

MANAGEMENT ACCOUNTING

FORMATION 2 EXAMINATION - APRIL 2015

NOTES:

Section A - Questions 1 and 2 are compulsory. You have to answer Part A **or** Part B **only** of Question 2. (If you provide answers to both Part(s) A and B of Question 2, you must draw a clearly distinguishable line through the answer not to be marked. Otherwise, only the first answer to hand for this question will be marked).

Section B - You are required to answer any **three** out of Questions 3 to 6. (If you provide answers to all of Questions 3 to 6, you must draw a clearly distinguishable line through the answer not to be marked. Otherwise, only the first three answers to hand for these four questions will be marked).

TIME ALLOWED:

3 hours, plus 10 minutes to read the paper.

INSTRUCTIONS:

During the reading time you may write notes on the examination paper but you may not commence writing in your answer book. **Please read each Question carefully.**

Marks for each question are shown. The pass mark required is 50% in total over the whole paper.

Start your answer to each question on a new page.

You are reminded to pay particular attention to your communication skills and care must be taken regarding the format and literacy of your solutions. The marking system will take into account the content of your answers and the extent to which answers are supported with relevant legislation, case law or examples where appropriate.

List on the cover of each answer booklet, in the space provided, the number of each question attempted.

NB: PLEASE ENSURE TO ENCLOSE YOUR ANSWER SHEET TO QUESTION 3 IN THE ENVELOPE PROVIDED.

MANAGEMENT ACCOUNTING

FORMATION 2 EXAMINATION - APRIL 2015

Time allowed: 3 hours, plus 10 minutes to read the paper.

Section A: Answer Question 1 and either Part A or Part B of Question 2.

Section B: You are required to answer any three out of Questions 3 to 6.

SECTION A - QUESTIONS 1 AND 2 ARE COMPULSORY

- 1.** Greatfone Style Limited commenced trading twelve months ago and as a result of a very successful year is seeking bank finance to expand. The company imports a specialised mobile phone case from an overseas supplier and currently sells it in a limited range of stores in Ireland and the UK. The case is unique in that it comprises a high quality, durable resin and can be adjusted to fit either of the two leading smartphones in the market. Additional bank funding would allow the company to extend its retailer network in the UK with the possibility of establishing outlets in other parts of Europe. However, to consider an application for finance, the bank requires Greatfone Style Limited to prepare a cash budget, forecasting its receipts and payments for the next six months commencing on 1 May 2015. The company has provided the following information:

1. Each case will cost €6.20 to purchase from the overseas supplier and the company has agreed to pay 50% of all purchases in cash with the remainder paid in the month after purchase.
2. Greatfone Style Limited will sell the case to retail customers for €11.25 and projects the following sales (in units) for the next six months:

May	June	July	August	September	October	November
10,000	12,000	15,000	15,000	16,000	18,000	18,000

3. To encourage prompt payments from customers, effective from 1 May 2015, the company has decided to give a discount for cash payment. Greatfone Style Limited expects that 20% of all customers will avail of this offer and will receive a discount of 5%. Of the remaining monies receivable, the company expects to receive 50% one month after the month of sale, 45% two months after the month of sale and the remainder will be bad debts.
4. To ensure that sales opportunities are not missed, the company will hold inventory at the end of each month amounting to 10% of the following month's projected sales. At 1 May 2015, the company expects to have 1,000 cases in inventory.
5. Salary and wage costs per month are expected to be €19,000 for the first two months and to increase by €2,000 per month for each of the next four months, as the company hires new staff.
6. Administration costs are projected to be €82,200 for the year, including depreciation of €9,900.
7. The company has decided to purchase additional computer equipment to support its sales staff. Laptops and printers costing €16,200 will be purchased and paid for in October.
8. At 1 May 2015, Greatfone Style Limited projects that it will have the following balances:

Bank overdraft	€ 2,960
Accounts receivable (all amounts to be received in May 2015)	€30,980
Accounts payable (due in May 2015)	€25,100

REQUIREMENT:

- (a) Prepare a cash budget for Greatfone Style Limited, on a monthly basis, for the six month period commencing 1 May 2015, clearly showing the closing cash balance at the end of each month. (19 marks)
- (b) Outline TWO benefits of cash budgets. (2 marks)
- (c) Explain the following terms:
 - (i) Flexible budget
 - (ii) Zero based budgeting (4 marks)

[Total: 25 Marks]

ANSWER PART (A) OR PART (B)

2.

- (A)** You have recently been approached for advice by one of your clients, Derien Limited. The company commenced trading a year ago and manufactures one product used in the hotel sector. Derien Limited currently does not employ a management accountant and while it has an excellent bookkeeper, the managing director is of the view that more detailed and analytical information is necessary. The managing director has asked you to explain cost-volume-profit (CVP) analysis as he considers that Derien Limited is at the stage of development to benefit from more detailed management accounting information.

