

COST ACCOUNTING AND QUANTITATIVE ANALYSIS

**Foundation stage examination
3 December 2003**

From 10.00 am to 1.00 pm
plus ten minutes reading time from 9.50 am to 10.00 am.

Instructions to candidates

Answer **four** questions in total: All questions carry equal marks.

All workings should be shown. Where calculations are required using formulae, calculators may be used but steps in the workings must be shown. Calculations with no evidence of this (for example, using the scientific functions of calculators) will receive no credit. Programmable calculators are not permitted in the examination room.

Where a question asks for a specific format or style, such as a letter, report or layout of accounts, marks will be awarded for presentation and written communication.



1

Garstang Supplies manufactures a product used in the fishing industry called the Trawlmaster and a standard costing system is also used to help control costs. The standard cost card of a Trawlmaster is as follows:

		£
Direct materials	(5kg of Spondex at £10 per kg)	50
Direct labour	(2 hours at £8 per hour)	16
Direct expenses		14

The standard selling price of a Trawlmaster is £100 (the standard contribution margin being £20 per unit.) Each month normal production of Trawlmasters is expected to be 1,000 units.

For the month just ended the following results have been reported:

Direct materials – purchased and used 4,600kg at a price of £9 per kg.

Direct labour – 2,200 hours were worked which cost £16,500 in wages.

Sales – the selling team sold the 900 units produced for £94,500.

(Note: there were no stocks either brought forward or carried forward and the direct expenses were as budgeted.)

The following information is also available:

The number of Trawlmasters produced over the last six months was

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6 (last month)
1,050	950	1,200	1,050	1,150	900

• **Requirement for question 1**

- (a) Calculate materials, labour and sales variances, including sub-variances. 10
- (b) Briefly describe the different types of standard cost which can be set. 4
- (c) Discuss whether a standard costing system can be used in public sector organisations. 4
- (d) Calculate mean, median, mode and standard deviation for the number of Trawlmasters produced over the last six months. 7

(25)

2

Chipping Chemicals produces a product after processing in two distinct operations – Process A is the mixing phase and Process B is the finishing department. At both stages raw materials are added and both labour and overhead costs incurred. Output from Process A is passed over to Process B (where further materials are added) and the output from Process B becomes finished goods stock.

Due to chemical reactions inherent in the processes it is expected that Process A (mixing) will have a 10% normal loss and Process B (finishing) a 5% normal loss. However, all scrap from Process A can be sold for £3.00 per kg and all scrap from Process B sold for £10.50 per kg.

The following results have been ascertained for the costing period just ended:

Process A

Direct materials used – 100 kg at a price paid of £5 per kg.

Direct labour – 20 hours at a rate of £10 per hour.

Overheads – 25% of labour cost is added as an overhead charge.

Process B

Direct materials used – 115 kg at a price paid of £10 per kg.
(new materials added to the amount transferred from Process A.)

Direct labour – 30 hours at a rate of £12 per hour.

Overheads – 50% of the new materials cost is added as an overhead charge on Process B.

NB: Process A transferred 85kg of good output to Process B and there was 195kg of good output from Process B which was transferred to finished goods stocks.

The Managing Director of Chipping Chemicals has an investment of £10,000 which he understands “pays interest of 0.2% per month”. Over a period of three years he would like to know how much interest would be earned. Unfortunately he is not sure whether the terms of the investment mean simple or compound interest.

• Requirement for question 2

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|-----|---|----|
| (a) | Prepare cost accounts for both Process A and Process B. | 10 |
| (b) | Prepare normal loss, abnormal loss, abnormal gain and scrap sales accounts. | 8 |
| (c) | Explain briefly an alternative treatment for scrap (ie other than crediting the process accounts). | 3 |
| (d) | Calculate the amount of interest to be earned on the £10,000 investment, assuming firstly simple interest and secondly compound interest. | 4 |

(25)

3

Longridge Hospital Trust has a “Friends of the Hospital” shop on the main hospital site. Sales of a particular product have been monitored for the last four days to try and establish patterns of demand and enable future projections to be made. The following information has been ascertained:

		Units sold
Day 1	Morning	62
	Afternoon	56
	Evening	80
Day 2	Morning	77
	Afternoon	83
	Evening	104
Day 3	Morning	107
	Afternoon	95
	Evening	131
Day 4	Morning	137
	Afternoon	140
	Evening	164

The manager of the shop would like to see these sales figures analysed statistically so that a better idea of trends might be established. He has asked for a Time Series Analysis – Decomposition, using the additive model, to be undertaken.

The hospital shop is unusual, in that it produces a type of fruit bun in a small bakery at the back of the shop. In order to satisfy legal requirements only 0.2% of buns should weigh below 75 grams. The bun producing machine operates with a standard deviation of 0.5 grams.

A new bun making machine is available for hiring. This machine operates to a standard deviation of 0.2 grams, but additional costs, including a hire charge, would be £25 per week. The shop’s weekly output is 2,000 buns. Buns with a weight in excess of 77 grams require additional packaging at a cost of 0.5p per bun, and the bun contents cost 5p per 100 grams.

