GX2662

Ollscoil na hÉireann, Gaillimh

National University of Ireland, Galway

Summer Examinations, 2000/2001

Master of Accounting

Management Accounting and Finance AY 516

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Time Allowed: 3 and a half hours

Candidates should answer-

Section A

Question 1 and any two other questions from this section

and

Section B

Question 5 and any two other questions from this section

Present Value Interest Factor Tables are attached

SECTION A: MANAGEMENT ACCOUNTING

In this section, answer Question 1 [14 marks] and any two other questions [18 marks each]

Question 1

Slainte Ltd. produces and sells 11,500 batches of beer per annum; this is the maximum capacity of the company's factory. Only one type of beer is produced. 40% of output is packaged and sold under the "Deoch" brand name, the remaining 60% is packaged specially for supermarkets under the supermarkets' brand names. Fixed production costs (overheads and labour) are £2,200,000 per annum. The selling prices and variable costs per batch of beer are as follows:

	Deoch brand name	Supermarket brand names
Selling price	£800	£700
Variable costs of production (raw materials)	£200	£200
Variable costs of packaging	£40	£30

The company believes that there is substantial unfulfilled demand for its beer, and has decided to use a subcontractor to increase supply. The subcontractor will provide his own raw materials, and will charge Slainte Ltd. £280 for each batch of beer. This beer will be supplied to Slainte Ltd. in bulk form, and Slainte Ltd. will therefore incur the costs of packaging in the normal way. Any beer produced under sub-contract will be sold under the "Deoch" brand name.

Slainte Ltd. has decided that:

- The "sales mix" as between "Deoch" and "supermarket brand names" will continue to be 40% : 60%, as at present.
- An extra £10,000 per annum will be spent on advertising "Deoch", to offset any adverse publicity which may arise from general awareness that the company no longer produces all of its own products.

Slainte Ltd. will eliminate some of its production facilities, if the production of all batches of "Deoch" is subcontracted. This would reduce fixed production costs by £300,000 per annum.

You are required to:

(a) Assuming that total sales next year will be 15,000 batches of beer, estimate the company's profit in each of the following circumstances:

(i) The company subcontracts all production of "Deoch".

(ii) The company uses its own factory to full capacity and therefore subcontracts as little production as possible. **(10 marks)**

(b) Given that the potential sales demand for next year is uncertain, specify the range of levels of output of "Deoch" at which it is more profitable to subcontract all production of this product. **(4 marks)**

Total: 14 marks

Question 2

Carnivore Ltd. manufactures speciality meat pies, which it sells in bulk to delicatessen shops. The only variable cost is raw material, which consists of three grades of raw meat. The standard cost of the raw materials used in the manufacture of each 100 kilograms of speciality meat pie is as follows:

Raw material	Kilograms	Standard Price per kilogram
A	25	£2
B	60	£3
C	40	£4
Total	**125**	
Normal loss [20%]	25	
Output	**100**	

In preparing its budget for 2000, the company assumed that there would be a market in Ireland for 125,000 kilograms of speciality meat pie and that Carnivore's product would have a 40% share of this market. The budget also assumed a selling price of £6 per kilogram for Carnivore's product.

However, during 2000 both Carnivore and its competitors were adversely affected by diminishing consumer confidence in meat products. The actual total market size was only 110,000 kilograms of speciality meat pie (instead of the anticipated 125,000 kilograms), and Carnivore sold only 33,000 kilograms of its product.

The managing director of Carnivore Ltd. recently explained how his company attempted to respond to the difficulties which it faced in 2000: "First, we reduced our selling price from £6 to £5.90; this was a modest price reduction in comparison with those of our smaller competitors. Second, we took advantage of falling market prices for some of the types of meat which we use as raw material for our product. With benefit of hindsight, we should perhaps have done more to increase consumers' confidence in the safety and quality of meat products in general and our own product in particular".

The actual raw materials used by Carnivore in 2000 were as follows:

Raw material	Kilograms	Actual Price per kilogram
A	8,800	£1.70
B	19,200	£3
C	12,000	£4
Total	**40,000**	

Carnivore had no opening or closing stocks of raw materials or finished product.