REQUIREMENT:

Prepare a memorandum for the managing director of Derien Limited:

- (i) Outlining the key aspects of cost-volume-profit (CVP) analysis including:
- Important terms and formulae specifically used in CVP analysis
 - Information that CVP analysis may provide. (8 marks)
- (ii) Briefly explaining FIVE of the assumptions of CVP analysis. (5 marks)

Format and presentation (2 marks)

[Total: 15 Marks]

OR

- (B)** To assist staff with their studies, the partners of Frimly & Co., a well-established reputable firm of Certified Public Accountants, have decided to create a series of concise briefing notes covering a variety of management accounting concepts, tools and techniques. You have volunteered to get involved and have suggested that as traditional overhead costing systems often form the basis of examination questions, it would be appropriate to write the first briefing note on this topic.

REQUIREMENT:

Draft a briefing note which describes how a traditional overhead costing system operates including:

- The two stage allocation process
- Calculation and treatment of under and over absorbed overhead. (14 marks)

Format and Presentation (1 mark)

[Total: 15 Marks]

SECTION B - ANSWER ANY THREE QUESTIONS.

- 3. Attempt each of these multiple-choice questions. Only one of the offered solutions is correct. Each question carries equal marks. Record your answers to each section on the answer sheet provided.**

- (i)** The following information relates to Foxx Limited, a manufacturer of three products:

	A	B	C
Budgeted sales for the year (units)	40,000	28,000	21,000
Selling price (per unit)	€10.50	€9.00	€9.00
Variable cost (per unit)	€5.00	€4.00	€4.50
Machine hours (per unit)	0.40	0.25	0.3

If the company only has 20,000 machine hours available for the year and wants to maximise profits it should manufacture:

- (a) 40,000 units of A, 28,000 units of B and 21,000 units of C.
 (b) 6,700 units of A, 7,000 units of B and 6,300 units of C.
 (c) 16,750 units of A and 28,000 units of B and 21,000 units of C.
 (d) 34,250 units of A and 6,300 units of C.
- (ii)** Blue Limited produces a range of hand crafted furniture. The company operates a traditional overhead costing system and absorbs overhead based on labour hours. Details relating to one of its products, a dining table, is as follows:

Direct materials per table (2.4 sq mtrs @ €55.65)	€133.56
Direct labour per table (2.5 hrs @ €41.60 per hr)	€104.00
Variable overhead per table	€ 25.75
Budgeted fixed production overheads per annum	€168,625
Sales for the year (tables)	9,500
Budgeted labour hours per annum	25,000

Assuming the company uses absorption costing, what is the cost of one dining table calculated to two decimal places?

- (a) €270.06.
 (b) €263.31.
 (c) €256.56.
 (d) €280.17.
- (iii)** Which of the following statements is FALSE:
- (a) Qualitative factors are those factors that cannot be expressed in monetary terms.
 (b) Relevant costs and revenues are future costs that will not be changed by a decision.
 (c) Sunk costs are costs that have already been created by a decision made in the past.
 (d) Only avoidable costs are relevant for decision-making purposes.
- (iv)** Coral Limited uses a traditional overhead costing system based on units of production. The following information is available for its most recent accounting period:

Actual fixed production overhead	€401,290
Budgeted production in units	120,500
Actual production in units	139,500

If there was under absorbed fixed production overhead for the period of €16,270, what is the fixed production overhead absorption rate calculated to two decimal places?

- (a) €2.76.
 (b) €3.20.
 (c) €2.99.
 (d) €3.47.

(v)



Unit Cost and Total Costs for the SAME category of costs over different levels of activity are shown in the above diagrams. The costs shown are best described as:

- (a) Fixed costs.
- (b) Variable costs.
- (c) Semi-variable costs.
- (d) Step fixed costs.

(vi) Which of the following statements is TRUE:

- (a) The Master Budget only includes the Statement of Financial Position.
- (b) Under or over absorbed overhead is calculated when using variable costing.
- (c) The contribution to sales ratio measures the percentage contribution earned on the selling price of one extra unit.
- (d) A flexible budget is static and not used for control purposes.

(vii) Happy Limited has analysed its distribution costs and activity over the past 3 months and these are as follows:

Month	Distribution costs	Units sold
January	€161,000	50,000
February	€251,000	90,000
March	€228,500	80,000

Using the high-low method of cost estimation, the variable distribution cost per unit is estimated to be (to two decimal places):

- (a) €2.79.
- (b) €2.86.
- (c) €3.22.
- (d) €2.25.

(viii) Which of the following statements, relating to different types of wages schemes, is FALSE:

- (a) Under premium bonus wages schemes, workers are paid based on a piece rate per unit and not on time taken to produce units.
- (b) Where workers are paid based on time worked it is necessary to have close supervision.
- (c) Under piece rate wages schemes each worker is paid on his merits and hence individual efforts are encouraged.
- (d) Under the premium bonus wages schemes the employer benefits by sharing the saving of time.