• **Requirement for question 3**

- (a) Establish, using Time Series Analysis – Decomposition, the equation of the trend line for sales in the form $y = a + bx$ and calculate seasonal adjustments using the additive model. 10
- (b) Using the above equation, show calculated figures for sales and establish the random/residual amounts when compared with the actual sales. 4

- (c) Calculate the weight to which the current machine should be set, in order to comply with legal requirements, assuming the buns produced are normally distributed. 3
- (d) Advise, based on financial grounds, whether the new machine should be hired. 8
- (25)**
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4

Fulwood Furniture is a medium sized manufacturing company using separate cost and financial accounting systems interlocked by control accounts in the two ledgers. At the beginning of the month just ended the following balances were recorded in the cost accounts:

	£	£
Raw materials stock	20,000	
Work in progress	40,000	
Finished goods	5,000	
Cost ledger control		65,000

The financial accounting department provided the following details of transactions for the month as follows:

- (i) Raw materials amounting to £80,000 were purchased on credit.
- (ii) The stores section issued materials as follows: £40,000 of direct materials were issued to production and £5,000 of indirect materials were used.
- (iii) The total cost of wages for the month was £60,000 with £10,000 of this being indirect production labour and the balance being direct wages cost.
- (iv) Further production expenses of £15,000 were incurred in this period and there were administration expenses totalling £6,000.

Fulwood have an absorption costing system which uses predetermined overhead absorption rates. At the moment the base used is direct labour cost. The amount charged to jobs for the period just ended (based on direct labour hours) was £28,000.

The cost of work done and transferred to stocks of finished goods was £140,000 and the cost of goods taken from finished goods stock and delivered to customers amounted to £120,000. There were sales in the month valued at £140,000.

Recently, an internal meeting of managers was held and a wide ranging discussion of accounting and statistical matters took place. The topic of sampling was raised and it transpired that no one was very clear about the different types of sampling which are possible.

• **Requirement for question 4**

- (a) Open and complete the necessary cost accounts for the period just ended. 12
- (b) Describe the main differences between integrated and interlocking systems of cost accounts and state advantages of each approach. 5
- (c) Explain the difference between systematic, stratified, quota and cluster sampling. 8

(25)

5

Leyland Manufacturing is a large engineering company which uses an absorption costing system to help set prices for products. (Predetermined overhead absorption rates are calculated for the production departments at the start of each costing period.) There are two production departments - a Machining Department and an Assembly Department - which are supported by two service departments - a Stores Department and a Maintenance Unit.

Overhead budgets have been prepared for the forthcoming costing period as follows:

Overhead	Total £
Rent	16,000
Machinery depreciation	100,000
Buildings insurance	8,000
Personnel costs	64,000
Machinery insurance	4,000
Total	<u>192,000</u>

The budgeted machining and assembly hours for the period were as follows:

	Machining	Assembly
Machine hours	40,000	2,000
Labour hours	12,000	20,000

The following further information is available:

	Employees (number)	Book value of machinery £000	Area Sq m	Issue from stores (number)	Maintenance jobs carried out (number)
Machining	40	1,500	4,000	1,000	10
Assembly	20	400	1,000	400	30
Stores	10	50	2,000	-	10
Maintenance	10	50	1,000	200	-
Totals	<u>80</u>	<u>2,000</u>	<u>8,000</u>	<u>1,600</u>	<u>50</u>

At the end of the costing period the following results became available:

	Machining Department	Assembly Department
Actual overhead costs incurred	£142,690	£53,910
Actual machine hours operated	41,600 hours	2,110 hours
Actual labour hours worked	11,200 hours	19,600 hours

One of the cost accountants at Leyland Manufacturing was recently seconded to a subsidiary of the company and helped in the production of cost accounting information. (An interlocking system of cost accounts being in operation). She was told that the cost accounts for an earlier period had shown a profit of £5,500, and that the following information was available in respect of that period:

- Dividends of £2,000 had been received.
- Debenture interest of £3,000 had been paid.
- A notional rent of £4,000 had been charged in the cost accounts.

Because of a different pricing policy for stock issues, the following stock values had been used for raw materials:

	Financial accounts	Cost accounts
Opening stock	£23,500	£22,000
Closing stock	£21,000	£20,000

• **Requirement for question 5**

- (a) Using appropriate bases of apportionment, produce an overhead analysis for the four departments. 5
- (b) Calculate predetermined overhead adsorption rates for the two production departments (using appropriate bases of absorption), ensuring that full account is taken of the reciprocal nature of service department costs. **NB:** Either repeated distribution or algebraic method should be used, but *not* specified order of closure. 7
- (c) Establish the amount of under/over absorption at the end of the costing period for the two production departments and identify the causes thereof. (**NB** quantify amounts attributable to each cause as well as describing.) 4
- (d) Describe briefly why it is usual to establish *predetermined* overhead absorption rates based on budgets, rather than wait for actual information. 3
- (e) Show, by means of a reconciliation statement, what the financial accounts profit would have been, using the figures given above for the subsidiary. 6
- (25)**
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