Mock Exam One

AAT L4 Management Accounting: Decision and control

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This practice assessment is one of a set of five AAT mock practice assessments which have been published for this subject. They are produced by expert AAT tutors to ensure real AAT exam style and real AAT exam standard tasks and ensure the best chance of success.

All practice assessments are relevant for the current syllabus.

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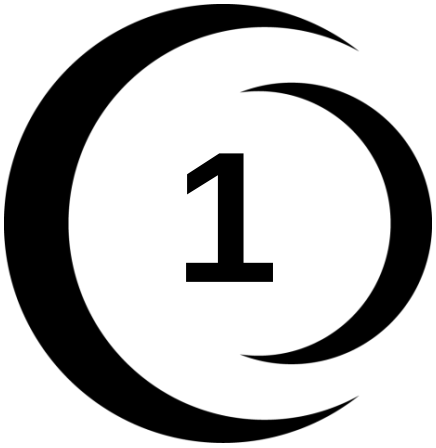

Mock Exam One

Management Accounting: Decision and control

Assessment information:

You have **2 hours and 30 minutes** to complete this practice assessment.

This assessment contains **8 tasks** and you should attempt to complete **every** task.
Each task is independent. You will not need to refer to your answers to previous tasks.
Read every task carefully to make sure you understand what is required.

Tasks 5, 7 and 8 require extended writing as part of your response to the questions. You should make sure you allow adequate time to complete these tasks.

Where the date is relevant, it is given in the task data.
Both minus signs and brackets can be used to indicate negative numbers **unless** task instructions say otherwise.

You must use a full stop to indicate a decimal point. For example, write 100.57 not 100,57 or 100 57

You may use a comma to indicate a number in the thousands, but you don't have to. For example, 10000 and 10,000 are both acceptable.

Task 1 (12 marks)

A manufacturer of a single product has supplied the following budgeted data below:

Direct materials	2.3 kg at £3.50 per kg
Direct Labour	£7,000 every 8000 units produced
Depreciation of machines	£3,000 per quarter
Repairs and maintenance	£15,000 per year plus £1.17 per unit

(a) Choose the correct description for each of the four costs above.

(4 marks)

Cost	Type of cost
Direct materials	
Direct Labour	
Depreciation of machines	
Repairs and maintenance	

Picklist: Variable cost, Semi-variable cost, Stepped fixed cost, Fixed cost.

(b) Complete the budget shown below for the monthly cost to produce 13500 units. Enter figures to the nearest whole pound (£).

(8 marks)

	Monthly Production	
	18000 units £	13500 units £
Direct materials	144,900	
Direct Labour	21,000	
Depreciation of machines	1,000	
Repairs and maintenance	22,310	

End of Task

Task 2 (15 marks)

The production information below relates to WB Limited, a business that makes timber garden benches.

	Budget	Actual
Production - benches	2000	2200
Wood - metres (m)	9000	11000
Wood - £	19800	24310
Direct labour - hours	12000	12980
Direct labour - £	132000	149270

(a) Calculate the variances in the table below. Enter your answers to the nearest whole pound (£). Enter a zero if there is no variance. Do not use minus signs or brackets.

(7 marks)

Use the drop down boxes to indicate whether each variance you calculate is adverse, favourable or no variance.

(4 marks)

	£	Adverse/Favourable/ No variance
Wood price variance		
Wood usage variance		
Direct labour rate variance		
Direct labour efficiency variance		

Picklist: Adverse, Favourable, No variance.

RJD Ltd operates a standard absorption costing system. The following fixed production overhead data is available for one month:

Budgeted production	200000 units
Budgeted fixed production overhead	£1,000,000
Actual fixed production overhead	£1,300,000
Fixed production overhead volume variance	£100,000 Adverse

(b) The actual level of production was.

(2 marks)

[ ] units

A standard cost per unit for materials used in a production process is shown below.

Standard cost:
4.2 litres at £5.50 per litre = £23.10 per unit

The number of units made in the period was 600 units. Materials used for production was 2500 litres and the materials price variance for the period was £3,340 adverse.

