks)**
- b) Calculate the cost per unit for each product using ABC principles. **(10 marks)**
- c) Explain the reasons for the differences in costs calculated using absorption and activity based costing. **(3 marks)**
- d) Briefly explain the benefits of switching to an ABC costing system for Axim with particular reference to the measurement of profit and pricing decisions. **(3 marks)**

(Total: 20 marks)

QUESTION TWO

- a) A value chain is a concept describing the full chain of a business's activities in creating a product or service from initial receipt of materials through its delivery to market.

The value chain framework encompasses five primary activities -inbound operations, operations, outbound logistics, marketing and sales, and service -and four secondary activities -procurement and purchasing, human resource management (HRM), technological development and company infrastructure.

Required:

Explain the significance of the *value chain* for business strategy. **(5 marks)**

- b) Sheriffa Ltd is engaged in manufacturing and sale of footwear. The company maintains one central factory and warehouse and sells its products through company operated retail outlets as well as through distributors. Management is in the process of preparing the budget for the year 2023 on the basis of the following information:

- The marketing director has provided the following annual sales projections:

	No. of units	Retail price range (GH¢)
Men	1,200,000	100 – 400
Women	500,000	85 – 250

- It has been estimated that 30% of the units would be sold through distributors who paid GH¢95 and GH¢70 per footwear for men and women respectively.
- The remaining 70% will be sold through company operated retail outlets.
- The previous pattern of sales indicates that 60% of these units are sold at the minimum price; 10% units are sold at the maximum price and remaining 30% at a price of GH¢200 and GH¢120 per footwear for men and women respectively.
- The company incurs variable cost of GH¢45 per footwear regardless of whether sales is through company operated retail outlet or distributors.
- The company operates 22 outlets all over the country. The fixed costs per outlet are GH¢12,000 per month and include rent, electricity, maintenance etc.
- Fixed costs for the factory and head office are GH¢4.5 million and GH¢1.5 million per month respectively.

Required:

- i) Prepare budgeted profit and loss account for the year 2023 for Sheriffa Ltd. **(13 marks)**
ii) Explain the term budget manual **(2 marks)**

(Total: 20 marks)

QUESTION THREE

- a) Mokobi Enterprise has provided you with the following information for the production of Kakatsofa, for the month of September.

Standard cost card		GH¢
Direct material Cost		6
Direct labour cost		5
Variable manufacturing overhead		4
Fixed manufacturing overhead		6
Selling Price		30
Budgeted Sales (Volume)		11,000
Actual Sales		10,200
Budgeted Production (Volume)		9,500
Actual Production		11,000
Fixed overhead volume variance		4500 A
Fixed overhead spending variance		6000 F

Required:

- Calculate sales margin volume variance using a variable costing technique. **(3 marks)**
 - Calculate sales margin volume variance using an absorption costing technique **(3 marks)**
 - Calculate the actual cost of fixed overhead of Kakatsofa for September **(2 marks)**
 - Why is the result in (i) more appropriate than (ii)? **(2 marks)**
- b) If businesses want to keep thriving, they need to adapt their strategies towards long term success in financial and non-financial terms. They need to identify where they create or destroy value and adapt their strategies accordingly. Accountants can be a strategic partner for companies' transition towards a more sustainable future.

Required:

Identify **FOUR** ways Management Accountants can deliver on helping companies get more sustainable. **(6 marks)**

- Explain the key aspects of Total Quality Management. **(4 marks)**

(Total: 20 marks)

QUESTION FOUR

- a) The Ministry of Social Affairs of Ghana in a bid to curb the growing infant and maternal mortality cases in the country has decided to undertake a special project. The project which will be a multipurpose facility for dealing with special cases is expected to be financed by foreign borrowing from development partners. The successful implementation of this project is expected to greatly contribute to the broader efforts of improving on the life expectancy of pregnant women and babies.

