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Paper F2

MANAGEMENT ACCOUNTING

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JUNE 2009 EXAMINATIONS

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Paper F2

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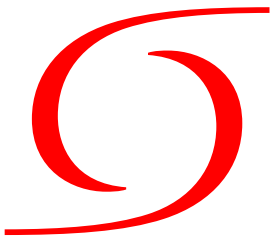

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Paper F2

FORMULAE

Regression analysis

$$a = \frac{\sum y}{n} - \frac{b\sum x}{n}$$

$$b = \frac{n\sum xy - \sum x \sum y}{n\sum x^2 - (\sum x)^2}$$

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{(n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

Economic order quantity

$$= \sqrt{\frac{2C_0 D}{C_h}}$$

Economic batch quantity

$$= \sqrt{\frac{2C_0 D}{C_h(1 - \frac{D}{R})}}$$

Chapter 1

THE NATURE AND PURPOSE OF COST AND MANAGEMENT ACCOUNTING

1 Introduction

The purpose of management accounting is to assist management in running the business in ways that will improve the performance of the business.

2 Data and information

One way of assisting management is to provide them with good information to help them with their decisions.

The information can be provided to them in different ways, but is usually in the form of reports. For example, a report analysing costs of producing each of several products may assist management in deciding which products to produce.

It is the management accountant who will be expected to provide the information, and in order to do so he/she needs to collect data. Data consists of the facts that are gathered and stored. Data has no clear meaning until it is processed – analysed and sorted – into information.

3 What makes good information?

Good quality information should:

- have a purpose and be relevant for the purpose
- be timely
- be understandable (to the manager using it)
- be accurate
- be complete (but not excessive)
- be communicated to the right person
- be communicated by an appropriate channel (for example, be printed or be sent electronically)

4 The main managerial processes

The main areas of management accounting are:

- **Costing**

  Cost accounting is identifying the cost of producing an item (or providing a service) in order to, for example, assist in deciding on a selling price.

- **Planning**

  e.g. plan how many staff will be required in the factory next year

- **Decision making**

  e.g. decide on what selling price to charge for a new product

- **Control**

  e.g. check month-by-month whether the company is over or under spending on wages

5 The different levels of planning

- **strategic planning**

  long-term plans (e.g. 5 to 10 years) for the business

  e.g. what new offices to open? / what new products to launch?

- **tactical planning**

  medium-term, more detailed, plans – usually involving producing budgets for the next year

  e.g. how many staff to employ next year?

- **operational planning**

  short-term planning and decisions

  e.g. which supplier to choose for a purchase next week

6 Comparison of management accounting with financial accounting

EXAMPLE 1

	Financial Accounting	*Management Accounting*

TEST 1

Question 1

The following assertions relate to financial accounting and to cost accounting:

(i) The main users of financial accounting information are external to an organisation.

(ii) Cost accounting is that part of financial accounting which records the cash received and payments made by an organisation.

Which of the following statements are true?

A Assertions (i) and (ii) are both correct.

B Only assertion (i) is correct.

C Only assertion (ii) is correct.

(1 mark)

Question 2

For which of the following is a profit centre manager responsible?

A Costs only
B Revenues only
C Costs and revenues.

(1 mark)

Question 3

Data is information that has been processed in such a way as to be meaningful to its recipients.

Is this statement true or false?

A True
B False

(1 mark)

Question 4

The following statement refers to a quality of good information:
The cost of producing information should be greater than the value of the benefits of that information to management.

Is this statement true or false?

A True
B False

(1 mark)

Chapter 2

COST CLASSIFICATION AND BEHAVIOUR

1 Cost classification

Cost classification is the arrangement of cost items into logical groups. For example: by their nature (materials, wages etc.); or function (administration, production etc.).

The eventual aim of costing is to determine the cost of producing a product/service; for profitability analysis, selling price determination and stock valuation purposes.

Cost unit

A cost unit is a unit of product or service in relation to which costs may be ascertained.

