

Ollscoil na hÉireann, Gaillimh

National University of Ireland, Galway

Autumn Examinations 2002

Bachelor of Commerce Degree Examination

Management Accounting III (AY 322)

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Time Allowed: Two Hours

Answer one part of Question 1, and Two additional questions.

Question 1

This question is compulsory

Answer **EITHER** Part A **OR** Part B for 20 Marks

Part A:

Sufficient evidence has not been obtained from contingency studies in management accounting to result in practical recommendations for organisations.

Required

- (a) Explain what is meant by contingency studies in management accounting. (6 Marks)
- (b) Discuss the reasons why contingency studies have not resulted in practical recommendations for organisations. (14 Marks)
- (Total 20 Marks)
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Part B of Question 1 begins on the next page P.T.O. ⇒

Question 1 (Continued)

This question is compulsory: Answer EITHER Part A OR Part B for 20 Marks

Part B:

The capital budgeting committee of **O'Higgins Engineering PLC** is faced with a capital rationing problem. Due to the company's self-imposed limits on capital expenditure, the committee can approve funding for only one of the following two projects. Each project involves an immediate investment (*i.e.*, at "Year 0") followed by a series of cash inflows at the end of each of the following five years. Details of the anticipated cash flows are:

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Project A:	-€68,000	+€12,000	+€15,000	+€28,000	+€55,000	+€13,000
Project B:	-€70,000	+€50,000	+€30,000	+€10,000	+€10,000	+€5,000

The company's accountant has provided the following figures for the net present value (NPV) and internal rate of return (IRR) of these projects:

	NPV @ 10% discount rate	IRR
Project A:	+€21,980	20.2%
Project B:	+€17,696	25.1%

When asked to justify his use of 10% as the discount rate in the above NPV calculations, the accountant provided the following answer. The company is financed entirely by equity capital; shareholders at present require a 10% annual return on their investment in O'Higgins Engineering PLC; and each of the projects under consideration has a systematic risk profile similar to the company's existing business.

Required:

- (i) Calculate the Modified Internal Rate of Return (MIRR) of each of the two projects, assuming that any cash inflows received during the life of a project will be reinvested at a rate of 18% per annum up to the end of Year 5.

Note: The following table of present value factors is provided:

	Year 1	Year 2	Year 3	Year 4	Year 5
19%	0.840	0.706	0.593	0.499	0.419
20%	0.833	0.694	0.579	0.482	0.402
21%	0.826	0.683	0.564	0.467	0.386

(12 Marks)

- (ii) Compare and contrast IRR, NPV and MIRR as methods for choosing between mutually exclusive projects. Use the example of O'Higgins Engineering PLC to illustrate your answer.

(8 Marks)

(Total 20 Marks)

(Total for ONE part: 20 Marks)

Question 2 begins on the next page P.T.O. ⇒

Question 2:

Valparaiso Ltd. operates a meat-packing factory. Production involves a single process. Raw materials are added at the start of this process, and conversion costs (labour and production overhead) are incurred evenly during the process.

Work-in-progress (WIP) at 1st June 2002 consisted of 50,000 batches of product, which were 25% complete as regards conversion cost. During June, the production process was commenced on a further 90,000 batches. At 30th June 2002, WIP was 40,000 batches, which were 40% complete as regards conversion cost.

All output is subjected to rigorous quality control testing at the end of the production process. In a typical month, 1% of the output inspected fails these quality control tests and is sold as scrap to a pet food manufacturer. However, Valparaiso Ltd experienced some unusual problems with temperature regulation in its factory during June 2002, and as result the failure rate in the quality control tests was twice the normal level. The price paid by the food manufacturer for each scrap batch of product was €3.172.

Valparaiso Ltd. uses a process costing system, with stocks valued using a 'weighted average costing' (WAVCO) assumption. On this basis, the book value of WIP was €136,400 (made up of raw materials €123,000 and conversion cost €13,400).

During June, additional raw materials costing €360,000 and conversion costs of €207,000 were added to the production process.

Required

- (a) Prepare the accounts for the production process, normal loss and abnormal loss for June 2002, on the basis of the WAVCO process costing assumption used by Valparaiso Ltd. at present.

(20 Marks)

- (b) A consultant has suggested that, given the physical sequence of production in the factory, a first-in, first-out (FIFO) assumption would be a more appropriate basis for process costing in this case.

Re-calculate your answer to part (a) on a FIFO basis. State any assumption which you make.

(15 Marks)

- (c) Explain the arguments for and against modifying Valparaiso Ltd.'s process costing system in the manner suggested by the consultant.

(5 Marks)

(Total: 40 Marks)

Question 3 begins on the next page P.T.O. ⇒

Question 3:

The Southern division of **Midland Industries Plc** produces a unique electronic component at a variable cost of €40. It sells this component to external customers at a price of €90, and it also sells components internally to the Richfield division at a transfer price equal to the external market price, i.e. €90. The Richfield division then incurs additional variable costs of €60 per unit in the production of a final product which incorporates the transferred component. This final product is sold for €170 per unit to an external customer. The Southern division is the only source of supply of the component.