[Total: 20 Marks]

4. Citrus Berry Limited manufactures a range of jams and marmalades which it sells under its own brand name in supermarkets throughout Ireland. The company has been in operation for twenty years and is currently operating at 80% of its full manufacturing capacity. One of its top selling products is Seville marmalade with Champagne. Recently, Barati, a low cost supermarket chain, approached Citrus Berry Limited and asked if it would be interested in supplying this Seville marmalade and allow it to be sold under the Barati brand in its supermarkets as part of a one-off, three month promotion. To supply all of its supermarkets during the three month promotion, Barati requires 50,000 jars of Seville marmalade per month and has offered to pay Citrus Berry Limited €0.85 per jar. The following information, relating to the production of one jar of Seville marmalade with Champagne, is available:
1. Each jar of Seville marmalade requires 0.125 kg of Seville oranges. Citrus Berry Limited purchases Seville oranges in bulk at a price of €1.60 per kg.
 2. To manufacture a jar of Seville marmalade 0.250 kg of sugar is required and the company purchases sugar for €0.32 per kg from its regular suppliers.
 3. Citrus Berry Limited adds 0.015 litres of Champagne to each jar of Seville marmalade. It purchases Champagne directly from a French chateau for €5.25 per 0.75 litre bottle.
 4. The marmalade is sold in glass jars which Citrus Berry Limited purchases from its suppliers in batches of 100,000 for €24,000. These jars are in constant use in the manufacture of a variety of Citrus Berry products.
 5. Citrus Berry Limited applies fixed production overheads to products based on machine hours. Budgeted fixed production overheads allocated to Seville marmalade with Champagne for the year amount to €45,000 and the company expects that in total 100,000 machine hours will be spent manufacturing this marmalade. The production team in Citrus Berry Limited calculated that on average each jar of marmalade requires a total of six minutes of machine time. Variable manufacturing overheads have been calculated at €0.08 per jar.
 6. Each jar of marmalade supplied must have a Barati label. The labels cost €5,000 for a batch of 500,000 and if not used for this contract they would be scrapped.
 7. Another jam manufacturer has offered Citrus Berry Limited €10,000 per month to lease machinery that would be required to produce the marmalade for Barati.

REQUIREMENT:

- (a) Based on the information provided above, recommend whether Citrus Berry Limited should accept the contract to produce Seville marmalade with Champagne for the low cost supermarket chain. You should provide calculations to support your recommendation.
- (12 marks)
- (b) Assume that the company does NOT have any spare manufacturing capacity but has been approached by Barati, the low cost supermarket chain, to supply Seville marmalade with Champagne at a price of €0.85 per jar. Citrus Berry Limited has found another marmalade manufacturer based in England who is willing to make the product and supply it to Citrus Berry Limited at a fixed price of €0.68 per jar. However, Citrus Berry Limited must provide the labels (see 6 above) to the supplier and pay transport costs to bring the product from England to the Barati warehouse in Ireland. These transport costs are estimated to be €12,400 in total.
- (i) For the situation explained at (b) above, recommend whether Citrus Berry Limited should accept the contract to produce Seville marmalade with Champagne for the low cost supermarket chain. You should provide calculations to support your recommendation.
- (6 marks)
- (ii) Briefly outline any TWO qualitative factors that should be considered before a final decision is made regarding whether to outsource production of the Seville marmalade with Champagne to the English supplier.

(2 marks)

[Total: 20 Marks]

5. Fruity Limited, based in Wexford, produces a range of delicious chutneys which it sells to selected supermarkets in the UK. In manufacturing its chutney there are two production processes, Mixing and Cooking. The Mixing process incurs both materials and conversion costs (labour and overheads) in preparing the fruit and vegetables and blending all of the ingredients together. The Cooking process only incurs conversion costs which arise from heating the ingredients and boiling and testing the chutney to ensure that it is properly 'set' before being poured into jars. The company uses the weighted average method of process costing to value production and inventory. Information relating to one of the company's most popular products, Apple Chutney, for the month of March is provided below.
1. During March, a total of 36,000 Kgs of mixed apples, vinegar and sugar costing €14,544 were input to the Mixing process and the conversion costs incurred during the month amounted to €9,470.
 2. At the beginning of March there was 1,800 Kgs of opening inventory in the Mixing process. The opening inventory included all ingredients which cost €765 but was only 40% complete in terms of conversion and this cost amounted to €385.
 3. Over the twenty years that it has been in operation Fruity Limited has established that no loss or gain arises in the chutney Mixing process but that a loss of 5% of materials input is expected to occur in the chutney Cooking process.
 4. During March, 35,200 Kgs of fully mixed and blended apples, vinegar and sugar were transferred to the Cooking process and 2,600 Kgs of partially mixed and blended ingredients remained in work in progress. The work in progress mixture was fully complete in relation to materials but only 50% complete in terms of conversion costs.
 5. Conversion costs incurred in the Cooking process during the financial period amounted to €15,198.
 6. At the beginning of March, there was 560 Kgs of opening inventory in the Cooking process. This inventory was complete in relation to materials which cost €125 and 50% complete in terms of conversion costs which totalled €48.
 7. During March, 33,700 Kgs of completed Apple Chutney was transferred from the Cooking process to the bottling area.
 8. The closing work in progress in the Cooking process at the end of March was 300 Kgs. This was fully complete in terms of material and 60% complete in terms of conversion costs.