(c) The actual price paid for each litre of material for the period (to two decimal places) was.

(2 marks)

£ [ ]

End of Task

Task 3 (15 marks)

The following budget relates to a manufacturer that makes a single product.

The manufacturer currently uses absorption costing and its overheads are absorbed on a budgeted production unit basis.

The following details for month 5 are included below:

Details:	Month 5 £
Opening inventory (units)	0
Selling Price (£)	105
Production (units)	20,000
Sales (units)	16,000
Direct materials (£ per unit)	11.50
Direct labour (£ per unit)	5.25
Other variable production costs (£ per unit)	11.00
Fixed production costs (£)	120,000

(a) Complete the budgeted operating profit statements below for month 5, using absorption costing and marginal costing All figures should be calculated to the nearest whole pound (£). Do not use minus signs or brackets. If any answer is zero or not required, then enter '0' in the relevant cell.

(15 marks)

Marginal costing statement	Month 5 £
Sales	
Less variable cost of sales	
Opening inventory	
Production costs	
Closing inventory	
Total variable cost of sales	
Contribution	
Fixed overheads	
Profit or loss for month 5	

Absorption costing statement	Month 5 £
Sales	
Less production cost of sales	
Opening inventory	
Production variable costs	
Production fixed costs	
Closing inventory	
Total production cost of sales	
Profit or loss for month 5	

End of Task

Task 4 (12 marks)

A manufacturer of ice creams uses time series analysis to forecast the price per 100 litres of milk for each month.

(a) Complete the table shown below by entering the missing figures. Use minus signs for any negative figures. Round your answers to two decimal places.

(3 marks)

20X4 Price per 100 litres	October £	November £	December £
Underlying price per 100 litres		26.00	29.00
Seasonal Variation	3.50		2.50
Seasonally adjusted price per 100 litres	26.50	20.50	

Assuming the trend and seasonal variations continue in part (a) above.

(b) Compete the table shown below to forecast the price (£) per 100 litres of milk in the last quarter of 20X5. Use minus signs for any negative figures. Round your answers to two decimal places.

(5 marks)

20X5 Price per 100 litres	October £	November £	December £
Underlying price per 100 litres			
Seasonal Variation			
Seasonally adjusted price per 100 litres			

The ice cream manufacturer needs to forecast its costs for its fleet of ice cream vehicles for 20X5. If 250000 miles are driven in a year, then vehicle costs are £102,500. If 200000 miles are driven in a year, then vehicle costs fall to £90,000.

Vehicle costs can be predicted using the linear regression equation y = a + bx.

Where:
x = number of miles driven and
y = total vehicle costs for the number of miles driven

(c) Calculate the values of a and b.

(2 marks)

Value of a: £ ☐

Value of b: £ ☐

(d) Using the information from (c) above. Calculate the forecast vehicle costs (£) for 180000 miles driven.

(2 marks)

£ ☐

End of Task

Task 5 (18 marks)

ALTE is a supermarket operating a nationwide high street of shops selling groceries to the general public.

One particular store under investigation by management had planned to sell groceries to 1000 customers in the last week and due to a busier period than normal, the actual number of customers served last week was 1080 customers.

A flexed budget has been drawn up using the following assumptions:

- £80 average expenditure by each customer.
- Cost of goods sold is £24 on average for each customer.
- Cashiers and shelf fillers cost an average of £2.50 for each customer served and are paid for each hour worked.
- Supervision and other overheads are fixed cost.

	Flexed Budget £	Actual £	Variance £
Number of customers served	1080	1080	
	£	£	£
Sales Revenue	86,400	78,990	-7,410
Less costs:			
Cost of goods sold	25,920	27,360	-1,440
Cashiers and shelf fillers	2,700	2,600	100
Supervision and other overheads	2,400	3,000	-600
Profit from store operations	55,380	46,030	

Additional information for last week

- A rent increase for the shop and pay rise for the shop supervisor occurred in the last week. The budget was not adjusted.
- The shop run a sales promotion on some of its major product lines sold to customers.
- Major shortages of certain inventory lines meant that quicker orders were required and goods were ordered from a different supplier.
- A cashier that worked for the shop, left at the beginning of last week and has not been replaced.
- A refrigerator broke down for two days which meant that some chilled goods had perished and had to be thrown away.