The following table summarises this, and data relating to capacity utilisation in each division:

	Southern Division	Richfield Division
Variable Manufacturing Cost per Unit	€40	€60
External Selling Price per Unit	€90	€170
Production Capacity	16,000 Units	8,000 Units
External Sales Volume	9,000 Units	5,000 Units
Components Transferred Internally	5,000 Units	-
Unused Capacity	2,000 Units	3,000 Units

The Richfield division has now identified a new opportunity to undertake a contract to supply 3,000 units of the final product at a price of €130 per unit, thereby utilising its full capacity. Increased output would not incur any additional fixed costs in either division.

Required:

(Show all workings, and explain each answer fully)

- (a) Identify whether the proposed contract opportunity is profitable for the company as a whole, and discuss whether or not the present market-based transfer price would motivate the divisions to jointly act in the interests of the overall company in relation to this contract.
(16 Marks)
 - (b) Show that a transfer price equal to the variable production cost of the component would not motivate the divisions correctly in relation to the proposed contract.
(6 Marks)
 - (c) Define and value the opportunity cost of a transfer of the required 3,000 components to the Richfield division, and show that a transfer price equal to opportunity cost would be goal congruent in this case.
(12 Marks)
 - (d) Explain why the external market price was not a goal-congruent transfer price in this situation.
(6 Marks)
- (Total: 40 Marks)

Question 4 begins on the next page P.T.O. ⇒

Question 4:

(If you select this question, answer TWO of the three parts)

Part (A)

Jeri operates a very popular and profitable taco bar close to the University. Since she does not have food-production facilities, she orders tacos each evening from a contract-catering operator at a cost of €2.00 each, and the freshly-produced taco order is delivered early the following morning ready for the normal day's trading. Jeri's tacos sell for €3.50 each.

Jeri's problem is the uncertainty of demand. Her taco orders are based on her subjective estimate of demand during the following day, which, using her experience in the business, takes into account the probable weather, the time of year, the day of the week, and a range of other factors which she finds difficult to define precisely.

Jeri believes that she must satisfy actual demand in order to maintain goodwill. So, if she has under-ordered relative to actual demand, additional tacos must be ordered as an 'emergency rush order' which incurs an additional fixed charge of €50.00 per order. However, if she has overestimated demand and has over-ordered for the actual demand during the following day, the unsold tacos are effectively worthless and are donated to a local charity.

As a regular and trusted customer, Jeri explains her problem to you, and she gives you the following information on the demand for tacos each day, and the number of tacos ordered the previous day, which she had recorded during the previous 10 days.

Day	Actual Demand (Tacos)	Tacos Ordered the previous day
1	750	800
2	820	750
3	850	800
4	850	900
5	720	700
6	600	650
7	620	650
8	670	700
9	710	650
10	740	700

Required:

- (a) Estimate the average opportunity loss (AOL) per day for the ten-day sample period due to the imperfection of information on taco demand.

(12 Marks)
 - (b) Discuss the relevance of AOL to the estimation of the expected value of perfect information (EVPI) on the demand for tacos, and carefully explain the limitations of this approach.

(8 Marks)
- (Total: 20 Marks)

Part (B) of Question 4 begins on the next page P.T.O. ⇒

Question 4 (Continued):

(If you select this question, answer **TWO** of the three parts)

Part (B)

Explain the nature of the control problem inherent in the managerial agency model, and discuss the role of information in the solution to that control and incentives problem.

(20 Marks)

Part (C)

Tom and **Gerry** are in competition with each other in their local area for the installation of PVC windows in new houses, and as replacement windows in older houses.

Production and installation costs are uncertain, and in bidding for contracts, each uses a different cost estimation method. Tom has an excellent cost estimation system which invariably produces a perfectly accurate cost estimate. Gerry has an inferior cost estimation system, with forecast errors ranging from underestimates of 20% of the true cost, to overestimates of a similar order.

The distributions of their cost estimates as a function of the (unknown) true cost of a contract are as follows:

Tom:

Cost Estimate	Probability
Correctly Estimated	1

Gerry:

Cost Estimate	Probability
Underestimated by 20%	0.25
Underestimated by 10%	0.25
Overestimated by 10%	0.25
Overestimated by 20%	0.25

Both Tom and Gerry add a profit margin of 10% to their cost estimates to arrive at their bid prices. You may assume that contracts are awarded to the lower bidder.

Required:

- Separately, identify the expected profit margins for Tom and for Gerry on their successful bids, and explain why Gerry will never make a profit in the PVC window business as long as the present conditions prevail. (10 Marks)
- Calculate the profit margin which, if added by both bidders to their cost estimates, would result in an expected breakeven for Gerry on his successful bids. (6 Marks)
- What would you do, if you were Gerry? (4 Marks)

(Total: 20 Marks)

(Total for **TWO** Parts: 40 Marks)

End of Question Paper