REQUIREMENT:

- (a) For the month of March prepare the following accounts, ensuring that all workings are clearly shown:
- (i) The Mixing process account (9 marks)
 - (ii) The Cooking process account. (8 marks)
- (b) In some cases a scrap value is placed on the loss arising from a production process. For example, this scrap material can be sold for cash. In such cases, explain how the scrap value of a normal loss and the scrap value of an abnormal loss are treated in the cost accounts. (3 marks)

[Total: 20 Marks]

6. Dendale Private Hospital is a well-known and highly reputable provider of a range of orthopaedic surgeries to Irish patients. The hospital has been in operation for eight years and during that time has streamlined all of its services and most of its administrative functions. The hospital accountant is keen to ensure best practice in the finance function, particularly in costing the various surgeries that are conducted and is considering the introduction of activity based costing (ABC). Dendale currently applies a traditional approach to costing surgeries by attributing direct costs as far as possible and allocating hospital overheads based on the patient's average length of stay (ALOS) in the hospital.

Total hospital overheads for the year are budgeted at €4,801,226 and the total budgeted ALOS for all patients for the year is 23,375 days.

To facilitate the introduction of ABC the hospital accountant has analysed all of the overheads incurred into six categories of expense and has also established the cause or driver of the expense as shown in the table below:

Expense category	Cause (driver) of expense
X-Ray department costs	Number of X-Rays provided
Hospital Consultant costs	Number of meetings with Hospital Consultant
Operating theatre costs	Number of hours spent in operating theatre
Physiotherapy costs	Number of physiotherapy sessions
Occupational therapy costs	Number of occupational therapy sessions
Sundry hospital costs	Average length of stay in the hospital (ALOS)

Budgeted data relating to the expense categories has also been compiled by the hospital accountant and is as follows:

X-Ray department costs	€1,008,320
Hospital Consultant costs	€ 960,267
Operating theatre costs	€1,104,430
Physiotherapy costs	€ 624,143
Occupational therapy costs	€ 528,106
Sundry hospital costs	€ 575,960
Total X-Rays provided	6,302
Total physiotherapy sessions	15,223
Total occupational therapy sessions	15,003
Total hours in operating theatre	9,154
Total meetings with Hospital Consultants	8,314

Information relating to two surgeries conducted during the year is given below:

	Knee surgery	Hip surgery
Direct materials cost	€425	€960
ALOS	3.5 days	4.2 days
Number of X-Rays	2	5
Meetings with Hospital Consultant	2 meetings	4 meetings
Physiotherapy	4 sessions	5 sessions
Occupational therapy	3 sessions	5 sessions
Theatre time	1.25 hours	2 hours

REQUIREMENT:

- (a) Calculate the total cost of each of the two surgeries noted above using:
- (i) The costing approach currently used by Dendale Private Hospital.
 - (ii) Activity based costing. (17 marks)
- (b) Comment on your answers in (a) (i) and (ii) above. (3 marks)

[Total: 20 Marks]

END OF PAPER

MANAGEMENT ACCOUNTING

FORMATION 2 EXAMINATION - APRIL 2015

SOLUTION 1

Workings

(W1) Receipts from customers

	May €	June €	July €	August €	September €	October €
Total sales	112,500	135,000	168,750	168,750	180,000	202,500
Received:						
- Cash sales (20% of total sales)	22,500	27,000	33,750	33,750	36,000	40,500
- Less discount (5% of cash sales)	<u>1,125</u>	<u>1,350</u>	<u>1,687</u>	<u>1,687</u>	<u>1,800</u>	<u>2,025</u>
Net cash sales	21,375	25,650	32,063	32,063	34,200	38,475
Remaining credit sales (80% of total sales)						
Due after 1 month (50% x 80% = 40% of total sales)		45,000	54,000	67,500	67,500	72,000
Due after 2 months (45% x 80% = 36% of total sales)			40,500	48,600	60,750	60,750
Total receipts from customers	<u>21,375</u>	<u>70,650</u>	<u>126,563</u>	<u>148,163</u>	<u>162,450</u>	<u>171,225</u>

(7.5 Marks)

(W2) Purchases required

	May	June	July	August	September	October	November
Sales units	10,000	12,000	15,000	15,000	16,000	18,000	18,000
Add closing inventory required (units)	<u>1,200</u>	<u>1,500</u>	<u>1,500</u>	<u>1,600</u>	<u>1,800</u>	<u>1,800</u>	
Total inventory (units)	11,200	13,500	16,500	16,600	17,800	19,800	
Less opening inventory (units)	<u>1,000</u>	<u>1,200</u>	<u>1,500</u>	<u>1,500</u>	<u>1,600</u>	<u>1,800</u>	
Purchases required (units)	<u>10,200</u>	<u>12,300</u>	<u>15,000</u>	<u>15,100</u>	<u>16,200</u>	<u>18,000</u>	
Total purchases (@ €6.20 per case)	€63,240	€76,260	€93,000	€93,620	€100,440	€111,600	
Payable:							
- 50% in cash	€31,620	€38,130	€46,500	€46,810	€50,220	€55,800	
- 50% After 1 month		€31,620	€38,130	€46,500	€46,810	€50,220	
Total payments to suppliers	<u>€31,620</u>	<u>€69,750</u>	<u>€84,630</u>	<u>€93,310</u>	<u>€97,030</u>	<u>€106,020</u>	