The management of ALTE want to determine the causes of the variances of the shop for the last week.

(a) Explain how each of the FOUR variances could have been affected by the information given above.

(12 marks)

The management of ALTE have requested that the budget assumptions for the shop should be amended to make next week's variance analysis for the shop more effective.

(b) Explain with reasons any budget assumptions that may need to be amended for next week's budget.

(4 marks)

The management of ALTE want standard revenue and costs to be revised across the store group and want staff bonuses to be paid, based on standard revenue and costs achieved by each store.

(c) Give some practical advice to help set the new budget standards.

(4 marks)

End of Task

Task 6 (15 marks)

AAA is a large manufacturing company that specialises in the design and manufacture of televisions. AAA reports its performance each year and compares actual performance to budgeted targets to aid budgetary control. The following is a summary of the performance of AAA last year:

Financial Performance	**Actual £ million**	**Budget £ million**
Sales revenue	1,793	1,941
Gross profit	1,177	1,320
Operating profit	652	790
Net assets (average)	2,835	2,550

Other performance indicators:

	Actual	**Budget**
Number of employees	2259	2128
Sales (million units)	2.35	2.40
Number of finished units re-worked	54000	30000
Percentage (%) of purchases from suppliers rejected	4.25	3.00
Average production cost per unit (£)	262	259
Average sales price per unit (£)	763	809
New product lines developed	12	10
New product lines successfully launched	1	4
Products returned from customers as faulty (per 1000 units sold)	28	20
Warranty claims (per 1000 units sold)	56	30

(a) Identify SIX suitable performance measures to assess the performance of AAA for the last year.

(6 marks)

(b) Calculate the performance measures you have selected in (a) above using the actual years information given. Explain any likely causes for each measure being better or worse when compared to budget.

(9 marks)

Task 7 (18 marks)

ST makes different types of strawberry jams. It currently has only 6000 kg of strawberries available for this month to meet its production requirements.

The information shown below is for this month's production and includes the maximum sales demand for each type of jam made.

The fixed cost for all three products for the month is £5,000.

Per unit	Economy Jam £	Standard Jam £	Premium Jam £
Selling Price	0.69	0.99	1.99
Direct material (strawberries)	0.20	0.80	1.20
Direct Labour	0.08	0.08	0.16
Maximum sales demand (jars sold)	10000	15000	5000
Kilograms (kg) of jam required each jar	0.1	0.4	0.6
Strawberries required to meet maximum sales demand (kg)	1000	6000	3000

(a) Complete all cells in the forecast statement shown below to recommend how many jars of each type of jam should be made this month.

(12 marks)

Per unit	Economy Jam	Standard Jam	Premium Jam
Contribution per unit (£). Rounded to 2.d.p.			
Kg of strawberries required each jar. Rounded to 1.d.p.			
Contribution per Kg of strawberries (£). Rounded to 2.d.p.			
Ranking			
Optimal production (jars)			

(b) Complete the following sentences, using your results from (a) above.

(6 marks)

The total contribution earned from the optimal production plan, given a shortage of strawberries for this month would be £ ____

The amount of profit earned for this month would be £ ____

End of Task

Task 8 (15 marks)

FC makes two products, the 'elf' and the 'reindeer' for the festive season market.

Budgeted overhead costs for its two production activities:

- Materials handling overhead £400,000
- Energy overhead £300,000

Further information has been provided below:

	Elf per unit	Reindeer per unit
Direct materials - £ per unit	7.50	8.00
Direct labour - £ per unit	15.00	35.00
Direct labour - hours per unit	3.00	5.00
Number of material requisitions	600	200
Energy consumed (Kw)	100,000	50,000
Budgeted production (units)	50000	30000

(a) Complete the table shown below using activity-based costing (ABC).