The cost unit should be appropriate to the type of business, for example:

Example 1

Suggest appropriate cost units for the following businesses

Solution

Business	Appropriate cost unit
Car manufacturer	
Cigarette manufacturer	
Builder	
Audit company	

Types of expenses

	$
Production/manufacturing costs	X
Administration costs	X
Selling and distribution costs	X
TOTAL EXPENSES	X

Only the production costs will be relevant in costing.

Direct costs

Direct costs are those costs which can be identified with and allocated to a particular cost unit.

TOTAL DIRECT COSTS = PRIME COST

Example 2

Direct costs

Indirect production costs (overheads)

Indirect production costs (known as production overheads) are those costs which are incurred in the course of making a product/service but which cannot be identified with a particular cost unit.

Example 3

Indirect production costs

TOTAL PRODUCTION COST = PRIME COST + PRODUCTION OVERHEADS

Non-production costs

Other costs required to run the business.

Example 4

Non-manufacturing/production costs

TOTAL COSTS = PRODUCTION COSTS + NON-PRODUCTION COSTS

2 Cost behaviour

It is expected that costs will increase as production increases (i.e. as output increases) but the exact way in which costs behave with output may differ.

Example 5

Types of behaviour

(a) Variable cost

(b) Fixed cost

(c) Stepped fixed cost

(d) Semi variable/fixed cost

Linear assumption

For Paper F2 we will assume that total variable costs vary linearly with the level of production (or that the variable cost per unit remains constant). In practice this may not be the case, but we will not consider the effect of this until later examinations.

Behaviour of manufacturing costs

With the linear assumption all costs can be categorised as either fixed or variable. This fits together with previous definitions:

Direct costs

By their nature direct costs will be variable costs.

Indirect costs/overheads

Overheads can be fixed or variable

	Fixed	*Variable*
Direct costs	X	√
Production overheads	√	√
Non-manufacturing costs	√	√

Semi-variable costs

It is necessary to determine the fixed and variable elements of semi-variable costs. A method known as **'High-Low'** can be used to establish the fixed and variable elements. This technique is best illustrated by the use of an example.

Example 6

The total costs of a business for differing levels of output are as follows:

Output (units)	*Total Costs ($'000)*
500	70
200	30
300	50
800	90
1,000	110

What are the fixed and variable elements of the total cost using the High-Low method?

A better approximation of the fixed and variable elements can be obtained using Regression Analysis. This will be considered in a later chapter of these notes.

Typical cost card for a cost unit

		$/unit
Direct costs:		
- Direct materials	(2kg @ $1.50/kg)	3.00
- Direct labour	(3 hrs @ $4/hr)	12.00
Prime cost		15.00
Indirect costs		
- Variable overheads		2.00
- Fixed overheads		3.00
Full product cost		20.00

Test 2

Question 1

An organisation has the following total costs at two activity levels:

Activity level (units)	16,000	22,000
Total costs ($)	135,000	170,000

Variable cost per unit is constant within this range of activity but there is a step up of $5,000 in the total fixed costs when the activity exceeds 17,500 units.

What is the total cost at an activity of 20,000 units?

A $155,000
B $158,000
C $160,000
D $163,000

(2 marks)

Question 2

Which one of the following should be classified as indirect labour?

A Assembly workers on a car production line
B Bricklayers in a house building company
C Machinists in a factory producing clothes
D Forklift truck drivers in the stores of an engineering company.

(1 mark)

Question 3

A manufacturing organisation incurs costs relating to the following:

(1) Commission payable to salespersons.
(2) Inspecting all products.
(3) Packing the products at the end of the manufacturing process prior to moving them to the warehouse.

Which of these costs are classified as production costs?