(5.5 Marks)

(W3) Administration costs

	€
Total annual administration costs	82,200
Less: depreciation (non-cash cost)	<u>9,900</u>
Total cash annual administration costs	<u>72,300</u>
Cash administration costs per month	6,025

(1 Mark)

(a) Cash Budget for the six months commencing 1st May 2015

		May €	June €	July €	August €	September €	October €
Cash receipts							
Accounts receivable in May	Given	30,980					
Total receipts from customers	(W1)	<u>21,375</u>	<u>70,650</u>	<u>126,563</u>	<u>148,163</u>	<u>162,450</u>	<u>171,225</u>
Total cash receipts		<u>52,355</u>	<u>70,650</u>	<u>126,563</u>	<u>148,163</u>	<u>162,450</u>	<u>171,225</u>
Cash payments							
Accounts payable in May	Given	25,100					
Total payments to suppliers	(W2)	31,620	69,750	84,630	93,310	97,030	106,020
Wages and salaries		19,000	19,000	21,000	23,000	25,000	27,000
Administration costs	(W3)	6,025	6,025	6,025	6,025	6,025	6,025
Purchase of computer equipment							16,200
Total cash payments		<u>81,745</u>	<u>94,775</u>	<u>111,655</u>	<u>122,335</u>	<u>128,055</u>	<u>155,245</u>
Net cash flow		(29,390)	(24,125)	14,908	25,828	34,395	15,980
Opening cash balance	Given	(2960)	(32,350)	(56,475)	(41,568)	(15,740)	18,655
Closing cash balance		<u>(32,350)</u>	<u>(56,475)</u>	<u>(41,568)</u>	<u>(15,740)</u>	<u>18,655</u>	<u>34,635</u>

(5 Marks)

(b) Two benefits of cash budgets

Any 2 of the following or other relevant points:

- (i) Cash budgets highlight the impact that all other decisions have on an organisation's financial resources.
- (ii) Cash may be a limiting factor which will restrict a company's plans. Preparing a cash budget will quickly identify if this is the case.
- (iii) Preparing a cash budget will identify any cash problems that may occur during the period covered by the budget. If a company has this information in advance it will be able to take corrective action.

(2 Marks)

(c) Explain the following terms:

(i) Flexible budget

A flexible budget recognises different cost behaviour patterns and so may be altered as volume of activity changes. More specifically, a flexible budget recognises the difference between fixed and variable costs when volume of activity is increased or decreased.

Flexible budgets are useful for control purposes as the actual volume of activity may be compared to budget by 'flexing' the budget so that it is based on actual activity. It shows the budgeted costs that would have been incurred if the original budget was based on actual activity. It allows for performance to be analysed by comparison of the variances arising between actual costs and revenues compared to (flexed) budgeted costs and revenues.

An example may be given to demonstrate how flexible budgets are produced.

(ii) Zero base budgeting

Zero base budgeting implies a different approach from traditional budgeting. It requires activities to be re-evaluated each time a budget is produced. Each functional budget is prepared on the basis that each cost element is justified as though the activities were occurring for the first time. No item of expenditure is included in the budget without full prior evaluation and justification.

Zero base budgeting attempts to eliminate unnecessary expenditure being retained in budgets from year to year.

(4 Marks)

[Total: 25 Marks]

SOLUTION 2

(a)

MEMORANDUM

TO: Managing Director, Derien Limited

FROM: A Trainee Management Accountant

RE: Cost-Volume-Profit Analysis

DATE: April 2015

As requested I have prepared a memorandum regarding the key aspects of cost-volume-profit (CVP) analysis. Firstly, important terms used in CVP analysis are defined and relevant formulae are presented. Next, an explanation of the information that CVP analysis may provide is outlined. Finally, the main assumptions underpinning CVP analysis are listed.

(i) Important terms and formulae used in CVP analysis

Contribution: It shows the amount that is available to pay fixed costs and provide a profit after variable costs have been paid. The formula used is sales minus variable costs and may be shown in total or for each unit.

Contribution = Sales – Variable Costs

Break-even point: This is the point at which the organisation covers all of its costs but does not make a profit i.e. does not make a profit or a loss. The break-even point may be calculated in units or sales value. In units, the formula is calculated as total fixed costs divided by contribution per unit.

Break-even point in units = $\frac{\text{Total fixed costs}}{\text{Contribution per unit}}$

In sales value, the formula is calculated as total fixed costs divided by the contribution to sales ratio. The contribution to sales ratio shows the percentage contribution earned on the selling price of one unit. The formulae for the contribution to sales ratio and the break-even point in sales value are shown below:

Contribution to sales ratio = $\frac{\text{Contribution (total or per unit)}}{\text{Sales (total or per unit)}}$

Break-even point in sales value = $\frac{\text{Total fixed costs}}{\text{Contribution to sales ratio}}$

Margin of safety: This shows by how much sales may decrease before a loss occurs. It may be calculated using units or sales value. The formula is calculated as expected sales minus break-even sales divided by expected sales and this is expressed in percentage terms.

