



Institute of Incorporated Public Accountants

Module 13:

Advanced Management Accounting

Wednesday, 27th. May 2015

2pm – 5pm.

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.

Complex Materials Ltd was founded by four former college graduates to design and develop bio tech based products for use in industry. Mary, a graduate in bio technology, is the managing director, whilst Peter, a graduate in marketing and business, is responsible for sales growth and distribution. John, who is a graduate in human resource management, is responsible for recruitment, training and general administration. Due to the nature of the products manufactured there is a continuous need for high skilled employees, who require continuous retraining as new products and production processes are developed. Sheila, who qualified as a mechanical engineer, is in charge of production.

The company's leading sales product had been Tylon. However, because of growing competition in the market with products that have similar characteristics, the company has designed and developed a new and better product called Zilgon. Consequently, it has ceased production and sale of its product Tylon.

John, who is responsible for producing the budget for presentation at the next board meeting, has asked both the sales director Peter, and the production director Sheila, to provide him with relevant sales and costs for three different production/sales volumes of the new product Zilgon.

Sales Director-Peter estimates for Zilgon

Sales price per unit of Zilgon	€80.00	€77.00	€74.00
Sales volume units	120,000 u	145,000 u	170,000 u
Sales revenue	€9,600,000	€11,165,000	€12,580,000
Marketing Budget	€120,000	€130,000	*€140,000

* The marketing budget for €140,000 covers marketing for a sales range of 170,000units to 190,000 units.

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Section A - Compulsory Answer all three questions

Section A continued

Production Director-Sheila-estimates for Zilgon

Production units	120,000 u	145,000 u	170,000 u
Input chemical H 586	€3,000,000	€3,625,000	€4,250,000
Labour costs	€2,400,000	€2,900,000	€3,400,000
Total Production Overheads	€1,600,000	€1,725,000	€1,850,000

The labour rate per hour is €10.00, regardless of the product being made.

The machine unit capacity is 200,000 units.

The labour capacity is 340,000 hours.

The materials availability is sufficient for 190,000 units.

Question 1

- (a) Calculate the variable production overhead rate per unit. **[2 marks]**
- (b) Calculate the Net profit arising for each volume. **[6 marks]**
- (c) Comment briefly as to which option is preferable. **[2 marks]**
- (d) Calculate the margin of safety percentage for the volume which resulted in the largest net profit computed under (b) above. **[3 marks]**
- (e) At a sales price of €74.00 per unit calculate the number of units required to be sold to make a net profit of €3,000,000. **[3 marks]**
- (f) Calculate by what percentage the sales price of €74 per unit would have to change if a target net profit of €3,000,000 is to be achieved but with no change in the volume of 170,000 units. **[4 marks]**

Total [20 marks]

Section A - Compulsory Answer all three questions

Question 2

Whilst John was preparing the budgetary figures for their new product Zilgon, the managing director received an enquiry from a newly established company in Dublin. The company, Macro Widgets Ltd, a subsidiary of a USA company, has asked the M.D. to quote for an order of 10,000 units of their old product Tylon. Macro Widgets Ltd. was not interested in purchasing the Zilgon product, as they were not familiar with its properties, and the Tylon product better suited their needs. The M.D. e-mailed John asking him to prepare a minimum price quotation for the delivery of 10,000 units of Tylon to Macro Widgets. She accepted that John's finalised budget for Zilgon, might result in the skilled labour being fully employed in its production. If so, it might be necessary to halt production of Zilgon, in order to make the labour hour available for processing the order from Macro Widgets Ltd. She felt that this order from Macro Widgets Ltd might result in more orders from that company.

In her email the M.D., who had designed the Tylon product herself, set out the issues involved.

- i. There was already in stock 1,500 units of Tylon, which the company had planned to sell to an overseas buyer at a discount of 60% of its original sale price of €60.
- ii. Tylon requires 0.8 litres per unit of product of a chemical called T56. There are currently 1,200 litres in stock which were purchased at €5.00 per litre. The company has no other use for T56 and its current purchase price has risen to €5.75
- iii. Tylon also requires 0.50 litres per unit of product of a chemical called B 50. There are 4,500 litres in stock purchased at a price of €4.50. Due to its toxic nature, it had been planned to have it disposed of safely by a green energy company at a cost €1.85 per litre.
- iv. The labour rate is €10 per hour and it requires 1.50 hours of labour for each unit of output of Tylon
- v. Variable overheads are charged at the same rate per unit of Tylon as in the production of Zilgon.