[... Question 2 is continued on the next page ...]

[... Question 2, continued from the previous page ...]

You are required to:

(a) Compute Carnivore's budget and actual contribution for 2000.

(3 marks)

(b) Calculate the following variances for Carnivore Ltd:

- Raw materials price; raw materials yield; raw materials mix;
- Sales price; sales volume.

(7 marks)

(c) Break down the sales volume variance into 'market size' and 'market share' variances.

(4 marks)

(d) Critically evaluate the performance of Carnivore Ltd. in 2000, supporting your answer by reference to the variances which you have calculated.

(4 marks)

Total: 18 marks

Question 3

The ability of large companies to align the interests of managers and shareholders and successfully devolve power and responsibility to staff has received considerable attention in management accounting. Stern Stewart developed Economic Value Added (EVA) as a solution to this problem.

You are required to:

(a) Explain what is meant by EVA and evaluate its contribution as a measure of manager and business unit performance.

(13 marks)

(b) Discuss the arguments for delegation of responsibility and power to staff.

(5 marks)

Total: 18 marks

Question 4

Chilwa Ltd. has two independent production departments each producing a single standardised product. The standard unit cost and selling price of each product is as follows:

		Dept. A Product 1		Dept. B Product 2
		£		£
Variable Production Costs		40.00		70.00
Fixed Production Overheads		60.00		80.00
Full Standard Cost per Unit		100.00		150.00
Profit Mark-up	(+50%)	50.00	(+25%)	37.50
Selling Price		150.00		187.50

Normal budgeted production levels are 11,000 units per month for Product 1 and 19,000 units per month for Product 2. The company uses an absorption costing approach for internal profit reporting and values finished goods stock at full standard cost. Administration and marketing costs are all fixed.

Departmental operating profit statements showing actual results for the last two months are as follows:

Departmental Operating Profit Statements for March and April £'000	March		April	
	Dept. A	Dept. B	Dept. A	Dept. B
Sales Revenue	1,500	3,750	1,875	3,375
Production Costs:				
Variable Production Costs	520	1,330	300	1,540
Fixed Overhead Applied	780	1,520	450	1,760
	1,300	2,850	750	3,300
Over/Under Applied Fixed Overhead	(120)	0	210	(240)
	1,180	2,850	960	3,060
Add Opening Stock	300	1,050	600	900
	1,480	3,900	1,560	3,960
Less Closing Stock	600	900	100	1,500
Cost of Goods Sold	880	3,000	1,460	2,460
Gross Profit	620	750	415	915
Administration & Marketing Costs	150	500	150	500
Operating Profit	470	250	265	415

[... Question 4 is continued on the next page ...]

[... Question 4, continued from the previous page ...]

Actual costs and efficiency levels in March and April were exactly as budgeted. The Chief Executive is concerned about the reported results. In a conversation with the accountant he made the following remarks: *"The total sales revenue was the same in each month. In April we changed the sales mix, increasing the sales of Product 1 which has a higher profit mark-up and reducing the sales of Product 2 which has a lower profit mark-up. There was no change in sales prices or in input costs. I expected an increase in operating profit in April but your report indicates that total profit was in fact £40,000 lower. The profit for Department A fell by £205,000 while the profit for Department B increased by £165,000. The results just don't seem to make any sense".*

You are required to:

(a) Redraft the departmental operating profit statements for March and April using a variable costing approach.

(7 marks)

(b) Prepare a report for the Chief Executive explaining the decrease in operating profit in April under the absorption costing approach. Illustrate your explanation with appropriate supporting calculations.