A (1) and (2) only
B (1) and (3) only
C (2) and (3) only
D (1), (2) and (3)

(2 marks)

Question 4

What would be the most appropriate cost unit for a cake manufacturer? Cost per:

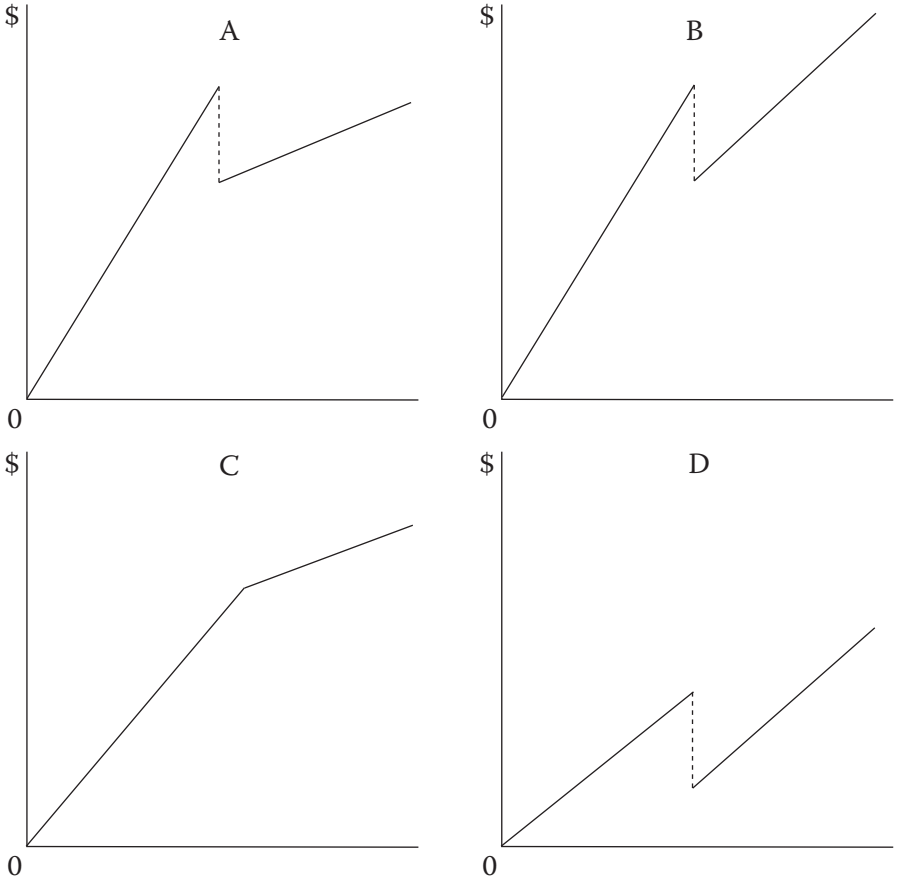
A Cake
B Batch
C Kg
D Production run

(1 marks)

Question 5

Up to a given level of activity in each period the purchase price per unit of a raw material is constant. After that point a lower price per unit applies both to further units purchased and also retrospectively to all units already purchased.

Which of the following graphs depicts the total cost of the raw materials for a period?



(2 marks)

Question 6

In an organisation manufacturing a number of different products in one large factory, the rent of that factory is an example of a direct expense when costing a product.

Is this statement true or false?

A True
B False

(1 mark)

Question 7

An organisation operates a piecework system of remuneration, but also guarantees its employees 80% of a time-based rate of pay which is based on $20 per hour for an eight hour working day. Three minutes is the standard time allowed per unit of output. Piecework is paid at the rate of $18 per standard hour.

If an employee produces 200 units in eight hours on a particular day, what is the employee's gross pay for that day?

A $128
B $144
C $160
D $180

(2 marks)

Question 8

A semi-variable cost is one that, in the short term, remains the same over a given range of activity but beyond that increases and then remains constant at the higher level of activity.

Is this statement true or false?

A True
B False

(1 mark)

Question 9

Which of the following are indirect costs?

