



**Institute of Incorporated Public Accountants**

**Module 13:**

**Advanced Management  
Accounting**

**26<sup>th</sup>. August 2015**

**Instructions: Answer five questions**  
**You must answer the three questions in**  
**Section A**

**Answer any two questions in**  
**Section B**

**All questions carry equal marks**

**Time Allowed: 3 Hours**

**Section A - Compulsory Answer all three questions**

The following scenario relates to all three questions.

John Boyd and Patricia Flaherty, both chemical engineers, have recently returned home, after ten years in the United States, where they both worked for a company called Tex Chemicals Ltd. John worked in the company's laboratories developing new products, whilst Patricia headed up one of its production divisions.

Attracted by the Irish government's incentives to bring back talented exiles, they decided to pool their resources and money to set up a company in Dublin called Compounds Ltd. Each of them has 50% of the shareholding in the new company.

Before leaving the USA, John secured a franchise, from his former employer, Tex Chemicals Ltd, for the manufacture and distribution of one of its patented products called Zalon. Zalon is used as an input in manufacturing various industrial compounds.

The franchise covered Ireland and the European union except for England, Scotland and Wales.

John has also designed a product called Deetron which is used for cleaning hospital equipment and other surgical appliances. Deetron uses Zalon as an input material in the manufacture of Deetron.

From the outset it was decided to set up two divisions called Zalon Division and Deetron division. In order to identify the different cash flows in relation to each product it was decided to operate separate bank accounts for each division.

Two business managers, Michael and Johanna, were recruited to head up the divisions with Michael in charge of the Zalon division and Johanna in charge of the Deetron division. Initially it was planned to focus on the Irish market. To save staff costs it was decided that Patricia Flaherty would act as budget and planning director and, with the help of the divisional managers, she was to draw up budgets for each division for the forthcoming year.

Much of the estimate for costs, sales and profit targets were agreed without too much debate.

As an incentive towards achieving targets, both Michael and Johanna were offered a bonus of 10% on profits made by their respective divisions. Michael insisted on an "arms-length" relationship, in any transactions between the two divisions, to maximise his division's profits and therefore the size of his bonus. Johanna did not object provided any transfer price in relation to the supply of Zalon was fair.

**Section A - Compulsory Answer all three questions**

Subsequently a meeting was held between the directors and the divisional heads to finalise all outstanding budgetary matters. Presented at that meeting were the following memos.

Both products are to be produced and sold in standard batch units with each batch unit consisting of a standard number of litres.

**Zalon division**

Potential Market size	200 batches
Estimated batch sales to outside market for next 12 months	158 batches
Target contribution to sales ratio	27%

**Estimated costs per batch**

<b>Inputs</b>	<b>units</b>		<b>unit costs</b>	<b>Total</b>
Materials	500	litres @	€2.00	€1,000.00
Labour	100	hours @	€18.00	€1,800.00
Variable production overhead	100	hours @	€3.75	€375.00
Delivery cost		per batch	€256.00	€256.00
Fixed production costs (i)		per batch	€540.00	€540.00
<b>Total costs</b>				<b>€3,971.00</b>

- (i) The budgeted fixed overhead rate is based on a 12 month production of 158 batches.

Details of the estimated costs of Detron are set out on the next page

**Section A - Compulsory    Answer all three questions**

**Deetron Division**

Potential Market size	84 batches
Estimated batch Sales for next 12 months	84 batches
Target contribution to sales	see note (iii)

**Estimated costs per batch**

Inputs	units		unit costs	Total
Zalon		per batch		€???
Chemical Z	500	Litres @	€4.00	€2,000
Variable production overhead (iv)	175	hours @	€21.20	€3,710
Delivery costs		per batch	€390.00	€390
Fixed overhead (ii)		per batch	€500.00	€500
<b>Total costs</b>				€????

- (ii) The budgeted fixed overhead rate is based on a 12 month production of 84 batches.
- (iii) Where the transfer price for product Zalon is at the full market price then the target contribution on all sales by Deetron division is 10%.
- (iv) Variable production overheads are based on machine hours.  
The discussions became quite heated as Michael insisted that the full market price should be the transfer price, since both divisions were to operate independently and at arms-length to each other.

Johanna countered that whilst she was not an accountant, she was sure that not all the costs, that went into computing the transfer price, were relevant. At that point she produced an email from Byron Ltd, which was in reply to her email requesting quotations for batches of Zalon. Byron Ltd., which is located in Liverpool, has the franchise for England, Scotland and Wales. Byron Ltd offered to supply Johanna with the following number of batches of Zalon at the following prices per batch.

42	batches	@	€3,375.00	per batch
84	batches	@	€3,300.00	per batch

John then adjourned the meeting to consider this new information. Once the divisional heads had left the room, the directors, John and Patricia discussed the email from Johanna. From the figures presented it appeared that the UK supplier could undercut their sales price for Zalon and even offer quantity discounts. Mary suggested that they immediately recruit an experienced qualified accountant to review all the information.

You have been recruited to consider the following questions.