(11 marks)

Total: 18 marks

Turn to Section B on the next page

SECTION B: FINANCE

In this section, answer Question 5 [24 marks] and any two other questions [13 marks each]

Question 5

Lylo plc is evaluating a high-risk project in a new industry. The company is temporarily short of accountants and has asked a part-qualified trainee to produce a draft financial evaluation of the project. The draft is shown below:

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**
	£'000 (now)	£'000	£'000	£'000	£'000	£'000	£'000
Sales		2,850	3,620	4,600	4,800	5,400	
Direct costs:							
Materials		570	724	920	960	1,080	
Labour		570	724	920	960	1,080	
Distribution		285	362	460	480	540	
Total direct costs		1,425	1,810	2,300	2,400	2,700	
Overheads		360	460	610	622	650	
Interest		210	600	600	600	600	
Depreciation		400	660	660	660	680	
Total Costs		2,395	3,530	4,170	4,282	4,630	
Net profit before tax		455	90	430	518	770	
Taxation @ 40%		182	36	172	207.2	308	1,920
Net profit after taxation		273	54	258	310.8	462	(1,920)
Land & Buildings	(1,100)	(300)					
Plant & Machinery	(1,900)						
Working Capital (cumulative requirement)	(230)	(470)	(580)	(650)	(710)	(710)	-
Net cash flows	(3,230)	(497)	(526)	(392)	(399.2)	(248)	(1,920)

Cash flows discounted @ 32% per annum. The net present value is (£2,674,373)

Conclusion: The project is not financially viable and should not be undertaken.

[... Question 5 is continued on the next page ...]

[... Question 5, continued from the previous page ...]

Additional information:

The trainee has noted that cash flows have been discounted at a high rate because of the high risk to the project.

Assume that you have been engaged as a financial consultant to Lylo plc. The following information is made available to you:

(i) The company has a five-year planning horizon for capital investments. The value of the investment at the end of five years is estimated to be twice the pre-tax operating cash flows of the fifth year. This figure includes the value of land and buildings and working capital.

(ii) 50% of the overheads would be incurred as a direct result of undertaking this project, while the remainder represents an allocation of general fixed factory overhead costs.

(iii) Corporate taxation is at the rate of 40% payable one year in arrears.

(iv) Tax allowable depreciation is on a straight-line basis at a rate of 25% per year on the full historic cost of depreciable fixed assets, starting in Year 1. Land and buildings are not depreciable fixed assets and their total value is expected to be £1.4 million at the end of year five.

(v) The project would be financed by two 15% debentures, to be issued at par. The debentures would both have a maturity of 10 years and carry the same interest rate as the company's existing debt.

(vi) The yield on one month Government Bonds is 11% per year and the average total yield from companies forming the ISEQ Share Index is 21% per year.

(vii) Interest rates are not expected to change significantly.

(viii) The company is listed on the USM. Its current share price is 245 pence and its equity beta coefficient value is 1.1. The equity beta value of a company whose major activity is the manufacture of a similar product to that proposed in Lylo's new project is 1.3. Both companies have gearing levels of 60% equity and 40% debt (by market values). Lylo's gearing includes the new debenture issues.

[... Question 5 is continued on the next page ...]

[... Question 5, continued from the previous page ...]

You are required to:

(a) Prepare a revised estimate of the net present value of the project. Recommend whether the project should be accepted and briefly discuss any reservations you have about the accuracy of your revised appraisal. State clearly any assumptions that you make.

(15 Marks)

(b) You are later told that the draft cash flow estimates did not include the effects of changing prices and are stated in terms of the value of £ today Discuss whether, on the basis of this new information, any further amendments to your analysis might be necessary.

(3 Marks)

(c) Discuss how consideration of risk might be incorporated into the financial evaluation of investment opportunities of this type.

(6 Marks)

Total: 24 Marks

Question 6

(a) The following five investments can be combined into three portfolios using the weightings shown below:

Investment	**Beta Factor (Equity)**	**Portfolio Weightings**		
		1	**2**	**3**
R	**1.04**	0.40	0.15	0.25
S	**0.77**	0.15	0.10	0.25
T	**1.51**	0.10	0.35	0.05
U	**1.21**	0.15	0.35	0.05
V	**0.68**	0.20	0.05	0.40

You are required to:

(i) Estimate the Equity Beta factor of each of the portfolios.

(3 Marks)

[... Question 6 is continued on the next page ...]