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Section A - Compulsory Answer all three questions

Question 2 continued:

- vi. Machinery, used in relation to the production of Tylon, was to be sold immediately for €28,000. However, if the order is accepted the sale of the machine would be postponed until the order was completed. It was estimated it could then be sold for €27,500. Depreciation of the machine is €1,800 for the period during which the order would be processed.
- vii. Where relevant, the sales price of Zilgon, the new product, is to be assumed to be €74 per unit of output

Required

- (a) Compute the minimum quotation price for delivery of 10,000 units of the product Tylon to Macro Widgets Ltd. Assume that labour hours will be fully utilised in producing Zilgon. **[15 marks]**
- (b) Set out any other factors that should be taken into account. **[5 marks]**

Total [20 marks]

Question 3

Peter the marketing manager thinks that it might be possible to apply the optimal price model to the information given.

Required

- (a) Assuming an optimal sale price model can be applied compute the optimum sales price, sales quantity and total contribution for the new product Zilgon. **[10 marks]**
- (b) Would the computations arrived at in **(a)** affect the minimum quotation price for Tylon computed under question **2 (a)**? **[4 marks]**
- a. Comment on your findings and how realistic your answers are. **[6marks]**

Total [20 marks]

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

Question 4

Set out below is the budget and actual results of Potteries Ltd for the month of April 2015

	Actual	Budget
Sales Volumes	18,000 units	20,000 units
Total Sales revenues	€3,240,000	€3,000,000
Production volumes	18,000 units	20,000 units
Direct materials X	84,000 kilograms	80,000 kilograms
Total Direct Material X costs	€100,800	€120,000
Direct Materials Y	102,600 kilograms	120,000 kilograms
Total Direct Material Y costs	€451,440	€480,000
Total Labour hours	99,000 hours	100,000 hours
Total labour costs	€891,000	€1,000,000
Fixed Production overhead	€1,320,000	€1,200,000
Total size of national market	88,000 units	80,000 units

Required

Compute the following variances:

In each case indicate whether it is Favourable i.e. **F** or adverse i.e. **A**

- (a) Sales price variance (1 mark)
- (b) Calculate in terms of standard contribution
 - (i) Market size (2 marks)
 - (ii) Market share (2 marks)
- (c) Material price variance [for both direct material X and Y] (2 marks)
- (d) For direct materials X and Y compute
 - (i) the mix variance (2 marks)
 - (ii) the yield variance (2 marks)
- (e) Labour rate and the labour efficiency variance. (3 marks)
- (f) Fixed expenditure production variance. (1 mark)
- (g) Reconcile the budgeted net profit to the actual net profit. (5 marks)

(20 marks)

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

Question 5

Holiday Bikes Ltd specialise in making bicycles for touring Ireland. The latest model, Magnum, has just been designed. Like previous models, it involves labour intensive production processes. It is estimated that the first bike will take 100 hours to make and that labour costs are €10 per hour. It is further estimated that a 70% learning curve will operate up to the production of the first 16 bicycles.

Materials are 10 kilograms per bike at €50 per kilogram. Quantity discounts of 5% off the price of an entire order will be given to Holiday Bikes Ltd., if that order is for more than 100 kilograms. Because the supplier, Mouldings Ltd, can deliver "within the hour", Holiday Bikes Ltd does not maintain any stock of materials on its premises.

Variable overheads are 25% of labour costs.

A profit of 20% margin on sales is added to determine the final price.

The index of learning for a 70% learning curve is -0.514573

Required

- (a) Compute the sales price of producing the first bike. [2 marks]
- (b) If the first two bikes were sold to a Dennis O Brien then what would be the average sales price per bike? [3 marks]
- (c) If the first three bikes were sold to Dennis O Brien and the fourth bike was sold to a Sheila Ryan then what would be the sales price of the bike sold to Sheila Ryan? [3 marks]
- (d) If Saddle Friends, a holiday cycling group, ordered the 1st 16 bikes for their members then what would be the average sales price per bike? [4 marks]
- (e) If, after Saddle Friends purchased the first sixteen bicycles, another cycling group called Wheelies, ordered 5 bikes, i.e. the 17th to the 21st inclusive, then what would be the average sales price per bike to Wheelies? [4 marks]
- (f) List four limitations of Learning curve theory. [4 marks]

Total [20 marks]

Note final amounts can be rounded to nearest euro

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

Question 6

Required

- (a) Explain what is meant by zero based budgeting. **[3 marks]**
- (b) Set out and discuss briefly the three steps involved
In zero based budgeting. **[7 marks]**
- (c) Set out four advantages of zero based budgeting.
[5 marks]
- (d) Set out four disadvantages of zero based budgeting.
[5 marks]

Total [20 marks]

END OF EXAMINATION