(5 marks)

	£	Elf £	Reindeer £	Total overheads £
Cost driver per material requisition				
Cost driver per Kw				
Total materials handling cost £				£400,000
Total energy cost £				£300,000

(b) Using the information in (a) above, calculate the fixed overheads for each product made in the table shown below. Assume budgeted fixed overheads are absorbed on a budgeted labour hour basis.

(4 marks)

	Elf £	Reindeer £
Budgeted fixed overheads		

The total unit cost for each product, using absorption and activity based costing (to two decimal places) is shown in the table below.

	Elf £	Reindeer £
Total unit cost - ABC	10.00	6.67
Total unit cost - Labour hours	7.00	11.67

(c) Explain the advantages and disadvantages of FC using an activity-based costing system.

(6 marks)

End of Task

Mock Exam One

Management Accounting: Decision and control

- Solutions

Task 1 (12 marks)

This task will expect you to distinguish between different cost classifications and evaluate their use in a management accounting function.

Students need to know:

- Product costing and the elements of direct and indirect costs, cost classification into materials, labour and production overhead.
- Cost classification by behaviour (fixed, variable, stepped fixed and semi-variable) and the relevant range for fixed costs.
- Prime cost, full production cost and marginal cost.
- The differences between cost centres, profit centres and investment centres.
- The High-Low method of cost estimation.

Students for semi-variable costs need to be able to use the high-low method to extract the fixed and variable elements, including making adjustments for a step up in cost or a quantity discount.

(a) Choose the correct description for each of the four costs above.

(4 marks)

Cost	Type of cost
Direct materials	Variable cost
Direct Labour	Stepped fixed cost
Depreciation of machines	Fixed cost
Repairs and maintenance	Semi-variable cost

(b) Complete the budget shown below for the monthly cost to produce 13500 units. Enter figures to the nearest whole pound (£).

(8 marks)

	Monthly Production	
	18000 units £	13500 units £
Direct materials	144,900	108,675
Direct Labour	21,000	14,000
Depreciation of machines	1,000	1,000
Repairs and maintenance	22,310	17,045

Workings:

Direct materials
2.3 kg x £3.50 per kg x 13500 units = £108,675.

Direct Labour
£7,000 every 8000 units produced (stepped fixed cost).
From 0-8000 units, the cost would be £7,000 fixed. From 8001-16000 units, the cost would be £14,000 fixed. 13500 units falls in the range between 8001-16000 units. The cost would be 2 lots of £7,000 fixed cost within this range = £14,000.

Depreciation of machines
The budget is for one month, so £3,000 per quarter (3 months) ÷ 3 months = 1 month's cost £1,000.

Repairs and maintenance
Fixed cost (£15,000 a year ÷ 12 months = £1,250) + Variable cost (£1.17 x 13500 units = £15,795) = Total cost £17,045.

Task 2 (15 marks)

You will be required to calculate standard costing variances:

- Raw material variances (total, price and usage).
- Labour variances (total, rate, idle time and efficiency).
- Variable overhead variances (total, rate and efficiency).
- Fixed production variances (total, expenditure and volume).

You could also be required in a task to calculate actual cost and standard cost information from variances already calculated and given to you in the task (backward variances). For example, the actual price paid for materials, or the actual time taken per unit by a workforce could be required as a calculation. It is a similar approach to calculating a variance, but works backwards within the variance calculation to identify missing information.

Total variances for materials, labour, variable and fixed costs (resources consumed) are the differences between the flexed total budgeted cost for these resources compared to their actual costs. We can then sub-divide further these total variances into their expenditure, price or rate differences for each resource paid for and/or assess the efficiency of how we have used these resources to make goods or services.

Variance calculations are very similar to each other. The materials price, labour rate or variable overhead expenditure variances and the materials usage, labour efficiency and variable overhead efficiency variances are all calculated in a similar manner.