**Question 1**

**Requirements**

(a) Set out the budgeted sales, costs and profits of each division for the next 12 months using the information set out above.

For answering this requirement only- Q1 (a)- assume that both divisions operate at full capacity and that the Zalon division charges the same price to the Deetron division as it does to the outside market.

Assume also that all production is sold by the end of the 12 months.

[6 marks]

(b) Calculate the minimum cost to Compounds Ltd of producing 80 batches of Zalon, if before the production of those batches, the Zalon division already operated

(i) at 58% level of activity

(ii) at 79% level of activity

[5 marks]

(c) Comment on the offer of Byron Ltd to supply 42 batches or 84 batches and make a recommendation with reasons.

Additionally list four other issues that should be considered.

[9 marks]

**[20**

**marks]**

**Section A - Compulsory      Answer all three questions**

**Question 2**

Patricia Flaherty, the director, was not happy with the ability of Byron Ltd to potentially undercut their market price for Zalon. She reviewed the planned labour practices and processes for producing Zalon, and discovered, from making enquires with former colleagues in the USA, that there was usually an 80% learning curve in the production of Zalon. Typically the learning curve affect, ceases after production of 16 batches.

**Note**

The learning curve is  $Y = AQ^b$  where Q equals quantity, and b is the co-efficient of the learning curve percentage.

The co-efficient of 80% is -0.32193

**Requirements**

The following two assumptions should be taken into account

- (i) A learning curve of 80%.
  - (ii) A contribution to sales of 27% on all sales, including sales to the Deetron division.
- (a) Calculate the labour time to make the first two batches of Zalon, and

the average sales price per batch. [ 3 marks]

(b) If the second batch was sold to a different customer, calculate the labour time taken and the sales price of that second batch. [ 3 marks]

(c) Calculate the labour time taken to make the 20<sup>th</sup> batch, and the sales price to a customer who only bought that batch. [ 4 marks]

(d) Calculate the total time taken and the average sales price per batch, if the first twenty batches were sold to the same customer. [ 4 marks]

(e) Discuss briefly the relevance of the learning curve affect in determining a pricing strategy for the production of Zalon. [ 6 marks]

Total **[20**

**marks]**

### Section A - Compulsory Answer all three questions

#### Question 3

John Flaherty believes that his newly developed product Deetron, is both environmentally friendly and superior to what is currently available in the market. Johanna, the head of the Deetron division, was recruited for her market research experience as well as her general management skills.

In preparing the schedules set out below, Johanna obtained further information from her assistant Joe, who was in charge of inventory planning, production and scheduling.

	Jan-March	April-June	July-Sept	Oct-Dec
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Budgeted Sales in batches	15	21	21	27

Opening inventory of finished batches		0	6	6	6
Budget closing inventory of finished batches		6	6	6	0
Chemical Z [500 litres per batch]					
Opening inventory of Z in litres		0	2,100	2,100	2,100
Budgeted closing inventory of Z in litres		2,100	2,100	2,100	0
Budgeted purchases of Zalon in batches		21	21	21	21

**Assumption**

With the exception of fixed production overheads, it is assumed that the total amounts for monies/batches/litres budgeted for sales or expenses in a particular quarter is divided equally amongst each month of that quarter. The annual fixed production overheads are assumed to be incurred equally over the four quarters.

**Sales/Revenue**

It was agreed for the purposes of the cash budget forecast, that a sales price of €12,000 per batch was appropriate.

It was proposed to give customers two months credit from the month in which the sale took place.

Delivery costs in relation to sales are paid as incurred. Deliveries are made in the same month as the month of sale.

**Chemical Z**

The suppliers of chemical Z will give one month credit from the month of purchase.

**Section A - Compulsory Answer all three questions**

**Question 3 –continued**

**Zalon**

The first 42 batches will be supplied by the Zalon division. The remaining batches will be purchased from Byron Ltd at the offered price of €3,375 per batch. Byron Ltd will give one months credit from the month of purchase. One batch of Zalon is required in the production of one batch of Deetron.

**Variable Overheads**

20% of the variable overheads to be incurred in any month will be paid immediately. The balance will be paid a month after the month incurred.

**Fixed Overheads**

Fixed overhead includes depreciation. The amounts are incurred quarterly quarters and paid on an actual basis.

**Capital Expenditure**

It is proposed to purchase a machine for €600,000 which will have a useful live of 5 years with no residual value. The machine will be paid for in the 1<sup>st</sup> quarter.

**Allocation**

The directors have allocated funds amounting to €350,000 at the start of the first quarter to the Deetron division bank account.

**Required**

Prepare a budgeted cash flow, for product Deetron, for each quarter setting out income and expenses showing the opening and closing cash balance/deficits for that quarter.

**Note:**Final amounts may be rounded to the nearest euro.

**[20**

**marks]**

**Section B-Compulsory. Answer any two questions from section B**

Question 4

Set out are the budgeted and actual results of Factors Ltd for its first period of operations.

