

Cost Accounting Level 3



Model Answers

Series 4 2006 (Code 3016)

Vision Statement

Our vision is to contribute to the achievements of learners around the world by providing integrated assessment and learning services, adapted to meet both local market and wider occupational needs and delivered to international standards.



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Cost Accounting Level 3

Series 4 2006

How to use this booklet

Model Answers have been developed by Education Development International plc (EDI) to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCI International Qualifications. The contents of this booklet are divided into 3 elements:

- (1) Questions – reproduced from the printed examination paper
- (2) Model Answers – summary of the main points that the Chief Examiner expected to see in the answers to each question in the examination paper, plus a fully worked example or sample answer (where applicable)
- (3) Helpful Hints – where appropriate, additional guidance relating to individual questions or to examination technique

Teachers and candidates should find this booklet an invaluable teaching tool and an aid to success.

EDI provides Model Answers to help candidates gain a general understanding of the standard required. The general standard of model answers is one that would achieve a Distinction grade. EDI accepts that candidates may offer other answers that could be equally valid.

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QUESTION 1

Triple Products uses a two stage processing system to jointly produce its three main products, Products P, Q and R. By-product B is also produced during the process.

Product P is complete at the end of stage 1 and Products Q, R and By-product S emerge at the end of stage 2.

Information regarding the joint process for the last period is as follows:

Input

Process stage 1

| | |
|----------------|-----------------------------|
| Raw material A | 20,000 kg at £2.00 per kg. |
| Raw material B | 24,000 kg at £2.50 per kg |
| Direct labour | 6,400 hrs at £8.00 per hour |

Process stage 2

| | |
|----------------|-----------------------------|
| Raw material C | 10,000 kg at £1.50 per kg |
| Direct labour | 1,800 hrs at £9.00 per hour |

Factory overheads in each process stage are absorbed at £12.00 per direct labour hour

Output

Process stage 1

| | Quantity | Selling price per kg |
|------------------------------|-----------|----------------------|
| Product P | 8,000 kg | £10.00 |
| Material transfer to stage 2 | 32,000 kg | - |

Process stage 2

| | | |
|---------------|-----------|--------|
| Product Q | 17,000 kg | £15.00 |
| Product R | 22,000 kg | £12.50 |
| By- Product S | 2,000 kg | £4.00 |

Process losses from stage 1 are disposed of at a cost of £0.50 per kg. The losses that occurred in stage 1, in the last period, were normal. No losses are expected in stage 2.

There was no work in progress at the beginning or at the end of the period in either process stage.

Joint processing costs are apportioned on the basis of relative weight of output.

REQUIRED

- (a) For the last period prepare the process accounts for:
- (i) Process stage 1 (6 marks)
 - (ii) Process stage 2 (6 marks)
- (b) Assuming that all production was sold prepare a profit statement for the last period. (4 marks)
- (c) Explain the meaning of:
- (i) Joint products
 - (ii) By-products (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

(a)

(i)

Process stage 1 account

| | Kg | £ | | Kg | £ |
|------------------------|---------------|----------------|--------------------|---------------|----------------|
| Material A | 20,000 | 40,000 | Product P | 8,000 | 46,000 |
| Material B | 24,000 | 60,000 | Trans to process 2 | 32,000 | 184,000 |
| Labour | | 51,200 | Normal loss | 4,000 | - |
| Overheads | | 76,800 | | | |
| Process loss/disposals | | 2,000 | | | |
| | <u>44,000</u> | <u>230,000</u> | | <u>44,000</u> | <u>230,000</u> |

Workings

Product P $\text{£}230,000 \times 8,000/40,000 = \text{£}46,000$

Trans to process 2 $\text{£}230,000 \times 32,000/40,000 = \text{£}184,000$

(ii)

Process stage 2 account

| | Kg | £ | | Kg | £ |
|------------|---------------|----------------|---------------|---------------|----------------|
| Process 1 | 32,000 | 184,000 | Product Q | 17,000 | 97,240 |
| Material C | 10,000 | 15,000 | Product R | 22,000 | 125,840 |
| Labour | | 16,200 | By-product S | 2,000 | 8,000 |
| Overheads | | 21,600 | Abnormal loss | 1,000 | 5,720 |
| | <u>42,000</u> | <u>236,800</u> | | <u>42,000</u> | <u>236,800</u> |