Further details of the project are set out below:

- The project is to be financed with an initial capital outlay of GH¢21,000,000.
- Expected financial benefits in the form of donations, grants and marginal user charges are expected to be GH¢15,500,000 per annum for the first three years of the project's life. This is expected to decline by 40% for the last two years of the project's life. The project is not expected to generate any cash benefits after five years of its implementation because more contemporary approaches would have been embraced by then.
- Direct costs of running the facility are expected to be 40% of financial benefits per annum.
- Other costs of running the facility are expected to be 10% of cash benefits.
- The government of Ghana currently borrows at 6% from its development partners.
- As a result of the inability of government to secure the entire amount of funding from development partners, a local finance house has stepped in to provide the financing shortfall of this project at the same terms as the foreign partners which represents 20% of the amount. Consequently, 20% of the net cash benefits of the project are expected to be paid to this local partner. Assume that this amount will be paid one year after the benefit is made.

Required:

- i) Determine whether the financial benefit can cover the investment cost using discounted cash flows, (Assume all cash flows arise annually in arrears) **(8 marks)**
- ii) Determine the duration it will take the facility to generate cashflows to payback the amount of the initial capital outlay. (Assume that all cash flows arise at the end of the year with the exception of the initial capital outlay which arises on the first day of the project. Ignore the time value of money). **(4 marks)**
- iii) Identify **THREE** challenges associated with public sector project appraisal. **(3 marks)**
- b) With regard to variance analysis for all production costs (direct material, direct labour, and overhead), it is important to note that each variance does not represent a separate and distinct problem to be handled in isolation. All variances in one way or another are interdependent.

Required:

- i) Explain what you understand by the term ***“inter-relationship between variances”***. **(2 marks)**
- ii) Explain possible reasons for inter-relationship between ***material variances*** and ***labour variances***. Support your answer with examples. **(3 marks)**

(Total: 20 marks)

QUESTION FIVE

Meditech (Ghana) Limited makes and sells a product, the Salve, which is nearing the end of its life. A replacement product, Unguent, has been designed and test marketed and the company is trying to decide when to replace Salve with Unguent. Meditech (Ghana) Limited only has the capability to produce one of the two products at a time.

Sales of Salve are expected to be 100,000 units in the first quarter of 2019 and are forecast to fall after that so that each quarter's sales will be 10% less than those of the previous quarter. Salve has a selling price of GH¢14 per unit and its contribution to sales ratio (C/S ratio) is 40%. The fixed costs of making Salve in 2019 will be GH¢200,000 per quarter.

Test market results for Unguent were very good and demand for similar products is growing rapidly. Meditech (Ghana) Limited believes that sales of Unguent can be predicted by the following equation:

$$Y = 80,000 + 6,000 T$$

Where:

Y = sales of Unguent in units per quarter

T = time, measured in quarters. For the first quarter of 2019 (that is, January to March 2019),

T = 1; for the second quarter of 2019, T = 2; etc

The selling price of the Unguent will be GH¢16 and its contribution per unit will be GH¢6. Fixed costs will increase to GH¢240,000 per quarter if Salve is replaced by Unguent.

Required:

- a) Calculate the budgeted profit under each of the following circumstances:
 - i) Meditech (Ghana) Limited continues to sell Salve and does not introduce Unguent in 2019.
 - ii) Meditech (Ghana) Limited introduces Unguent and discontinues Salve as from 1 January 2019.

(8 marks)

To avoid disruption of the production of Meditech's other products the changeover between Salve and Unguent must take place on either 1 January 2019 or 1 July 2019. The costs of changeover will differ depending upon which date is chosen and the following information is available.

- i) Some of the machinery used to make the Salve will no longer be required for the Unguent. The written down value of this machinery will be GH¢250,000 at 1 January 2019, and GH¢220,000 by 1 July 2019. Its net realisable value at 1 January 2019 will be GH¢140,000, but by 1 July 2019 it will be GH¢30,000.
- ii) Some redundancies will result from the change of products. Redundancy payments of GH¢40,000 will be made if the changeover occurs on 1 January, but these will rise to GH¢50,000 by 1 July. The five administration workers concerned are each paid GH¢20,000 per annum and will not be replaced. Their wages are not included in the costs given in part (a).