Calculations to learn (sub-division of variances)

Material price variance	**£**
Did spend (actual quantity purchased x actual average price paid)*	£X
Should spend (actual quantity purchased x standard price)	£X
Material price variance	£X

* This figure would be the actual purchase expenses for the period.

Materials can be purchased and used by the litre, kg, tonne etc.

Material usage variance	
Actual production (units made) did use	X kg
Actual production (units made) should use	X kg
Difference	X kg
x standard price per kg	£ per kg
Material usage variance	£X

Labour rate variance

Did spend (actual hours worked x actual average rate paid)**	£X
Should spend (actual hours worked x standard rate paid)	£X
Labour rate variance	£X

** This figure is the actual wage expenses for the period.

Labour efficiency variance

Hours they did work for actual production (units made)	X hours
Hours they should work for actual production (units made)	X hours
Difference	X hours
x standard rate per hour	£ per hour
Labour efficiency variance	£X

There is also the labour idle time variance to learn if there is a difference between labour hours paid and labour hours worked. Idle time (non-productive time) is always an adverse variance and calculates the cost of production stoppages, machine break downs, 'no work on', or strike action etc. It's an additional variance for labour and you may want to read up on this and its effect on the labour efficiency calculation.

Variable overhead expenditure variance

Did spend (actual hours worked x actual average V/OH rate paid)	£X
Should spend (actual hours worked x standard V/OH rate paid)	£X
Variable overhead expenditure variance	£X

Variable overhead efficiency variance

Hours they did work for actual production (units made)	X hours
Hours they should work for actual production (units made)	X hours
Difference	X hours
x standard rate per hour	£ per hour
Variable overhead efficiency variance	£X

Labour and variable overhead work on similar calculations since the cost of both are assumed to be driven by labour hours worked in the period.

Fixed overhead expenditure variance

Actual fixed overhead expenditure	£X
Budgeted fixed overhead expenditure	£X
Fixed overhead expenditure variance	£X

Fixed overhead volume variance

Did produce (actual units made)	X units
Should produce (budget units made)	X units
	X units
x Overhead Absorption Rate (O.A.R)	£ per unit
Fixed overhead volume variance* **	£X

*** This variance is only applied as a calculation if the business uses absorption costing.

Variances will 'reconcile' (agree) the flexed budgeted cost (budgeted costs based on the actual number of units made) to the actual costs for the same period. We can sometimes prove whether our answers are correct or not when the variances have been calculated by performing a reconciliation. You may not have time during an exam to do this, but to prove the logic the solutions below will do this whenever possible.

(a) Calculate the variances in the table below. Enter your answers to the nearest whole pound (£). Enter a zero if there is no variance. Do not use minus signs or brackets.

(7 marks)

Use the drop down boxes to indicate whether each variance you calculate is adverse, favourable or no variance.

(4 marks)

	£	Adverse/Favourable/ No variance
Wood price variance	**110**	**Adverse**
Wood usage variance	**2420**	**Adverse**
Direct labour rate variance	**6490**	**Adverse**
Direct labour efficiency variance	**2420**	**Favourable**

Standard costs:

Material price (£19,800 ÷ 9000 metres)	£2.20	per metre
Material usage (9000 metres ÷ 2000 benches)	4.5	metres per unit
4.5 metres @ £2.25 per metre	£9.90	per unit
Labour rate (£132,000 ÷ 12000 hours)	£11.00	per hour
Labour efficiency (12000 hours ÷ 2000 benches)	6.0	hours per unit
6 hours @ £11 per hour	£66.00	per unit

Wood price variance

11000 metres did cost	£24,310	
11000 metres should cost (x £2.25 per metre)	£24,200	
	£110	

Wood usage variance

2200 benches did use	11000	metres
2200 benches should use (x 4.5 metres per bench)	9900	metres
	1100	metres
x Standard cost per metre	£2.20	per metre
	£2,420	

Proof:

Flexed material cost (£9.90 x 2200 benches)	£21,780	
Wood price variance	£110	Adverse
Wood usage variance	£2,420	Adverse
Actual material cost	£24,310	