Workings

Product Q $\text{£}(236,800 - 8,000) \times 17,000/40,000 = \text{£}97,240$

Product R $\text{£}(236,800 - 8,000) \times 22,000/40,000 = \text{£}125,840$

Abnormal loss $\text{£}(236,800 - 8,000) \times 1,000/40,000 = \text{£}5,720$

MODEL ANSWER TO QUESTION 1 CONTINUED

(b)

| | Profit Statement (£) | | | |
|--------------------|----------------------|---------|---------|-----------------------|
| Product | P | Q | R | Total |
| Sales | 80,000 | 255,000 | 275,000 | 610,000 |
| Process costs | 46,000 | 97,240 | 125,840 | <u>269,080</u> |
| | | | | 340,920 |
| Less abnormal loss | | | | <u>5,720</u> |
| Profit | | | | <u>335,200</u> |

Alternative answer to part (b)

| | | | | |
|--------------|---------------|--|----------------|-----------------------|
| Sales | | | | |
| Product P | 80,000 | | | |
| Product Q | 255,000 | | | |
| Product R | 275,000 | | | |
| By-product S | <u>8,000</u> | | 618,000 | |
| Costs | | | | |
| Process 1 | 230,000 | | | |
| Process 2 | <u>52,800</u> | | <u>282,800</u> | |
| Profit | | | | <u>335,200</u> |

(c) (i) Joint Products

Two or more products separated in processing, each having a sufficiently high saleable value to merit recognition as a main product.

(ii) By-Product

A product that has commercial value but is not the product, or products, for which the production process is intended.

QUESTION 2

A company has budgeted to use 12,000 units of component RM10 in its production department during the forthcoming year. Production will be distributed uniformly throughout the year.

The following information is available regarding component RM10:

| | |
|---------------------|-------------------------------------|
| Cost of component | £12.50 each (before discount) |
| Ordering costs | £250 per order |
| Stock holding costs | 12% of the component cost per annum |

The component can be purchased in order sizes of 1,000, 2,000, 4,000, 6,000 or 12,000 and it can be assumed that the company carries no buffer (safety) stock.

REQUIRED

- (a) Produce a table showing the total annual ordering costs and the total annual stock holding costs of the component for each order size assuming no discount is received from the basic price. Identify the optimum order size. (7 marks)
- (b) Use the EOQ formula to verify your answer. (5 marks)

Assume that the supplier has offered the following quantity discounts:

| Order size | Discount from the basic £12.50 unit price |
|-----------------|---|
| 0 - 3,999 | No discount |
| 4,000 - 11,999 | 4% discount |
| 12,000 and over | 6% discount |

REQUIRED

- (c) Advise the company on the order size that minimises the total annual cost if the quantity discounts are available. Support your advice with calculations. (8 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

| (a) | Order size (units) | No of orders | Ordering costs (£) | Average stock (units) | Stock holding costs (£) | Total costs (£) |
|-----|--------------------|--------------|--------------------|-----------------------|-------------------------|-----------------|
| | 1,000 | 12 | 3,000 | 500 | 750 | 3,750 |
| | 2,000 | 6 | 1,500 | 1,000 | 1,500 | 3,000 |
| | 4,000 | 3 | 750 | 2,000 | 3,000 | 3,750 |
| | 6,000 | 2 | 500 | 3,000 | 4,500 | 5,000 |
| | 12,000 | 1 | 250 | 6,000 | 9,000 | 9,250 |

Optimum order size = 2,000 units 1

(b)

$$EOQ = \sqrt{\frac{2 \times C_o \times D}{C_h}}$$

$$EOQ = \sqrt{\frac{2 \times 500 \times 12,000}{12.5 \times 0.12}}$$

$$EOQ = 2,000 \text{ units}$$

(c)

| Options available | 2,000 | 4,000 | 12,000 |
|-------------------------|----------------|----------------|----------------|
| Order size | 2,000 | 4,000 | 12,000 |
| Component price (£) | <u>12.50</u> | <u>12.00</u> | <u>11.75</u> |
| Ordering costs (£) | 1,500 | 750 | 250 |
| Stock holding costs (£) | 1,500 | 2,880 | 8,460 |
| Component costs (£) | <u>150,000</u> | <u>144,000</u> | <u>141,000</u> |
| Total annual costs (£) | <u>153,000</u> | <u>147,630</u> | <u>149,710</u> |

Advice

Optimum order size = 4,000 components

QUESTION 3

A company manufactures and sells a single product. The following information is available for the period December year 1 to May year 2.