Margin of safety (in units or sales value) = $\frac{\text{Expected sales} - \text{break-even sales}}{\text{Expected sales}} \times 100$

Information that CVP analysis may provide

CVP analysis is based on the relationship between volume and sales revenue, cost and profits in the short run which is usually a period of one year or less and where the output of the firm is limited to current operating capacity. CVP aims to establish what happens to the financial results of a company if activity or volume fluctuates. Questions that may be answered using CVP analysis include:

- What would be the effect on profit if selling price is reduced and more units are sold?
- What sales volume must be achieved to cover the additional costs arising from an advertising campaign?
- If the company seeks to attain a specific profit level what sales volume must be reached?

(8 marks)

(ii) Assumptions of CVP analysis
(Any FIVE of the following):

CVP analysis is based on a number of assumptions and these are as follows:

- It is assumed that volume is the only factor influencing cost.
- Costs may be accurately classified into fixed costs and variable costs.
- Selling price per unit remains constant.
- Variable cost per unit remains constant.
- If more than one product is sold, the sales mix is assumed to be constant.
- The CVP analysis applies to the relevant range and short term horizon.
- Inventory is valued at variable cost of production or if not all units are sold in the period when they are produced.

(5 Marks)

If you have any questions relating to information contained in this memorandum I will be pleased to provide further clarification.

Yours sincerely,
A Trainee Management Accountant

Format and Presentation (2 Marks)

[Total: 15 Marks]

(b)

Briefing note

(i) How a traditional overhead costing system operates:

The two stage allocation process

Traditional overhead costing involves calculating a separate overhead rate for each production department in the organisation. A two stage allocation process is used to establish separate production department overhead rates. The first stage involves establishing cost centres or cost pools which are locations to which overhead costs are initially assigned. Cost centres are usually production and service departments such as machining, assembly, stores, canteen, maintenance etc. Once this is done the total overhead costs allocated to non-manufacturing or service departments (such as stores, canteen, maintenance etc.) are then reallocated to the production departments on a suitable basis such as material movements, number of staff, machine hours etc. When all of the service department overheads have been reallocated to the production departments the second stage of the allocation process may commence. This involves selecting a suitable allocation base (such as machine hours, labour hours, units of output, direct materials percentage, direct wages percentage or prime cost percentage) and dividing the total overhead for the cost centre by the selected base to obtain an overhead absorption rate (OAR). The OAR is then used to apply overheads to products; this is done by multiplying the OAR by the product's use/consumption of the selected base. For example, if the OAR is €4.23 per direct labour hour and product B requires 4 direct labour hours, then product B will be allocated €16.92 of overheads (4 x €4.23).

Calculation of under and over absorbed overhead

The overhead absorption rate (OAR) is based on the organisation's budgeted overhead costs for the period. Overheads allocated to products using the OAR are unlikely to be the same as total overheads incurred for the period. By comparing the actual overheads incurred with the overheads allocated or absorbed into production, an under or over absorption of overheads may be calculated. If overheads are under absorbed, this means that not enough overhead costs have been applied to the cost of production. If overheads are over absorbed, this means that too much overhead cost has been applied to the cost of production. The treatment of under or over absorbed overheads is to not to allocate it products but rather to include it in the income statement as a period cost as it represents an adjustment against current year profit.

(14 marks)

Format and Presentation (1 mark)

[Total: 15 Marks]

SOLUTION 3

(i) Answer (c)

	A	B	C
Selling price per unit	€10.50	€9.00	€9.00
Variable cost per unit	€ 5.00	€4.00	€4.50
Contribution per unit (x)	€ 5.50	€5.00	€4.50
Machine hours per unit (y)	0.40	0.25	0.30
Contribution per machine hour (x/y)	€13.75	€20.00	€15.00
Ranking	3	1	2

Manufacture as much of B as possible: **28,000** units x 0.25 per hour = 7,000

Manufacture as much of C as possible: **21,000** units x 0.30 per hour = 6,300

13,300

Use remaining hours to manufacture A: (20,000 – 13,300) = 6,700/0.40 = **16,750 units**

(ii) Answer (d) €280.17

Overhead absorption rate = $\frac{\text{Total budgeted fixed production overhead}}{\text{Total budgeted labour hours}}$

$$= \frac{€168,625}{25,000} = €6.745 \text{ per labour hour}$$

Cost of one dining table	€
Direct materials	133.56
Direct labour	104.00
Variable overhead	25.75
Fixed production overhead €6.745 x 2.5 hours =	16.86
Total cost	<u>280.17</u>

(iii) Answer (b)

Relevant costs and revenues are future costs that will not be changed by a decision. This is incorrect, relevant costs and revenues are future costs that WILL be changed by a decision.

(iv) Answer (a) €2.76

Actual fixed production overhead for the period	€401,290
Less: under absorbed overhead for the period	€ 16,270
Absorbed fixed production overhead for the period (x)	€385,020
Actual production in units (y)	<u>139,500</u>

Fixed overhead absorption rate per unit (x/y) = €2.76

(v) Answer (b) Variable costs

(vi) Answer (c)

The contribution to sales ratio measures the percentage contribution earned on the selling price of one extra unit

(vii) Answer (d) €2.25

	Distribution costs	Units sold
January	€161,000	50,000
February	€251,000	90,000
Difference	€90,000	40,000

$$\text{Variable cost per unit} = \frac{\text{Difference in costs}}{\text{Difference in activity}} = \frac{€90,000}{40,000} = €2.25$$

(viii) Answer (a)

Under premium bonus wages schemes, workers are paid based on a piece rate per unit not on time taken to produce units. This is incorrect as workers are paid based on time taken to produce units rather than a piece rate per unit.