	<b>Actual</b>		<b>Budget</b>	
Sales Volumes	12,000 units		14,000 units	
Selling price unit	€140.00		€145.00	
Production volumes	13,000 units		14,000 units	
Direct materials X	130,000	kilograms	126,000	kilograms
price per kilogram	€1.10	per kilogram	€1.25	per kilogram
Direct Materials Y	65,000	kilograms	84,000	kilograms
price per kilogram	€6.00	per kilogram	€5.00	per kilogram
Total Labour hours	52,000	hours	70,000	hours
Rate per labour hour	€6.00	per hour	€5.00	per hour
Fixed Production overhead	€680,000		€700,000	
National Market	45,000units		56,000 units	

Note: Any closing inventory is valued on a full cost basis

**Required**

- (i) Calculate the sales price variance mark 1
- (ii) Calculate the material price variances marks 2
- (iii) Calculate the material usage variances marks 2
- (iv) Calculate the labour rate variance mark 1
- (v) Calculate the labour efficiency variance marks 2
- (vi) Calculate the fixed overhead expenditure variance mark 1

(vii)	Calculate the fixed overhead volume variance marks	2
(viii)	Calculate the market share variance marks	2
(ix)	Calculate the market size variance	2 marks
(x)	Reconcile the budgeted net profit with the actual net profit <u>marks</u>	<u>5</u>
		Total <b><u>20</u></b> <b><u>marks</u></b>

**Note final amounts can be rounded to nearest euro**

**Section B-Compulsory. Answer any two questions from section B**

**Question 5**

Sea-Goods Ltd is an Irish owned shipping business, ferrying goods to and from Ireland. It has three ships. The managing director, J.Smyth, had received the news that one of the ships, the Carbonia, had floundered off the coast of southern England and sunk. There was no loss of life.

One of Sea-Good's major customers- Motor Factors-, on hearing the news about the sinking of the Carbonia, has demanded 100% compensation for loss of their goods being delivered to them on that ship. The total value of goods was €2,100,000.

Some two weeks after the event you have been hired, on special assignment by J.Smyth to determine whether the Carbonia should be salvaged or replaced by the purchase of a similar ship.

In your discussion with the staff of Sea-goods Ltd you ascertain the following issues

- (1) It has already commissioned a report on whether the ship can be salvaged. The cost of the report, which has not yet been paid for, will cost €24,000. The report indicated that the Carbonia can be salvaged.
- (2) The ship Carbonia cost €20,000,000 five years ago and was being depreciated on a straight line basis over twenty years. The insurance is willing to pay out 90% of the cost of the ship and 100% of the customer's cargo of €2,100,000.
- (3) The Salvage report has established that the machine parts were greased and packed in airtight containers, which would keep the goods undamaged by seawater for about 12 weeks.

- (4) The cost of a replacement ship is estimated at €21,000,000. However should the company go ahead and claim the insurance for the sunk Carbonia, then the company's insurance premiums will increase by €125,000 per year for 4 years.
- (5) A salvage company will charge €2,100,000 to undertake the salvage which they estimate will take nine weeks.
- (6) Two members of the Sea-Goods staff will be assigned to the salvage company to assist in technical aspects on the ship's condition. One of the staff members, Fred, is immediately available. Fred is paid €600 a week. The other staff member Jill, who is paid €620 a week, will have to be pulled from another assignment. No other member of staff has the technical skills to oversee its completion. The assignment had a potential contract price €100,000 with estimated variable costs of €48,000, direct fixed costs incurred of €10,000, and a projected allocation of general overheads of €15,000.

This question continues on the next page.

## **Section B-Compulsory. Answer any two questions from section B**

### **Question 5 continued**

#### **Issue no.**

- (7) Two additional receptionists will have to be hired to handle queries from anxious customers as to whether their goods were on the sunken ship. The receptionists will be on three week contracts of €500 per week each.
- (8) If no attempt is made to salvage the ship then the company will pay an environmental fine of €325,000.
- (9) If the ship is re-floated it will require a new seaworthy certificate costing €18,000, but if the replacement ship is obtained it will require an extension of its existing seaworthy certificate of €5,000.

#### **Required**

- (a) Define the following terms
- (i) Relevant cost
  - (ii) Sunk costs

- (iii) Opportunity cost
- (iv) Incremental cost

**[5 marks]**

- (b) Advise the managing director if the Carbonia should be salvaged. In relation to each issue state the amounts to be included or excluded, or amended and indicate the reasons for same. Make a recommendation.

A suggested layout is as follows

<u>Issue No.</u>	<u>Amount</u>	<u>Justification</u>
?	€0	excluded because .....
??	€xxx	amount included because .....

Alternatively the justification can be set out on a separate page referenced to the particular issue.

**[15 marks]**

**Total [20 marks]**

**Section B-Compulsory. Answer any two questions from section B**

**Question 6**

**Required**

- (a) Explain, in the context of transfer pricing, what is meant by sub-optimal decisions. **[ 4 marks]**

- (b) Set out and describe three advantages and three disadvantages

of a “market based” approach to transfer pricing.  
**[12 marks]**

(c) Set out and describe two situation where a “cost based” approach to transfer pricing might be appropriate. **[ 4 marks]**

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**Total [20 marks]**

**END OF EXAMINATION**