Sales:

The budgeted sales, in units, are as follows:

| December | January | February | March | April | May |
|----------|---------|----------|-------|-------|-----|
| 480 | 520 | 540 | 560 | 560 | 540 |

The standard selling price is £25 per unit. 40% of the sales are expected to be cash sales with the remaining customers allowed one months credit. It is estimated that 5% of credit customers will be bad debts.

Production:

The company manufactures 75% of the budgeted sales during the month before sale and the remaining 25% in the month of sale.

Costs:

- (1) Direct materials will be £10 per unit of finished product. Materials will be purchased in the month prior to their use in production, and paid for in the month following purchase.
- (2) Direct labour will be paid at a rate of £4 per unit of finished product, payable in the month of production. A bonus payment of £2.00 per unit will be paid on all additional monthly production in excess of 500 units, paid in the month following production.
- (3) Fixed production overheads of £20,000, including depreciation of £6,800, are budgeted for the year ahead. These are budgeted to be the same each month and, apart from depreciation, are payable in the month they are incurred.
- (4) Variable selling expenses are expected to be £1.50 per unit payable in the month of sale
- (5) Fixed administration overheads of £6,000 for the year ahead are budgeted to be the same per month and payable in the month they are incurred.

Cash:

The company expect to have a bank overdraft balance of £2,500 at the start of January year 2

REQUIRED

Prepare the following budgets for each of months January to March.

- | | |
|------------------------------|------------|
| (a) Production (units) | (3 marks) |
| (b) Material purchases (£'s) | (2 marks) |
| (c) Labour cost | (3 marks) |
| (d) Cash | (12 marks) |

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a) Production Budget

| | December | January | February | March | April | May |
|-------------------------------|------------|------------|------------|------------|------------|------------|
| Sales (units) | <u>480</u> | <u>520</u> | <u>540</u> | <u>560</u> | <u>560</u> | <u>540</u> |
| Production (units) | | | | | | |
| 75% of following months sales | 390 | 405 | 420 | 420 | 405 | |
| 25% of current months sales | <u>120</u> | <u>130</u> | <u>135</u> | <u>140</u> | <u>140</u> | |
| Production budget | <u>510</u> | <u>535</u> | <u>555</u> | <u>560</u> | <u>545</u> | |

(b) Material Purchases Budget

| | | | | |
|--------------------------------------|--|-------|-------|-------|
| Material purchases(production units) | | 555 | 560 | 545 |
| Material purchases budget (£) | | 5,550 | 5,600 | 5,450 |

(c) Labour Cost Budget

| | | | | |
|-------------------------------|--|--------------|--------------|--------------|
| Production output (units) | | <u>535</u> | <u>555</u> | <u>560</u> |
| Basic cost | | 2,140 | 2,220 | 2,240 |
| Bonus cost | | <u>70</u> | <u>110</u> | <u>120</u> |
| Labour cost budget (£) | | <u>2,210</u> | <u>2,330</u> | <u>2,360</u> |

(d) Cash budget

| | January | February | March |
|--------------------------------|----------------|---------------|---------------|
| Receipts | | | |
| Sales | <u>12,040</u> | <u>12,810</u> | <u>13,295</u> |
| Payments | | | |
| Material | 5,350 | 5,550 | 5,600 |
| Labour | 2,160 | 2,290 | 2,350 |
| Fixed production overheads | 1,100 | 1,100 | 1,100 |
| Variable selling expenses | 780 | 810 | 840 |
| Fixed administration overheads | <u>500</u> | <u>500</u> | <u>500</u> |
| | <u>9,890</u> | <u>10,250</u> | <u>10,390</u> |
| Net cash flow | 2,150 | 2,560 | 2,905 |
| Opening bank balance | <u>(2,500)</u> | <u>(350)</u> | <u>2,210</u> |
| Closing bank balance | <u>(350)</u> | <u>2,210</u> | <u>5,115</u> |