SOLUTION 4

Data

Price per jar of marmalade offered by Barati	€0.85
Oranges cost per kg	€1.60
Sugar cost per kg	€0.32
Champagne cost per 0.75 litre	€5.25
Glass jar cost	€0.24
Variable overhead per jar	€0.08
Total number of jars required	150,000

(a) Recommend if Citrus Grove should take offer from Barati

	€	€
Income from sale of marmalade to Barati: 150,000 jars		127,500
<u>Less: relevant cost of production</u>		
0.125kg Oranges x 150,000 jars	30,000	
0.250kg Sugar x 150,000 jars	12,000	
0.015 litres Champagne x 150,000 jars	15,750	
150,000 jars	36,000	
Fixed overheads (incurred anyway)	0	
Variable overheads x 150,000 jars	12,000	
Labels cost (must purchase batch)	5,000	
Lease rental x 3 months - opportunity cost	<u>30,000</u>	
		<u>140,750</u>
Projected loss		<u>(13,250)</u>

Recommendation

Citrus Berry Limited should not accept the contract to supply Seville marmalade with Champagne as at a price of €0.85 per jar the company will make a loss of €13,250.

(12 Marks)

(b)

(i) Recommend if Citrus Grove should accept contract if it outsources to English supplier

Income from sale of marmalade to Barati: 150,000 jars		127,500
<u>Less: relevant costs</u>		
Marmalade from English supplier 150,000 jars x €0.68	102,000	
Labels cost (as above)	5,000	
Transport cost	<u>12,400</u>	
		<u>119,400</u>
Projected profit		<u>8,100</u>

(6 Marks)

Recommendation

Based on the financial information Citrus Berry Limited should accept the contract to produce Seville marmalade with Champagne if production is outsourced to the English supplier as it would result in a profit of €8,100.

(ii) Briefly explain any TWO qualitative factors that should be considered before making final decision

Quality of product - by outsourcing to the English supplier Citrus Grove Limited loses control over the quality of the product.

Reliability of supplier - Citrus Grove Limited must consider how reliable the English supplier is to deliver the product on time.

Effect on reputation - is it possible that Barati will find out about the outsourcing and may not be happy with it. This could have a negative effect on the reputation of Citrus Grove Limited.

Effect on workforce - will the decision to outsource have a negative effect on the workforce of Citrus Grove Limited who may become worried about their jobs and consequently become demotivated.

Other relevant factors (2 Marks)

[Total: 20 Marks]

SOLUTION 5

Workings

Mixing process

Inputs	Total Physical Units Kgs	Equivalent units	
		Materials Kgs	Conversion costs Kgs
Opening WIP	1,800		
Materials input	36,000		
	<u>37,800</u>		
Outputs			
Closing WIP	2,600	2,600	1,300 (50% complete)
Transferred to Cooking process	35,200	35,200	35,200
	<u>37,800</u> (x)	<u>37,800</u>	<u>36,500</u>
Costs			
Value of opening work in progress	€1,150	€765	€385
Total costs incurred during month	€24,014	€14,544	€9,470
Total costs to be allocated	<u>€25,164</u> (y)	<u>€15,309</u>	<u>€9,855</u>
Cost per equivalent unit	(x/y)	€0.405	€0.270
			€0.675

Allocation of costs

Valuation of output transferred to Cooking process = 35,200 Kgs x €0.675 per Kg =	€23,760
<u>Valuation of closing WIP (2,600 Kgs)</u>	
Materials: 2,600 Kgs x €0.405 =	€1,053
Conversion costs: 1,300 Kgs x €0.270 =	€351
	<u>€1,404</u>
	<u>€25,164</u>

(7 marks)

Cooking process

Inputs	Total Physical Units Kgs	Equivalent units	
		Mixing process costs Kgs	Conversion costs Kgs
Opening WIP	560		
Materials transferred from Mixing process	35,200		
	<u>35,760</u>		
Outputs			
Closing WIP	300	300	180
Normal loss 5% of materials input (35,200 Kgs)	1,760	0	0
Completed and transferred	33,700	33,700	33,700
	<u>35,760</u> (x)	<u>34,000</u>	<u>33,880</u>
Opening WIP	€173	€125	€48
Prior process costs transferred in	€23,760	€23,760	
Costs incurred	€15,198		€15,198
Total costs to be allocated	<u>€39,131</u> (y)	<u>€23,885</u>	<u>€15,246</u>
Cost per equivalent unit	(x/y)	€0.7025	€0.4500
			€1.1525

Valuation of finished output transferred: 33,700 Kgs @ €1.1525 per Kg = €38,839.25

Valuation of closing WIP (300 Kgs)

