

Q3.

ABC Ltd has a single production process for which the following costs have been estimated for the period ending 31 December 1992:

	£
Material receipt and inspection cost	15,600
Power cost	19,500
Material handling cost	13,650

Three products X, Y and Z are produced by workers who perform a number of operations on material blanks using hand-held electrically powered drills. The workers have a wage rate of £4 per hour.

The following budgeted information has been obtained for the period ending 31 December 1992:

	Product X	Product Y	Product Z
Production quantity (units)	2,000	1,500	800
Batches of material	10	5	16
Data per product unit:			
Direct material (sq. metres)	4	6	3
Direct material (£)	5	3	6
Direct labour (minutes)	24	40	60
Number of power drill operations	6	3	2

Overhead costs for material receipt and inspection, process power and material handling are presently each absorbed by product units using rates per direct labour hour.

An activity based costing investigation has revealed that the cost drivers for the overhead costs are as follows:

- Material receipt and inspection: number of batches of material.
- Process power: number of power drill operations.
- Material handling: quantity of material (sq. metres) handled.

(a) Prepare a summary which shows the budgeted product cost per unit for each of products X, Y and Z for the period ending 31 December 1992 detailing the unit costs for each cost element:

- (i) using the existing method for the absorption of overhead costs
- and (ii) using activity based costing.

(16 marks)

(b) Explain the relevance of cost drivers in activity based costing. Make use of figures from the summary statement prepared in (a) to illustrate your answer.

(4 marks)

(Total 20 marks)

Harold Newall recently received £100,000 as a result of a redundancy. He decides to commence manufacturing a product for which he knows there is a ready market. He intends to employ new workers as and when needed. Suitable premises have been found to rent, and machinery costing £40,000 has already been purchased out of the £100,000.

Production will begin on 1st September, 25% of the October sales will be manufactured in September. Each month thereafter the production will consist of 75% of the current month's sales and 25% of the following month's sales.

Estimated sales are:

	Units	Sales Price per unit £
October	3000	24
November	3500	25
December	3800	25
January	4100	26
February	4300	26
March	4500	26

Amounts receivable from customers: a 2½% cash discount is allowed for payment in the month following the month of sale (i.e. the second month), 40% of each month's sales qualify for this discount. 30% of each month's sales are received in the third month, 25% in the fourth month and 3% in the fifth month. The balance of 2% represents anticipated bad debts.

Variable production cost per unit	£
Direct materials	8
Direct wages	6
Variable overhead	1
	<u>£15</u>

80% of the raw material stocks required for the September production period have already been purchased out of the £100,000. It is intended to buy, each month, 60% of the materials required for the following month's production requirements. The other 40% will be purchased in the month of production. The balance of the September purchase i.e. 20%, has yet to be made. Payment for materials will be made 1 month after purchase.

All wages will be paid on the last day of the month in which they are incurred.

Variable production overhead: 65% is to be paid in the month following the month in which it was incurred, and 35% one month later.

Fixed overheads are £3,500 per month. 25% of this is paid in the month incurred, one half in the following month, and the remainder represents depreciation on the machinery calculated on a straight line basis.

Prepare a cash budget for September to January assuming that unlimited overdraft facilities are available. Work to the nearest whole pound.

A specialist manufacturer of components in the electronics industry has been offered a contract to supply 800 identical components over the next twelve months. The data relating to the production of each component is as follows:

Material required

Material A1: 4 kg	-	see note 1
Material A2: 3 kg	-	see note 2
Part No. 479: 1	-	see note 3

Notes

1. Material A1 is in continuous use by the company. Current stock is 2,000 kg at a book value of £10.70 per kg but it is known that future purchases will cost £12.50 per kg.

2. A stock of 1,200 kg of material A2 is held. The original cost of this material was £8.30 per kg and future purchases will cost £7.00 per kg. As the material has not been required for the last two years it has been written down to £4.50 per kg scrap value. The only foreseeable alternative use is as a substitute for material A4 (in current use) but this would involve further processing costs of £2.60 per kg. The current cost of material A4 is £4.60 per kg.

3. It is estimated that the Part No. 479 could be bought for £70 each.

Labour requirements

Each component would require six hours of skilled labour and four hours of semi-skilled. An employee possessing the necessary skills is available and is currently paid £6 per hour. A replacement would, however, have to be obtained at a rate of £5 per hour for the work which would otherwise be done by the skilled employee. The current rate for semi-skilled work is £4 per hour and an additional employee could be appointed for this work.

Overhead

The company absorbs overhead by a machine hour rate, currently £25 per hour of which £9 is for variable overhead and £16 for fixed overhead. If this contract is undertaken it is estimated that fixed costs will increase for the duration of the contract by £5,200. Spare machine capacity is available and each component would require six machine hours.

A price of £240 per component has been suggested by the offering company.

- (i) State whether or not the contract should be accepted and support your conclusion with appropriate figures for presentation to management.
- (ii) Comment briefly on three factors which management ought to consider and which may influence their decision.

Multi-product Analysis

So far only single product situations have been considered. However if a number of products are produced in a constant ratio the same analysis can be carried out using an average contribution rate equivalent to a single product. If the analysis is carried out graphically then it can be shown as an average or by showing each product's contribution to sales ratio.

Example

A department has fixed costs of £50,000 pa and has three products, the budgeted sales and contribution of which are:

Product	Sales £	Contribution £
A	150,000	30,000
B	40,000	20,000
C	60,000	25,000

Determine the break-even sales.

The weighted average PV ratio =

Hence the break-even sales =

This can be shown graphically as follows:

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ABC Quarries Ltd manufactures three types of brick, Engineering, Facing and Common. Budgeted sales of pallets of these bricks for the next month are as follows:-

Brick	Quantity	Price (£)
Engineering	3,000	100
Facing	5,000	140
Common	7,000	80

Clay, shale and brickearth are used in the manufacture of these bricks and their costs and quantities are:-

	Clay	Shale	Brickearth
Material unit cost (£)	13	4	5
Units used per pallet:			
Engineering	4	4	2
Facing	5	3	1
Common	3	2	1

Two types of labour are used, loaders and machinists. The hourly rates and standard pallet times for each type of brick are:-

	Loaders	Machinists
Hourly rate	£5	£6
Standard pallet time (mins)		
Engineering	12	20
Facing	15	30
Common	12	10

Production overheads, which are absorbed into product costs on a direct labour hours basis, are budgeted as follows:-

	£
Building occupancy	33,850
Equipment utilization	17,170
Personal services	12,150
Materials handling	9,340
Production planning and control	9,790
Total	<u>82,300</u>

Stocks at the beginning of the month are expected to be:-

Finished bricks	Quantity (pallets)	
Engineering	1,000	
Facing	2,000	
Common	3,000	
Materials	Quantity (units)	Unit cost (£)
Clay	40,000	12.50
Shale	20,000	4.00
Brickearth	10,000	4.50

The company plans an increase of 10% in quantities of finished bricks held at the end of the month, and a reduction of 20% in the quantities of materials. The FIFO system of stock evaluation is used by the company.