Cash budget workings

Receipts - Sales

| | Sales (£) | Receipts (£) | | Total |
|-------|-----------|---------------|-----------------|-------------------|
| | | Cash (40%) | Credit (60%) | Bad debts (5%) |
| Dec | 12,000 | | | |
| Jan | 13,000 | 5,200 | 7,200 | (360) |
| Feb | 13,500 | 5,400 | 7,800 | (390) |
| March | 14,000 | 5,600 | 8,100 | (405) |
| | | | | 13,295 |

Payments - Materials

MODEL ANSWER TO QUESTION 3 CONTINUED

| | Purchases(£) | Payments(£) |
|-------|---------------------|--------------------|
| Dec | 5,350 (535 x 10) | |
| Jan | 5,550 | 5,350 |
| Feb | 5,600 | 5,550 |
| March | 5,450 | 5,600 |

Payments - Labour

| | Output (units) | Basic pay(£) | Bonus pay(£) | Total pay(£) |
|-------|-----------------------|---------------------|---------------------|---------------------|
| Dec | 510 | | | |
| Jan | 535 | 2,140 | 20 | 2,160 |
| Feb | 555 | 2,220 | 70 | 2,290 |
| March | 560 | 2,240 | 110 | 2,350 |

Payments - Fixed production overheads

| | |
|-------------------|--------------|
| Total overheads | 20,000 |
| Less depreciation | <u>6,800</u> |
| Payment per year | 13,200 |
| Payment per month | 1,100 |

Payments - Variable selling expenses

| | Sales (units) | Expense (£) |
|-------|----------------------|--------------------|
| Jan | 520 | 780 |
| Feb | 540 | 810 |
| March | 560 | 840 |

QUESTION 4

A company, which manufactures a single product, has prepared the following budgeted information for the next period:

| | |
|------------------------------------|---------|
| Production/sales units | 20,000 |
| | £ |
| Selling price per unit | 28 |
| Direct material per unit | 8 |
| Direct labour per unit | 5 |
| Production overheads | 110,000 |
| Selling and distribution overheads | 50,000 |
| Administration overheads | 20,000 |

The following points have been revealed concerning the budget:

- (1) The budget is based on 80% utilisation of maximum capacity.
- (2) Production overheads are absorbed on a cost per unit basis based on the maximum capacity and a total cost of £120,000 at maximum capacity.
- (3) Selling and distribution overheads include a fixed element of £30,000.
- (4) Administration overheads are fixed.

REQUIRED

- (a) Calculate for the next period
- (i) The fixed overhead costs (5 marks)
 - (ii) The breakeven point (in units) (2 marks)
 - (iii) The margin of safety as a % of the sales (1 mark)
 - (iv) Profit at 80% capacity utilisation. (1 mark)

The company is considering reducing its selling price to £26 per unit. Market research suggests that this price reduction will generate the additional sales for the company to operate at maximum capacity.

REQUIRED

- (b) Assuming a selling price of £26 per unit and maximum capacity utilisation, calculate for the next period:
- (i) The breakeven point (in units) (1 mark)
 - (ii) The margin of safety as a % of sales (1 mark)
 - (iii) Profit at 100% capacity. (1 mark)
- (c) Using the graph paper provided draw on a single profit-volume chart a separate profit line for each of the following:
- (i) £28 per unit selling price (up to 80% capacity utilisation)
 - (ii) £26 per unit selling price (up to 100% capacity utilisation)

Clearly show on the chart the breakeven point for each selling price and margin of safety for each resulting output.

