COST ACCOUNTING AND QUANTITATIVE ANALYSIS

Foundation stage examination
7 June 2000

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: Each question carries equal marks. The marks available for each question are shown in italics in the right-hand margin.*

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 examinations room.

Formula sheets, statistical tables, graph paper and cash analysis paper are available from the invigilator, where applicable.

1 Stont plc absorbs its production overheads by applying a pre-determined machine hour rate that is calculated at the beginning of each year. Any under or over absorbed production overheads at the end of the year are transferred to the Costing Profit and Loss Account.

The budgeted production overheads of the Company for the year just ended were £150,000 and the forecast machine hours were 30,000.

Stont plc places a great deal of importance on forecasting future machine hours and production overheads for each period and uses several techniques to enhance the quality of the forecasting, including the moving average method.

For administrative and costing purposes the year of Stont plc is divided into six equal periods. The actual production overheads incurred in each period of the past year, and the actual machine hours in the year, were as shown below.

Period	Production overheads £	Machine hours
1	25,850	4,900
2	27,177	5,100
3	24,447	4,950
4	25,532	5,150
5	26,424	5,300
6	23,552	4,870

- **Requirement for question 1**

(a) Forecast, by adopting a six period moving average, the machine hours and production overheads for each of the first three periods of next year. *9*

(b) Calculate for the forthcoming year the machine hour absorption rate (rounded up to the nearest whole pence), by using the forecasts from (a) above and stating the assumptions made. *5*

(c) Establish the impact on last year's Costing Profit and Loss Account of any under or over absorption of production overheads. *6*

(d) Explain how the Costing Profit and Loss Account of Stont plc would differ from its Financial Profit and Loss Account. *5*

(25)

2 M&T plc are concerned at the reducing level of sales. In an attempt to boost sales the company is considering the introduction of a group bonus scheme for the sales team.

The following information in respect of the company's sales for the last 150 days is available. The sales team advise that this 150 day sample can be considered to be representative of the whole year, which is 250 sales days.

Daily sales: units	**Frequency:** days
51 - 60	15
61 - 70	22
71 - 80	32
81 - 90	30
91 - 100	22
101 - 110	18
111 - 120	11

The proposed group bonus scheme would be to reward sales, as follows.

Daily sales: units	**Bonus per day:** £
91 - 100	40
101 - 110	50
111 - 120	60

The bonus would be shared equally between the sales team of 5 staff, who each currently earn an average of £20,000 per annum.

Relating the proposed bonus scheme to the recent sales figures, M&T plc estimate that the effect of the bonus scheme on the sales level frequency would have been as follows.

Daily sales: units	**Frequency:** days
51 - 60	- 3
61 - 70	- 4
71 - 80	- 4
81 - 90	- 7
91 - 100	+ 8
101 - 110	+ 6
111 - 120	+ 4

- **Requirement for question 2**

(a) For the actual daily sales level of units for the last 150 days, determine the:

(i) arithmetic mean;
(ii) standard deviation;
(iii) modal class; and
(iv) median. *10*

(b) Explain how the calculation of the arithmetic mean in (a) (i) could be useful to the company. *3*

(c) Calculate the percentage increase in the average earnings of the sales staff, if the proposed group bonus scheme had the expected impact on the level of sales. *6*

(d) Discuss the merits and demerits of group bonus schemes. *6*

(25)

3 Drade plc produces and sells many different products, one of which is the Plin. The Standard Cost Card for each Plin is as shown below.

		£	£
Sale Price			40.00
Variable Costs:			
Direct Labour	2 hours x £6.00 per hour	12.00	
Direct Materials	5 kg x £4.00 per kg	20.00	32.00
Contribution			8.00

The standard production of Plins is 500 per month, which was the level achieved in April and May 2000. Although 500 Plins were sold in May, the sales level in April was only 400. There was no stock on hand of Plins at the beginning of April 2000.

Drade's Cost Accountant has advised the Directors that the Actual Cost Card for a unit of Plin in May was as follows:

		£	£
Sale Price			39.77
Variable Costs:			
Direct Labour	2.1 hrs x £5.80 per hour	12.18	
Direct Materials	4.9 kg x £4.10 per kg	20.09	32.27
Contribution			7.50

In both April and May, 75% of the fixed costs related to production overheads. The fixed costs totalled £3,200 in April and were £3,000 in May.