Prior process costs: 300 Kgs x €0.7025 = €210.75

Conversion costs: 180 Kgs x €0.450 = €81.00

€291.75

Total cost €39,131.00

(6 marks)

(a)

(i) **Mixing process account**

	Kgs	€		Kgs	€
Opening WIP	1,800	1,150			
Inputs	36,000		Transferred to Cooking Process	35,200	23,760
Materials		14,544			
Labour & overhead		9,470	Closing WIP	2,600	1,404
	<u>37,800</u>	<u>25,164</u>		<u>37,800</u>	<u>25,164</u>

(ii) **Cooking process account**

	Kgs	€		Kgs	€
Opening WIP	560		Completed & transferred	33,700	38,839
- Prior process costs		125	Normal loss	1,760	0
- Conversion costs		48	Closing WIP	300	292
Transferred in from mixing	35,200	23,760			
Conversion costs		15,198			
	<u>35,760</u>	<u>39,131</u>		<u>35,760</u>	<u>39,131</u>

(4 Marks)

(b) **Treatment of scrap value of normal loss and abnormal loss**

If units of normal loss have a scrap value, the cost of finished output is reduced by this amount. This means that in calculating the cost per equivalent unit, the scrap value of the normal loss is deducted from the total materials cost of the process. This is shown in the cost accounts as:

Normal Loss

	Kgs	€		Kgs	€
Process Account	Normal loss in Kgs	Scrap value of normal loss	Cash for units scrapped	Normal loss in Kgs	Scrap value of normal loss

Where units of abnormal loss have a scrap value, this value is set off against the amount to be written off in the income statement.

Abnormal Loss

	Kgs	€		Kgs	€
Process Account	Abnormal loss in Kgs	Abnormal loss valued at cost per equivalent unit (A)	Cash for units scrapped	Abnormal loss in Kgs	Abnormal loss in Kgs valued at scrap value per unit (B)
			Income statement		(A-B)

(3 marks)

[Total: 20 Marks]

SOLUTION 6

(a)

(i) **Total surgery cost using traditional overhead costing approach**

W1 Budgeted hospital overhead per day

Total budgeted hospital overheads	€4,801,226
Total budgeted ALOS in days	23,375
Budgeted hospital overhead rate per day	€205.40

Cost of surgeries using traditional overhead absorption

	Knee surgery	Hip surgery
ALOS in days	3.5	4.2
	€	€
Direct materials cost	425.00	960.00
Hospital overhead cost @ €205.40 per day (W1)	718.90	862.68
Total surgery cost	<u>1,143.90</u>	<u>1,822.68</u>

(4 Marks)

(ii) **Total surgery cost using activity based costing approach**

W2 Calculation of cost per driver

Activity	Cost driver	Cost	Total of drivers	Cost per driver
		€		€
X-Ray department costs	No of X-Rays provided	1,008,320	6,302	160.00
Hospital Consultant costs	No of meetings with Hospital Consultant	960,267	8,314	115.50
Operating theatre costs	No of hours spent in operating theatre	1,104,430	9,154	120.65
Physiotherapy costs	No of physiotherapy sessions	624,143	15,223	41.00
Occupational therapy costs	No of occupational therapy sessions	528,106	15,003	35.20
Sundry hospital costs	Average length of stay in hospital (ALOS)	575,960	23,375	24.64
		<u>4,801,226</u>		

W3 Calculation of total overhead cost for each surgery

	Knee surgery	Hip surgery
	€	€
X-Ray department costs (2/5 x €160)	320.00	800.00
Hospital Consultant costs (2/4 x €115.50)	231.00	462.00
Operating theatre costs (1.25/2 x €120.65)	150.81	241.30
Physiotherapy costs (4/5 x €41)	164.00	205.00
Occupational therapy costs (3/5 x €35.20)	105.60	176.00
Sundry hospital costs (3.5/4.2 x €24.64)	86.24	103.49
Total overhead cost	<u>1,057.65</u>	<u>1,987.79</u>

Calculation of total surgery cost

	Knee surgery	Hip surgery
	€	€
Direct materials (as for (a) (i))	425.00	960.00
Overheads (W3)	1,057.65	1,987.79
Total surgery cost	<u>1,482.65</u>	<u>2,947.79</u>

(13 Marks)

(b) **Comparison of costs**

	Traditional/ Existing approach	ABC approach	Difference
	€	€	€
Knee surgery	1,143.90	1,482.65	(338.75)
Hip surgery	1,822.68	2,947.79	(1,125.11)

Comments:

ABC is considered to be a more accurate method of absorbing overheads to jobs or services.

The comparison of costs above shows that too little costs are being attributed to each surgery under the current traditional overhead costing system.

For the knee surgery the existing costing method is undercosting the amount charged by 30% (€338.75/€1,143.90). For the hip surgery the existing costing method is undercosting the amount charged by 62% (€1,125.11/€1,822.68).

Using the existing traditional costing system the hospital will not be able to cover all of the overheads that it is incurring. It should change to the ABC method to improve accuracy of surgery costing and ensure that all overheads are covered. Any other relevant comments.

(3 Marks)

[Total: 20 Marks]