(8 Marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a)

(i) Fixed overhead costs

| Overhead | Total cost(£) | Fixed cost(£) | Variable cost(£) |
|--------------------------|----------------------|----------------------|-------------------------|
| Production | 110,000 | 70,000 | 40,000 |
| Selling and distribution | 50,000 | 30,000 | 20,000 |
| Administration | <u>20,000</u> | <u>20,000</u> | <u>-</u> |
| | <u>180,000</u> | <u>120,000</u> | <u>60,000</u> |

Workings
 100% Capacity Output = 20,000 / 0.8 = 25,000 units

| | | Fixed | Variable |
|----------------------|--------------------------------|------------|------------------|
| Production overheads | | F + | 25,000 x V |
| 100% Capacity | 120,000 = | F + | 20,000 x V |
| 80% Capacity | <u>110,000 =</u> | <u>F +</u> | <u>5,000 x V</u> |
| | <u>10,000 =</u> | | |
| Variable cost V = | (10,000 / 5,000) = £2 per unit | | |
| Fixed cost = | 120,000 - (25,000 x 2) | | = £70,000 |

(ii)

Breakeven point.

Variable cost per unit(£)

| | |
|--------------------------|-----------|
| Direct material | 8 |
| Direct labour | 5 |
| Overheads(60,000/20,000) | <u>3</u> |
| | <u>16</u> |

Unit contribution (£) 28 - 16 = £12
 Breakeven point 120,000 / 12 = 10,000 units

(iii) Margin of safety

$$= \frac{20,000 - 10,000}{20,000} \times 100\% = 50\%$$

(iv) Profit

$$= (20,000 \times £12) - £120,000 = £120,000$$

(b)

(i) Breakeven point

Unit contribution (£) 26 - 16 = £10
 Breakeven 120,000 / 10 = 12,000 units

(ii) Margin of safety

$$= \frac{25,000 - 12,000}{25,000} \times 100\% = 52\%$$

(iii) Profit

$$= (25,000 \times £10) - £120,000 = £130,000$$

(c)