The actual variable costs for the production of each Plin was £32.50 in April 2000.

Drade plc prices its stock issues on the FIFO basis.

- **Requirement for question 3**

(a) Calculate the sales, labour and material variances for the month of May. *7*

(b) Prepare a statement that reconciles the monthly standard contribution to the actual contribution made in May. *5*

(c) Discuss briefly the limitations of standard costing as a method of budgetary control. *5*

(d) Determine the profit for May, using both the marginal and absorption costing methods. *8*

(25)

4 Pryzak plc produces several products. Leito, one of their products, passes through two separate processes before its completion.

For Process 1 the input is always 15,000 kg of material P and 5,700 kg of material Q are required for Process 2. Pryzak plc adopts the LIFO method for pricing the issue of materials to the processes.

For scheduling purposes Pryzak produce Leitos in only the January to April period of the year.

The first processing of Leitos of the current year now has to be costed. The stock details immediately prior to this processing were as shown below:

Month	Purchase of material P		Issued
	kgs	£ per kg	kgs
June	4,500	5.40	
July			3,100
August	7,000	5.80	
September	5,200	5.90	
October			8,000
November	10,000	6.10	

Month	Purchase of material Q		Issued
	kgs	£ per kg	kgs
July	12,500	11.90	
August			4,200
September			5,000
October	3,500	12.30	

The expected loss from each process is 4% and 2% of the input to Process 1 and 2 respectively, which can be sold as scrap for £1.50 per kg for Process 1 and £2.00 per kg for Process 2.

For the recent processing the actual loss for Process 1 was 700 kg and the transfer from Process 2 to finished stock was 19,750 kg.

Overheads are absorbed by each process on a % basis of the cost of material issued directly to the process. For Process 1 it is 25% of the cost of material P and for Process 2 it is 20% of the cost of material Q.

The labour cost was £52,960 and £48,704 for Process 1 and 2 respectively.

- **Requirement for question 4**

(a) Prepare the Process 1 and Process 2 Accounts for the recent processing of Leitos. *10*

(b) The mean loss from Process 1 has actually been 615 kg over the past year, with a standard deviation of 150 kg. Assuming this distribution of loss continues for the forthcoming year, determine the probability that the actual loss from Process 1 of Leitos will be:

(i) in excess of the expected target loss of 600 kg;
(ii) less than 3% of the 15,000 kg input;
(iii) between 550 kg and 650 kg. *10*

(c) State briefly the arguments for and against pricing stock issues on the LIFO basis. *5*

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Semaj plc employs a full time specialist worker, who is presently hired out to other businesses for a total of 500 hours per annum. The current hire charge made by Semaj plc is treble the effective hourly rate (ie rate per actual working hour) of employing this worker.

This company has now only a core need to employ this specialist worker for 600 hours per annum and is anxious to increase the hired out hours. A target to double the existing hired out hours has been set. However, this worker has appreciated his marketability and has demanded an hourly increase of £2 on his current wage of £10 per hour, or else he will accept an offer of alternative employment.

The demand for an increase in wages is coupled to the view held by Semaj plc that they will have to reduce their current hire charge by 10% and spend £4,000 a year on advertising, if they are to achieve their target of doubling the current level of hired hours.

All hired out hours above the core need can be covered by existing manpower, who are paid £6 per hour, although all cover for the specialist worker would be in overtime, that attracts a premium of one half.

The specialist worker is paid for 40 hours a week (5 days of 8 hours each) for 52 weeks a year and has a holiday entitlement of six weeks a year, which includes bank holidays. He attends training courses throughout the year, which reduces his annual actual working days by 17 days and his sickness record over recent years reveals that he has five days sickness per annum.

The employer labour on-costs of all workers is 20%, which covers such additional costs as National Insurance and pension fund contributions.

- **Requirement for question 5**

(a) Construct a table that shows clearly the current and target allocation of the specialist worker's time in a year. *8*

(b) Calculate the current hourly hire charge for the specialist worker. *4*

(c) Determine the effect on annual profit if the increased wage demand of the specialist worker is met and the views of the company on the requirements to achieve its target are implemented. *8*

(d) Explain how the Coefficient of Correlation could be used to assess the effectiveness of the advertising budget. 5

(25)