[... Question 6 , continued from the previous page ...]

(ii) Explain which portfolio you would recommend if:
1) the market was falling;
2) the market was rising.

(2 Marks)

(iii) Investment T has a capital structure consisting of 70% equity and 30% risky debt which has a beta factor of 0.2. Calculate the overall Beta factor for Investment T.

(2 Marks)

(b) Explain and illustrate each of the following terms in a capital market context:

(i) Mean-variance efficiency
(ii) Systematic risk
(iii) Coefficient of correlation

(6 Marks)

Total: 13 Marks

[... Question 7 is on the next page ...]

Question 7

(a) *Management can add value to a firm's investment in real assets by responding to changing circumstances - by taking advantage of good fortune or mitigating loss. Management has the opportunity to act because many investment opportunities have real options embedded in them, options which management can exercise when it is in the firm's interest to do so.*

Explain this statement, giving some examples of real options which may be embedded in capital investment projects. **(6 Marks)**

(b) **Zinidane Plc.** has developed a hard disk-based system for recording and playback of high quality digital video images. One of its competitors has already decided to manufacture and market a similar system, which employs essentially the same technology.

The major uncertainty which will determine the economic success or failure of the new product is the realised level of demand, which depends on consumers' willingness to adopt the hard disk-based systems rather than the recordable DVD systems which are currently being released to the market.

Zinidane's investment in production and distribution facilities for the product is expected to cost £100 millions, and, given the probability distribution of demand and a 10% project cost of capital, the expected net present value (NPV) of the investment is £10 millions. This estimate is based on the following data:

	Low Demand	High Demand
Cash Flow at Time 1	£5 m	£ 20 m
Value at Time 1 of later cash flows	£50m	£200m
Total Value at Time 1	£55m	£220m
Present Value at Time 0 (K_o = 10%)	£50m	£200m
Probability	0.6	0.4
Expected Present Value of Inflows	£110 m	

Zinidane Plc also has the option of postponing the investment for one year. During that year, information on the competitor's success or otherwise in marketing an equivalent product will be available, so that by the end of the year, the actual demand conditions will be known. The cost of the investment is expected to be £100m even if the investment is postponed.

Assume a risk-free rate of 5% per year.

Your are required to:

Determine the value of the option to postpone the investment, using the risk-neutral method. Should the project investment be made immediately, or should the investment decision be postponed for one year? **(7 Marks)**

(Total: 13 Marks)

[... Question 8 is on the next page ...]

Question 8

The corporate treasury team of Galway Avionics is debating the strategy they should pursue in relation to a sterling denominated loan, which the company arranged twelve months ago. At that time, their analysis led them to believe that sterling would join the Euro in the short to medium term, and that interest rates would decline.

The amount borrowed was £3,000,000 and the interest rate was set at a risk premium of 50 basis points above the six-month LIBOR rate. The treasury team believes that at the next re-fixing date for the loan interest, the six-month LIBOR rate is likely to have risen by 75 basis points above the current six month LIBOR rate of 6.5%. The next re-fixing date for the loan is June 30th, and the treasury team has decided to investigate the possibility of hedging their interest rate exposure using either LIFFE three month sterling interest rate futures contracts, or a forward rate agreement.

You may assume that it is now January 1st.

Details of quoted futures prices are as follows:

LIFFE Futures Prices (January 1st):

LIFFE £500,000 Three Month Sterling Interest Rate (Points of 100%).

March:	93.45
June:	93.10

You are required to:

a) Illustrate the results of hedging the interest rate exposure on the Sterling liability if by June 30th, interest rates on the cash market have risen by 65 basis points and the futures price has moved by 55 basis points.

(6 marks)

b) Illustrate the results of hedging the interest rate exposure on the Sterling liability if on January 1, Galway Avionics purchases a six versus twelve FRA, quoted at 7.25% - 7.0%, and the interest rate rise on the cash market by June 30th is 65 basis points.

(4 marks)

c) Explain the precise meaning of "basis risk", using the quantitative data in (a) above to illustrate your answer.

(3 marks)

Total: 13 marks