Required:

Recommend the most profitable changeover date. You should include a schedule of relevant costs and revenues and provide explanations of your figures. **(12 marks)**

(Total: 20 marks)

SOLUTION TO QUESTIONS

QUESTION ONE

(a) **Traditional absorption costing**

Total overheads = (in GH¢000: 2,400 + 1,000 + 1,500 + 700) GH¢5,600,000

Total direct labour hours = 40,000 + 40,000 + 20,000 = 100,000

Absorption rate per direct labour hour = GH¢5,600,000/100,000 = GH¢56.

	Labour hours per unit	Labour cost (GH¢)	Overhead cost (GH¢)
FF	8	80	448
WM	5	50	280
DW	5	50	280

	FF	WM	DW
	GH¢	GH¢	GH¢
Direct materials	90	40	20
Direct labour (at GH¢10 per hour)	80	50	50
Overheads (at GH¢56 per hour)	448	280	280
Cost per unit	618	370	350

(4 marks)

(b) **Activity based costing**

Cost drivers

Deliveries to retailers

GH¢2,400,000/1,000 deliveries = GH¢2,400 per delivery

Set-up costs

GH¢1,000,000/500 set-ups = GH¢2,000 per set-up

Order processing

GH¢1,500,000/900 orders = GH¢1,667 per order

Sales returns handling

GH¢700,000/280 returns = GH¢2,500 per sales return

	FF	WM	DW
	GH¢	GH¢	GH¢
Direct materials	90	40.0	20
Direct labour (at GH¢10 per hour)	80	50.0	50

	FF	WM	DW
	GH¢	GH¢	GH¢
Overheads			
Deliveries			
600 × GH¢2,400/5,000	288		
300 × GH¢2,400 / 8,000		90.0	
100 × GH¢2,400/4,000			60
Set-ups			
300 × GH¢2,000/5,000	120		
150 × GH¢2,000 / 8,000		37.5	
50 × GH¢2,000/4,000			25
Orders			
600 × GH¢1,667/5,000	200		
240 × GH¢1,667 / 8,000		50.0	
60 × GH¢1,667/4,000			25
Sales returns			
40 × GH¢2,500/5,000	20		
160 × GH¢2,500 / 8,000		50.0	
80 × GH¢2,500/4,000			50
Cost per unit	798	317.5	230
			(10 marks)

(c)

	FF	WM	DW
Volume	5,000	8,000	4,000
Cost per unit using absorption costing	618	370	350
Cost per unit using activity based costing	798	317.5	230

The cost of FF has increased using activity based costing and the costs of WM and DW have fallen compared to the traditional method. WM is a high volume product which attracted a high amount of overhead using the traditional overhead absorption basis of labour hours. It uses less deliveries, set ups and orders than FF and therefore generates less overhead cost. FF is a lower volume product but has a relatively high usage of overhead activities and therefore the cost increased under activity based costing.

(3 marks)

- (d) It can be argued that switching to ABC results in more accurate costs and therefore a more accurate assessment of the profitability of each product. If selling prices are unchanged then the profitability of FF will fall dramatically and the viability of the product may be questioned. In the short term the product will remain viable as long as the product generates a contribution but in the long term attributable fixed overheads must also be covered.

Identifying the cost drivers of each product may help managers find ways of changing the production process to reduce costs and so improve the profitability of all products.

If prices are calculated on a cost plus basis then this will lead to an increase of the price of FF and reductions of the prices of WM and DW. Depending on the type of market and the level of competition then this may not lead to increases in revenue. Customers may not be prepared to pay more for FF. If the market is highly competitive and demand is price elastic then an increase in price may lead to a more than proportionate fall in volume. Managers may prefer to hold the price and live with a reduced profit margin.