Labour rate variance

12980 hours did cost	£149,270	
12980 hours should cost (x £11 per hour)	£142,780	
	£6,490	

Labour efficiency variance

2200 benches did take	12980	hours
2200 benches should take (x 6 hours per bench)	13200	hours
	220	hours
x Standard cost per hour	£11.00	per hour
	£2,420	

Proof:

Flexed labour cost (£66 x 2200 benches)	£145,200	
Labour rate variance	£6,490	Adverse
Labour efficiency variance	£2,420	Favourable
Actual labour cost	£149,270	

(b) The actual level of production was 180000 units

(2 marks)

Fixed overhead volume variance

Did produce (actual units made)	X units	
Should produce (budget units made)	X units	
	X units	
x Overhead Absorption Rate (O.A.R)	£ per unit	
Fixed overhead volume variance	£X	

Did produce (actual units made)	180000	**Balance**
Should produce (budget units made)	200000	units (given)
	20000	
x Overhead Absorption Rate (O.A.R)	£5 per unit	see below
Fixed overhead volume variance	£100,000	given (adverse)

The OAR (overhead absorption rate) is always calculated as follows:

Budget overhead ÷ budgeted units

£1,000,000 ÷ 200000 units = £5 OAR per unit absorbed.

You need to include all figures you do know from the task information into a fixed overhead volume variance calculation and work backwards. The variance was £100,000 adverse, this is calculated from multiplying the difference between actual and original (not flexed) budgeted production in units by the £5 OAR. If you divide £100,000 by £5 OAR then the difference in units between actual and budget production must have been 20000 units. We know that the original budget was 200000 units and the volume variance is adverse, so actual production must have been 20000 units less than the original budget (180000 units is calculated by working backwards).

(c) The actual price paid for each litre of material for the period (to two decimal places) was £6.84

(2 marks)

Material price variance	**£**
Did spend (actual quantity purchased x actual average price paid)	£X
Should spend (actual quantity purchased x standard price)	£X
Material price variance	£X

Material price variance	**£**	
Did spend (2500 litres x actual average price paid)	17090	Balance
Should spend (2500 litres x £5.50 per litre)	13750	Given
Material price variance	3340	Given

£17,090 ÷ 2500 litres = £6.836 actual price per litre.	6.836
Rounded to 2 decimal places would be	£6.84

Task 3 (15 marks)

Within this task you could be examined on the following:

Prepare and reconcile standard costing operating statements:

- Prepare a standard costing operating statement reconciling budgeted cost with the actual cost of actual production.
- Explain the differences between marginal costing and absorption costing operating statements.
- Reconcile the difference between the operating statement under marginal costing and absorption costing.

Discriminate between and use marginal costing and absorption costing techniques:

- The difference between marginal costing and absorption costing.
- How to critically evaluate the differences between the two methodologies.
- How to reconcile marginal costing profit with absorption costing profit for changes in inventory to demonstrate the differences in the two methodologies.

Details:	Month 5 £
Opening inventory (units)	0
Selling Price (£)	105
Production (units)	20,000
Sales (units)	16,000
Direct materials (£ per unit)	11.50
Direct labour (£ per unit)	5.25
Other variable production costs (£ per unit)	11.00
Fixed production costs (£)	120,000

(a) Complete the budgeted operating profit statements below for month 5, using absorption costing and marginal costing All figures should be calculated to the nearest whole pound (£). Do not use minus signs or brackets. If any answer is zero or not required, then enter '0' in the relevant cell.

(15 marks)

The main differences between the two costing systems:

- Marginal costing values finished goods inventory at the variable production cost for each unit. Absorption costing values finished goods inventory at FULL production cost for each unit, which would include any additional fixed production overhead.
- Both costing methods ignore non-production overheads such as finance, administration, selling and distribution expenses within their inventory valuation.
- The profit (operating) statements are different layouts. Marginal costing for example, deducts all variable costs first from sales to arrive at 'contribution' earned and then deducts fixed overheads to arrive at the profit or loss for the period.
- Absorption costing absorbs (charges) production overhead and treats it as a 'product cost'. Marginal costing treats fixed production overhead as a 'period cost' which is written off as an expense to the profit or loss account.