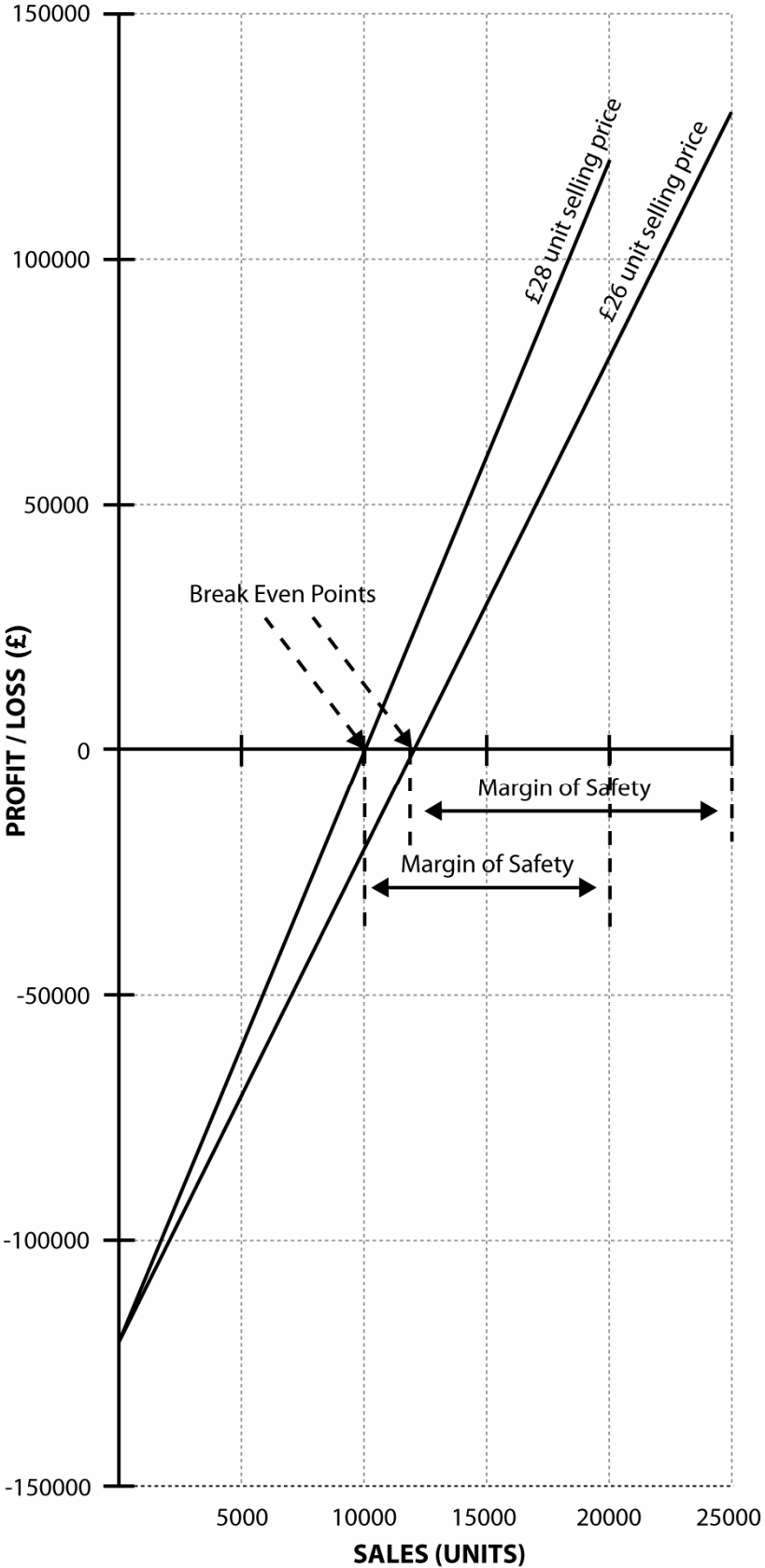
Profit Volume Chart

(See attached chart)

| | |
|-------------------|-----|
| Title | (1) |
| Labelling | (1) |
| Lines | (2) |
| Fixed cost | (1) |
| Breakeven points | (1) |
| Margins of safety | (2) |

MODEL ANSWER TO QUESTION 4 CONTINUED

Profit Volume Chart



QUESTION 5

A company manufactures and sells a range of products, including Product D12. 5,400 units of Product D12 are sold each year. The company is proposing a change to the manufacturing method for this product.

The following information is available.

Each unit of product D12 is made with 8kg of material costing £5.00 per kg
A machine operation reduces the weight of each unit to 5kg
Recovered scrap material is sold for £2.50 per kg
All completed products are inspected and rejected units sold for £10.00 per unit

Present manufacturing method.

The product is machined in cost centre A
Machine time per unit 1.50 hours.
All scrap material is recovered
Product rejection rate at final inspection 10%
Conversion cost rate is £11 per machine hour, of which 40% is variable.
Cost centre A produces a variety of products

Proposed manufacturing method.

The product to be machined in cost centre B
Machine time per unit will be reduced to 1.25 hours.
Only 50% of scrap material will be recovered
Product rejection rate at final inspection reduced to 4%
Conversion cost rate is £18.00 per machine hour, of which 30% is variable.
Cost centre B produces a variety of products

REQUIRED

- (a) Calculate for the present manufacturing method
- (i) The total time taken each year to machine product D12 (2 marks)
 - (ii) The variable production cost of Product D12 (net of scrap material and reject sales) both in total per annum and per unit of finished product. (7 marks)
- (b) Advise the company on whether or not to change the manufacture of product D12 from Cost centre A to Cost centre B. Your answer should include suitable calculations. (11 Marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a) Present Manufacturing method (Cost centre A)

| | | |
|------------------------------|------------------------------|----------------|
| Output | | |
| D12 units sold | | 5,400 |
| Rejection rate at inspection | | 10% |
| Units manufactured | (5,400 / 0.90) | 6,000 |
| Time Taken | (6,000 x 1.50 hrs) | 9,000 Hours |
| Variable cost | | £ |
| Material | (6,000 x 8 x £5.00) | 240,000 |
| Variable conversion | [6,000 x 1.50 x (40% x £11)] | 39,600 |
| Sale of scrap material | [6,000 x (8 - 5) x £2.50] | (45,000) |
| Sale of rejects | [(6,000 - 5,400) x £10.00] | <u>(6,000)</u> |
| Total variable cost | | <u>228,600</u> |
| Unit variable cost | 228,600 / 5400 | 42.33 |