(3 marks)

(Total: 20 marks)

QUESTION TWO

a) The value chain framework helps organizations identify sources of their positive or negative cost efficiency. Conducting a value chain analysis can help businesses with the following:

- Support decisions for various business activities.
- Diagnose points of ineffectiveness for corrective action.
- Understand linkages and dependencies between different activities and areas. For example -- issues in HRM and technology are broadly impactful.
- Optimize activities to maximize output and lower costs.
- Establish a cost advantage over competitors.
- Understand core competencies and areas of potential improvement.

(5 marks)

a)

i) **Budgeted Profit And Loss Account For The Year Ending 2023**

Revenue			GH¢
Distributor:			
Men -	(30% x 1,200,000) x GH¢ 95	=	34,200,000
Women -	(30% x 500,000) x GH¢70	=	10,500,000
Outlets:			
Men			
Minimum Price -	60% x 840,000 x GH¢100	=	50,400,000
Maximum Price -	10% x 840,000 x GH¢400	=	33,600,000
Average Price -	30% x 840,000 x GH¢200	=	50,400,000
Women			
Minimum Price -	60% x 350,000 x GH¢85	=	17,850,000
Maximum Price	10% x 350,000 x GH¢250	=	8,750,000
Average Price	30% x 350,000 x GH¢120	=	<u>12,680,000</u>
Total Revenue		=	218,300,000
Less cost			
Variable Cost	GH¢ 45(1,200,000 + 500,000)	=	76,500,000
Less Factory Overheads	4,500,000 x12	=	<u>54,000,000</u>
Gross Profit		=	87,800,000
Less: Administrative overhead	12 x 1,500,000	=	18,000,000
Cost of retail outlets	12x 22x 12,000	=	<u>3,168,000</u>
Net profit		=	<u>66,632,000</u>

(13 marks evenly spread using ticks)

ii) The **budget manual** is a collection of instructions governing the responsibilities of persons and the procedures, forms and records relating to the preparation and use of budgetary data.

(2 marks)

(Total: 20 marks)

QUESTION THREE

i. **Standard Contribution Margin** = Sales - Variable Cost

$$= 30 \quad - \quad (6 + 5 + 4)$$

$$= 30 \quad - \quad 15$$

$$= 15 \quad \quad \quad \mathbf{0.5 \text{ mark}}$$

Sales Margin Variance (Variable) = Actual Output - Budgeted Output) * Standard CM per unit

$$= (10,200 - 11,000) * 15$$

$$= \mathbf{12,000 \text{ U}} \quad \quad \quad \mathbf{2.5 \text{ marks}}$$

ii. **Standard Profit** = Sales - (Variable Cost + FC)

$$= 30 \quad - \quad (6 + 5 + 4 + 6)$$

$$= 30 \quad - \quad 21$$

$$= 9 \quad \quad \quad \mathbf{0.5 \text{ mark}}$$

Sales Margin Variance (Absorption) = Actual Output - Budgeted Output) * Standard CM per unit

$$= (10,200 - 11,000) * 9$$

$$= \mathbf{7,200 \text{ U}} \quad \quad \quad \mathbf{2.5 \text{ marks}}$$

iii. **The Fixed Overhead Volume Variance (FOVV)**
= (Actual Production - Budgeted) * Standard Rate (SR)
 = (11,000 - 9500) * SR = 6000 F
 = (1500) SR = 6000 F
SR = GHS 4

1 mark

Budgeted Fixed Overhead = 9500 * 6 = GHS 57,000

If Fixed Overhead Spending Variance = 6,000 F then:

BOH-AOH = Spending variance

$$57,000 - X = 6,000 \text{ F}$$

$$X = \text{GHS } 51,000$$

Actual overhead for Kakatsofa is **GHS 42,500**

1 mark

iv. The results in (i) will be preferred because variances computed through an absorption technique does not provide a good basis for cost control as compared to the variable costing technique. The segregation of fixed and

variable cost to ascertain the true impact of production on profit makes standards computed through variable costing preferable for decision making.