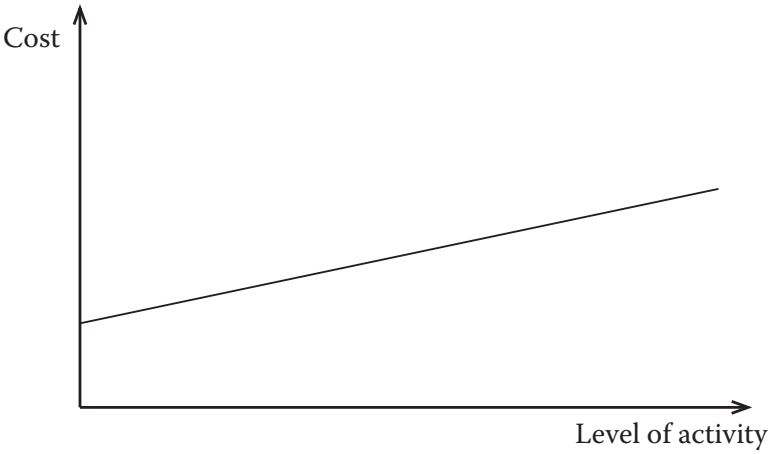
(i) The depreciation of maintenance equipment
(ii) The overtime premium incurred at the specific request of a customer
(iii) The hire of a tool for a specific job

A Item (i) only
B Items (i) and (ii) only
C Items (ii) and (iii) only
D All of them

(2 marks)

Question 10

The following is a graph of cost against level of activity



To which one of the following costs does the graph correspond?

A Electricity bills made up of a standing charge and a variable charge
B Bonus payment to employees when production reaches a certain level
C Salesman's commissions payable per unit up to a maximum amount of commission
D Bulk discounts on purchases, the discount being given on all units purchased

(2 marks)

Question 11

Which of the following costs are part of the prime cost for a manufacturing company?

A Cost of transporting raw materials from the supplier's premises
B Wages of factory workers engaged in machine maintenance
C Depreciation of lorries used for deliveries to customers
D Cost of indirect production materials

(2 marks)

Chapter 3

OVERHEAD ALLOCATION, APPORTIONMENT AND ABSORPTION

1 Introduction

A business needs to know the cost per unit of goods or services that they produce for many reasons.

E.g. to value stock

to fix a selling price

to analyse profitability

In principle, the unit cost of materials and of labour should not be a problem, because they can be measured. It is the overheads that present the real difficulty – in particular the fixed overheads.

E.g. if the factory costs $100,000 p.a. to rent, then how much should be included in the cost of each unit?

2 Absorption of overheads

To show our approach to solving the problem referred to above, consider the following example:

Example 1

X plc produces desks.
Each desk uses 3 kg of wood at a cost of $4 per kg, and takes 4 hours to produce.
Labour is paid at the rate of $2 per hour.
Fixed costs of production are estimated to be $700,000 p.a..
The company expects to produce 50,000 desks p.a..

Calculate the cost per desk.

This method of arriving at an overhead cost p.u. (dividing total overheads by total production) is known as the absorbing of overheads.

(Note that because we need the cost p.u. for things like fixing a selling price, we will usually absorb the overheads based on estimated total cost and estimated production. This can lead to problems later because obviously our estimates may not be correct. We will deal with this problem in the next chapter.)

Although the basic approach to absorbing overheads is not difficult, there are two extra problems that can occur and that you can be asked to deal with.

We will consider each of these problems in turn, and then look at a full example.

3 First problem – more than one product produced in the same factory

In this situation we have to decide on a basis for absorption first.

There are many bases for absorption that could be used (e.g. per unit, per labour hour, per machine hour etc.)

Example 2

X plc produces desks and chairs in the same factory.
Each desk uses 3kg of wood at a cost of $4 per kg, and takes 4 hours to produce.
Each chair uses 2 kg of wood at a cost of $4 per kg., and takes 1 hour to produce.
Labour is paid at the rate of $2 per hour.
Fixed costs of production are estimated to be $700,000p.a..
The company expect to produce 30,000 desks and 20,000 chairs p.a.
(Overheads are to be absorbed on a labour hour basis)

Calculate the cost per unit for desks and chairs

In practice it would be up to the Management Accountant to decide on the most appropriate basis.

In examinations it will be made obvious to you which basis to use, but read the question carefully.

4 Second problem – more than one department in the factory.

In this situation we need first to **allocate** and **apportion** the overheads between each department. We can then **absorb** the overheads in each department separately in the same way as before.

Example 3

X plc produces desks and chairs in the same factory. The factory has two departments, assembly and finishing.