(b) Proposed Manufacturing method (Cost centre B)

| | | |
|------------------------------|-------------------------------|----------------|
| Output | | |
| D12 units sold | | 5,400 |
| Rejection rate at inspection | | 4% |
| Units manufactured | (5,400 / 0.96) | 5,625 |
| Time Taken | (5,625 x 1.25 hrs) | 7,031.25 Hours |
| Variable cost | | £ |
| Material | (5,625 x 8 x £5.00) | 225,000 |
| Variable conversion | [(5,625 x 1.25 x (30% x £18)] | 37,969 |
| Sale of scrap material | [5,625 x (8 - 5)/2 x £2.50] | (21,094) |
| Sale of rejects | [(5,625 - 5,400) x £10.00] | <u>(2,250)</u> |
| Total variable cost | | <u>239,625</u> |
| Unit variable cost | (239,625 / 5,400) | 44.38 |

Advice:

Based on cost.

Continue to manufacture in Cost centre A. Cost centre B would cost

£11,025 per year more.

Based on time taken.

Change manufacture to Cost centre B. Overall time saved 1,969 hours per year.

QUESTION 6

A company produces a single product and uses a standard absorption costing system. The production department budgets include the following for month 3:

| | |
|--------------------------|-----------------------|
| Production output | 10,000 units |
| Direct labour per unit | 4 hours @ £8 per hour |
| Direct material per unit | 5kg @ £3 per kg |
| Fixed overheads | £324,000 |

Fixed production overheads are absorbed on the basis of standard direct labour hours.

The actual results for the period were as follows:

| | |
|-------------------|---|
| Production output | 9,800 units |
| Direct labour | 38,200 hours, at a total cost of £309,600 |
| Direct materials | 50,000kg at a total cost of £148,000 |
| Fixed overheads | £312,000 |

REQUIRED

- (a) Calculate for the period the following production ratios:
- (i) Efficiency (2 marks)
 - (ii) Capacity (2 marks)
- (b) Calculate for the period the following variances:
- (i) Direct labour rate (2 marks)
 - (ii) Direct labour efficiency (2 marks)
 - (iii) Direct material price (2 marks)
 - (iv) Direct material usage (2 marks)
 - (v) Fixed production overhead expenditure (2 marks)
 - (vi) Fixed production overhead volume. (2 marks)
- (c) Describe the possible reasons for the following variances:
- (i) Direct labour (2 marks)
 - (ii) Direct material (2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 6

(a)

(i) **Production efficiency ratio (%)**

$$\frac{\text{Standard direct labour hours of actual production}}{\text{Actual direct labour hours worked}} \times 100\%$$

$$\frac{9,800 \times 4}{38,200} \times 100\% = 102.6\%$$

(ii) **Production capacity ratio (%)**

$$\frac{\text{Actual direct labour hours worked}}{\text{Budgeted direct labour hours}} \times 100\%$$

$$\frac{38,200}{10,000 \times 4} \times 100\% = 95.5\%$$

Syllabus Topic 5: Standard costing and variances (5.3)

(b)

| | | |
|--|--------------------------------|---------|
| (i) Labour rate variance | £ | £ |
| | 309,600 – (38,200 x 8) | 4,000A |
| (ii) Labour efficiency variance | (38,200 x 8) – (9,800 x 4 x 8) | 8,000F |
| (iii) Material price variance | 148,000 – (50,000 x 3) | 2,000F |
| (iv) Material usage variance | (50,000 x 3) – (9,800 x 5 x 3) | 3,000A |
| (viii) Fixed overhead expenditure variance | 312,000 – 324,000 | 12,000F |
| (ix) Fixed overhead volume variance | 324,000 – (9,800 x 4 x 8.1) | 6,480A |

Syllabus Topic 5: Standard costing and variances (5.4)

(c)

(i)

Direct labour variances.

The company could have increased the employees rate of pay (adverse rate variance) which in turn motivated the employees to complete the work in a time that was quicker than the standard time (favourable efficiency variance).

(ii)

Direct material variances.

The company could have found a new supplier who offered a cheaper unit price per kg (favourable price variance). The material supplied could have been of inferior quality or more scrap was generated than budgeted for and as a consequence more material than standard could have been used (adverse usage variance).