2 marks

b) Ways Management Accountants can deliver on helping companies get more sustainable.

- **Provide better corporate information**

Accountants can help improve how a company communicates with its stakeholders by innovating how it reports, for example by using the integrated reporting <IR> framework. Reporting should disclose relevant financial and non-financial information (such as on environmental, social and governance matters (ESG)), Accountancy Europe has explored the future of corporate reporting and promotes presenting corporate information via a Core & More approach. This involves focusing on what really matters and linking financial and non-financial information in corporate reports.

- **Provide independent assurance**

Independent assurance is key to ensure if information is trustworthy – and thus to prevent greenwashing. Accountants have the skills to audit companies independently and provide assurance on their sustainability processes. Accountants report on the organisation's material weaknesses and offer insights on long-term business implications. They enhance the organisation's internal decision-making process and hence its ability to achieve sustainability objectives.

- **Assign costs to negative impacts on the environment and society**

Accountants can help assessing the real cost that corporate activities generate. For example, smartphones can be extremely polluting, and fast fashion can result in human rights violations in the production process: these impacts come at a cost to society and need to be transparent.

- **Encourage ESG goals**

Accountants can help businesses embed sustainability throughout, from formulating strategy to improving processes and measuring performance. And accountants need to comply with international standards for their ethical behaviour, including integrity, objectivity, and professional competence and due care.

- **Help businesses implement ESG regulations**

Accountants can help comply with existing laws and prepare for upcoming legislation. The EU and national legislators require businesses to consider ESG factors more. Accountants offer strategic advice on these obligations and provide roadmaps to help companies, especially SMEs, adapt.

- **Perform on-the-ground monitoring and measuring**
- Accountants can support the company with improve business processes and ensure that companies take a long-term view with the business choices that they make. This includes evaluating or auditing processes and ensuring that companies avoid short termism.
- **Identify ways to reward sustainable policies**
- Accountants can ensure that a company gains benefits from its sustainable practices by enhancing employee retention, customer satisfaction, aligning remuneration on sustainability targets or applying for funding and subsidies that help companies become more sustainable.

(4 points for 6 marks)

c) **There are five major steps to TQM, and each are essential to successful implementation.**

- **COMMITMENT AND UNDERSTANDING FROM EMPLOYEES**

It is key to ensure that all employees within your organization know about the Total Quality Management (TQM) policies and make them an fundamental part of their work. Your employees should know your corporate goals and recognize the importance of these goals to the overall success of your organization. Employees need to know what is expected from them and why. It may sound like a no-brainer but too often this is not driven home by management. When employees understand and share the same vision as management a world of potential is unleashed. If they are in the dark, commitment is lacking and policies will not be successfully deployed.

- **QUALITY IMPROVEMENT CULTURE**

The organizational culture needs to be modernized on a continuous basis to encourage employee feedback. Your employees are full of valuable knowledge-embrace it! Listen to those executing the processes that keep your business moving daily. If employees have an idea on how to improve operations, they need to know management respects their ideas or they will not share.

- **CONTINUOUS IMPROVEMENT IN PROCESS**

There is no standing still. If you are not moving forward, you are moving backwards. Total Quality Management (TQM) is a continuous process and not a program. This requires constant improvement in all the related policies, procedures and controls established by management. Do your research. Keep your ear to the market and make an effort to routinely revise all aspects of your operation. There should be a constant effort to improve proficiency – which will result in constant scopes for improvement (even if some improvements are small).

- **FOCUS ON CUSTOMER REQUIREMENTS**

In today's market, customers require and expect perfect goods and services with zero defects. Focusing on customer requirements is significant to long term survival and essential in order to build relationships with customers. People do business based on emotion. Competitors will always be a risk. Keep your customers close and happy. Make sure precise requirements of all customers are documented and understood by everyone that touches the account.