Each desk uses 3kg of wood at a cost of $4 per kg., and takes 4 hours to produce – 3 hours in assembly and 1 hour in finishing.

Each chair uses 2 kg of wood at a cost of $4 per kg, and takes 1 hour to produce – ½ hour in assembly and ½ hour in finishing.

All labour is paid at the rate of $2 per hour.

Fixed costs of production are estimated to be $700,000 p.a.. Of this total, $100,000 is the salary of the supervisors – $60,000 to Assembly supervisor, and $40,000 to Finishing supervisor.

The remaining overheads are to be split 40% to Assembly and 60% to Finishing.

The company expects to produce 30,000 desks and 20,000 chairs.

(Overheads to be absorbed on a labour hour basis)

Calculate the cost per unit for desks and for chairs

The charging of supervisors salaries to the relevant department is known as **allocation** of overheads.

The splitting or sharing of overheads between departments (as in the remaining $600,000 in our example) is known as the **apportionment** of overheads.

A fuller example of allocating and apportioning overheads:

Example 4

Production overhead costs for the period

	$
Factory rent	20,000
Factory heat	5,000
Processing Dept – supervisor	15,000
Packing Dept – supervisor	10,000
Depreciation of equipment	7,000
Factory canteen expenses	18,000
Welfare costs of factory employees	5,000
	80,000

	Processing Dept	***Packing Dept***	***Canteen***
Cubic space	50,000 m^3	25,000 m^3	5,000 m^3
NBV equipment	$300,000	$300,000	$100,000
No. of employees	50	40	10

Allocate and apportion production overhead costs between the three departments using a suitable basis.

5 Reapportionment of service cost centre overheads

Factory cost centres can be broken down into two types:

PRODUCTION COST CENTRES - these make the cost units.

SERVICE COST CENTRES - these do work for the production cost centres and one another.

We therefore need to transfer all service cost centre overheads to the production centres so that all production overheads for the period are shared between the production cost centres alone - as it is through these cost centres that cost units flow.

No Inter Service Work Done

If there is just one service department, or if there is more than one service department but there is no work done by one service department for another, then reapportionment is done using a suitable basis (e.g. canteen costs by the number of employees).

Example 5

Reapportion the canteen costs in Example 4 to the production cost centres.

Inter-Service Work Done

The problem is a little more complicated if there is more than one service cost centre and where they do work for one another. The way to deal with this is the reciprocal method.

The reciprocal method can be carried out in one of two ways:

- either the continuous or repeated distribution (tabular) method; or
- the algebraic method.

Example 6

	Production Depts		*Service Centres*	
	X	*Y*	*Stores*	*Maintenance*
	$	*$*	*$*	*$*
Allocated and apportioned overheads	70,000	30,000	20,000	15,000
Estimated work done by the service centres for other departments:				
Stores	50%	30%	-	20%
Maintenance	45%	40%	15%	-

Reapportion service department costs to departments using:
(a) repeated distribution method; and
(b) algebraic method.

Test 3

Question 1

A factory consists of two production cost centres (A and B) and two service cost centres (X and Y). The total allocated and apportioned overhead for each is as follows:

A	*B*	*X*	*Y*
$95,000	$82,000	$46,000	$30,000

It has been estimated that each service cost centre does work for other cost centres in the following proportions:

	A	*B*	*X*	*Y*
Percentage of service cost centre X to	50	50	–	–
Percentage of service cost centre Y to	30	60	10	–

The reapportionment of service cost centre costs to other cost centres fully reflects the above proportions.

After the reapportionment of service cost centre costs has been carried out, what is the total overhead for production cost centre A?

A $124,500
B $126,100
C $127,000
D $128,500

(2 marks)

Question 2

The process of cost apportionment is carried out so that

A costs may be controlled
B cost units gather overheads as they pass through cost centres
C whole items of cost can be charged to cost centres
D common costs are shared among cost centres

(1 marks)

Question 3

A cost centre is

A A unit of product or service in relation to which costs are ascertained
B An amount of expenditure attributable to an activity
C A production or service location, function, activity or item of equipment for which costs are accumulated
D A centre for which an individual budget is drawn up

(1 marks)

Question 4

A company manufactures two products L and M in a factory divided into two cost centres, X and Y. The following budgeted data are available:

	Cost centre	
	X	*Y*
Allocated and apportioned fixed overhead costs	$88,000	$96,000
Direct labour hours per unit:		
Product L	3·0	1·0
Product M	2·5	2·0

Budgeted output is 8,000 units of each product. Fixed overhead costs are absorbed on a direct labour hour basis.