- **EFFECTIVE CONTROL**

It is essential to monitor and measure the performance of the business. It's easy to forget how many times in a year an employee does not conform to a controlled procedure or how many times a piece of equipment was down due to unplanned maintenance. If strict documentation is maintained, you will be able to objectively quantify areas for improvement and focus your efforts where they will provide the greatest return of both your time and financial resources.

(4 points for 4 marks)

(Total: 20 marks)

QUESTION FOUR

a.

Computation of net cashflows to determine the financial viability of the project

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Ghc'000	Ghc'000	Ghc'000	Ghc'000	Ghc'000	Ghc'000	Ghc'000
Cash benefits	-	15,500.00	15,500.00	15,500.00	9,300.00	9,300.00	
Direct costs	-	(6,200.00)	(6,200.00)	(6,200.00)	(3,720.00)	(3,720.00)	
Other costs	-	(1,550.00)	(1,550.00)	(1,550.00)	(930.00)	(930.00)	
Cash benefits	-	7,750.00	7,750.00	7,750.00	4,650.00	4,650.00	
Payt to local partner	-		(1,550.00)	(1,550.00)	(1,550.00)	(930.00)	(930.00)
Initial capital outlay	(21,000.00)						
Net cash benefits	(21,000.00)	7,750.00	6,200.00	6,200.00	3,100.00	3,720.00	(930.00)
Capital cost @6%	1.00	0.94	0.89	0.84	0.79	0.75	0.70
Present Value	(21,000.00)	7,311.32	5,517.98	5,205.64	2,455.49	2,779.80	(655.61)
Net Present Value		1614.6157					

The project is financially viable since it generates a positive net cash benefit of GHC1,614.62

7 marks for table and 1 mark for interpretation = 8 Marks

(b)

Year	Annual cashflows	Cummulative cashflows
	Ghc'000	Ghc'000
0	21,000	(21,000)
1	7,750	(13,250)
2	6,200	(7,050)
3	6,200	(850)
4	3,100	2,250
5	3,720	5,970
6	(930)	5,040

Based on the simple cashflows the facility can payback the borrowing in 3 years and 9 months

3 marks for table and 1 mark for interpretation = 4 marks

(c) Challenges associated public sector project appraisal

- Difficulties associated with quantifying non-financial benefits
- Future effects of projects usually difficult to determine
- The presence of externalities
- Difficulty of determining outcomes
- Measurability challenges in the public sector
- Gaming of performance measures by affected stakeholder

1 mark each for 3 points

a)

- i) Variances, like ratios, should never be viewed in isolation when being interpreted. Inter-relationship between variances means that there is often a natural connection between variances which are calculated. This connection may become apparent when management is seeking explanations to variances which have arisen in a period. Identifying these connections helps provide assurance that the reasons being suggested are logical and are more likely than not to be correct.

(2 marks)

- ii) **Note:** The question does not ask for causes of labour and material variances, but for inter-relationship. The key is to think about *quality* of labour and materials used.

Materials used

If we use a low grade raw material we may get it more cheaply and therefore experience a favourable price variance. The downside on this is that we may use more of it due to breakages, waste and spoilage. This will not only cause an adverse usage variance but also may also cause a greater time to be taken due to waste and rejection and therefore result in adverse labour efficiency.

(2 marks)

Labour used

Using a low grade of unskilled labour may cause a favourable rate variance whilst resulting in the job taking longer due to lack of experience. At the same time, their lack of knowledge may also result in lower quality of work causing waste of materials and there being more rejections. This may cause an adverse material usage variance.

(1 mark)

(Total: 20 marks)

QUESTION FIVE

(a) Should the company replace Salve with Unguent?