What is the budgeted fixed overhead cost per unit for Product M?

A $10
B $11
C $12
D $13

(2 marks)

Question 5

A company operates a job costing system. Job number 1203 requires $300 of direct materials and $400 of direct labour. Direct labour is paid at the rate of $8 per hour. Production overheads are absorbed at a rate of $26 per direct labour hour and non-production overheads are absorbed at a rate of 120% of prime cost.

What is the total cost of job number 1203?

A $2,000
B $2,400
C $2,840
D $4,400

(2 marks)

Question 6

The management accountant of Warsaw Limited has already allocated and apportioned the fixed overheads for the period although she has yet to reapportion the service centre costs. Information for the period is as follows:

	Production departments		*Service departments*		*Total*
	1	*2*	*Stores*	*Maintenance*	
Allocated and apportioned	$17,500	$32,750	$6,300	$8,450	$65,000
Work done by:					
Stores	60%	30%	-	10%	
Maintenance	75%	20%	5%	-	

What are the total overheads including in production department 1 if the reciprocal method is used to reapportion service centre costs?

A $27,618
B $28,171
C $28,398
D $28,453

(2 marks)

Chapter 4

THE MANAGEMENT ACCOUNTANTS PROFIT STATEMENT – ABSORPTION COSTING

1 Introduction

In the previous chapter we stated that the cost per unit is normally calculated in advance using estimated or budgeted figures. This is for several reasons. For instance, we need an estimate of the cost before we can fix a selling price. In addition, the estimated cost per unit provides a benchmark for control purposes. The Management Accountant can check regularly whether or not units are costing more or less than estimated and attempt to take corrective action if necessary.

As a result, the Management Accountants Profit Statement (or Operating Statement) takes a different form than that of the Financial Accountant's Income Statement

The statement is usually prepared monthly, and its objective is to show whether the profit is higher or lower that that expected, and to list the reasons for any differences.

The statement starts with the profit that should have been made if all the costs had been the same as on the standard cost card.

It then lists all the reasons for any differences in profit (or **variances**) to end with the actual profit.

However, in calculating the budgeted profit for individual months, absorption costing causes a problem when the expected production in a month differs from that used to absorb fixed overheads for the cost card.

This problem is illustrated in the following example

2 Illustration

Example 1

X plc produces one product – desks.
Each desk is budgeted to require 4kg of wood at $3 per kg, 4 hours of labour at $2 per hour, and variable production overheads of $5 per unit.
Fixed production overheads are budgeted at $20,000 per month and average production is estimated to be 10,000 units per month.
The selling price is fixed at $35 per unit.
There is also a variable selling cost of $1 per unit and fixed selling cost of $2,000 per month.
During the first two months X plc expects the following levels of activity:

	January	*February*
Production	11,000 units	9,500 units
Sales	9,000 units	11,500 units

(a) Prepare a cost card using absorption costing
(b) Set out Profit Statements for the months of January and February.

3 Hourly absorption rates

The previous example assumed that fixed overheads were absorbed on a unit basis. A popular question in the exam is to be asked to calculate the amount of any over or under - absorption when fixed overheads are absorbed on an hourly basis

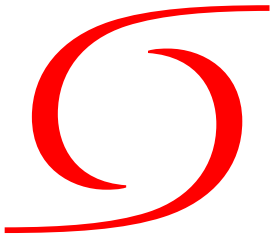
Example 2

Y plc budgets on working 80,000 hours per month and having fixed overheads of $320,000. During April, the actual hours worked are 78,000 and the actual fixed overheads are $315,500.

Calculate:

(a) the overhead absorption rate per hour.

(b) the amount of any over or under absorption of fixed overheads in April



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