Budgeted profit for year ending 31 December 2019 assuming Salve is manufactured and sold.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
	GH¢000	GH¢000	GH¢000	GH¢000	GH¢000
Sales revenue	1,400	1,260	1,134	1,021	<u>4,815</u>
Therefore:					
Contribution	40% × Sales revenue				1,926
Fixed costs	4 quarters × GH¢200,000				<u>(800)</u>
Profit					<u>1,126</u>

Budgeted profit for year ending 31 December 2019 assuming Ungent is manufactured and sold.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total (units)
Sales units	86,000	92,000	98,000	104,000	<u>380,000</u>
Therefore:					
Contribution	380,000 units × GH¢6				2,280
Fixed cost	4 quarters × GH¢240,000				<u>(960)</u>
Profit					<u>1,320</u>

Therefore, the company should make and sell Ungent instead of Salve.

(b) Replacement date

Profit for the year if the replacement is at each of the dates is as follows:

	Replace at 1 January GH¢	Replace at 1 July GH¢	Incremental impact of replacing July instead of Jan GH¢
Profits in the year (W1)	1,320,000	1,396,000	76,000
Sale of machinery	140,000	30,000	(110,000)
Redundancy costs	(40,000)	(50,000)	(10,000)
Wage savings	100,000	50,000	(50,000)
Incremental profits	<u>1,520,000</u>	<u>1,426,000</u>	<u>(94,000)</u>

Conclusion

The company should discontinue making and selling Salve and introduce the new product on 1 January 2019.

Working 1: Profit for the year if Unguent replaced Salve on 1 July

GH¢000

Contribution:

Q1 and Q2 (40% of (1,400,000 + 1,260,000))

1,064

Q3 and Q4 (GH¢6 × (98,000 + 104,000))

1,212

2,276

Fixed costs

Q1 and Q2 (2 × GH¢200,000)

400

Q3 and Q4 (2 × GH¢240,000)

480

Less: Fixed costs

(880)

Profit

1,396

Explanation of figures

Profits. The profit is included in each option. This will include incremental contribution and incremental fixed costs which are relevant in this situation.

Sale of machinery. The net realisable value of the machinery is relevant here as this is what the machinery could be sold for. Written down value are sunk costs.

Redundancy and wage savings. Early changeover leads to lower redundancy payments and higher wage savings.

Alternative solution: Relevant costs and revenues

Step 1: Compare replacing at 1 January to continuing to make Salve (as in part a)

Using total profit figures for the year from (a) the extra profit if replacement occurs at 1 January = GH¢1,320,000 – GH¢1,126,000 = GH¢194,000.

Therefore the decision was to replace at 1 January rather than continue making and selling Salve.

Step 2: Compare replacing at 1 July (i.e. make Salve in first two quarters and then make Unguent) to making Salve for the whole year.

Replacing at 1 July the profit for the first 6 months will be the same under both options.

For the second two quarters the profit selling Salve would be as follows:

GH¢000

Sales revenue: 1,134 + 1,021, from the answer to (a)

2,155

Contribution (sales × 40%)

862

Less: Fixed costs

(400)

Profit

462

From selling Unguent profit would be:

GH¢000

Contribution (98,000 + 104,000) × GH¢6

1,212

Less: Fixed costs

(480)

Profit

732

Incremental profit from selling Unguent, in GH¢000: = 732 – 462 = 270.

Step 3: Compare the results from steps 1 and 2 and choose the best.

	Replace at 1 January GH¢	Replace at 1 July GH¢	Incremental revenues and costs GH¢
Extra profits in the year (W2)	194,000	270,000	(76,000)
Sale of machinery	140,000	30,000	110,000
Redundancy costs	(40,000)	(50,000)	10,000
Wage savings	100,000	50,000	50,000
Incremental profits	<u>394,000</u>	<u>300,000</u>	<u>94,000</u>

Conclusion

The company should discontinue making and selling Salve and introduce the new product from 1 January 2019 rather than 1 July 2019.

Explanation of figures

Profits. The incremental profit is included in each option. This will include incremental contribution and incremental fixed costs which are relevant in this situation.

Conclusion

On a relevant cost basis it is best to introduce the new product on 1 January 2019.