Production cost and valuation of inventory (marginal costing)

Direct materials (£ per unit)	11.50
Direct labour (£ per unit)	5.25
Other variable production costs (£ per unit)	11.00
Total variable production cost per unit	**27.75**

Closing inventory valuation £27.75 x 4000 units (20000 units made less 16000 units sold) = £111,000.

Marginal costing statement	**Month 5 £**
Sales (£105 x 16000 units)	1,680,000
Less variable cost of sales	
Opening inventory	0
Production costs (20000 units x £27.75)	555,000
Closing inventory (4000 units x £27.75)	111,000
Total variable cost of sales	444,000
Contribution	1,236,000
Fixed overheads	120,000
Profit or loss for month 5	1,116,000

Production cost and valuation of inventory (absorption costing)

Direct materials (£ per unit)	11.50
Direct labour (£ per unit)	5.25
Other variable production costs (£ per unit)	11.00
Total variable production cost per unit	27.75
Total cost fixed cost per unit (£120,000 ÷ 20000 units production)	6.00
FULL Production cost per unit	**33.75**

Closing inventory valuation £33.75 x 4000 units (20000 units made less 16000 units sold) = £135,000.

Absorption costing statement	**Month 5 £**
Sales (£105 x 16000 units)	1,680,000
Less production cost of sales	
Opening inventory	0
Production variable costs (20000 units x £27.75)	555,000
Production fixed costs (as per task)	120,000
Closing inventory (4000 units x £33.75)	135,000
Total production cost of sales	540,000
Profit or loss for month 5	1,140,000

Task 4 (12 marks)

Within this task you will need to demonstrate a range of statistical techniques to analyse business information and this can include any of the following.

Calculating key statistical indicators

- Calculate index numbers, time series analysis, moving averages, seasonal variations and trend information.
- Use the regression equation (e.g. y = a + bx).
- Calculate the outputs from various statistical calculations.

Using and appraising key statistical indicators:

- The key statistical indicators to forecast income and costs.
- To recommend actions and give reasons for your recommendations.
- The key variations (seasonal, cyclical and random).

(a) Complete the table shown below by entering the missing figures. Use minus signs for any negative figures. Round your answers to two decimal places.

(3 marks)

20X4 Price per 100 litres	October £	November £	December £
Underlying price per 100 litres	23.00	26.00	29.00
Seasonal Variation	3.50	-5.50	2.50
Seasonally adjusted price per 100 litres	26.50	20.50	31.50

Workings:

Additive model
TS = T + SV

October
26.50 = T + 3.50
26.50 - 3.50 = **23.00**

November
20.50 = 26.00 + SV
20.50 - 26.00 = **-5.50**

December
TS = 29.00 + 2.50
TS = **31.50**

(b) Compete the table shown below to forecast the price (£) per 100 litres of milk in the last quarter of 20X5. Use minus signs for any negative figures. Round your answers to two decimal places.

(5 marks)

20X5 Price per 100 litres	October £	November £	December £
Underlying price per 100 litres	59.00	62.00	65.00
Seasonal Variation	3.50	-5.50	2.50
Seasonally adjusted price per 100 litr	62.50	56.50	67.50

Workings

We need the trend starting October 20X5.

From the 20X4 data the price moved from £23 to £29 in two monthly movements.

£29 - £23 = £6 increase per movement (monthly)

Monthly movement (trend) = £6 ÷ 2 months movement = £3 increase per month.

Trend

So for October 20X5 = £29 (Dec 20X4) + £3 x 10 months (Jan 20X5 to Oct 20X5) = £59.

November 20X5 = £59 + £3 = £62.

December 20X5 = £62 + £3 = £65.

Seasonal Variation

These are given in (a) for Oct 20X4 - Dec 20X4.

They would be the same for Oct 20X5 - Dec 20X5.

Time series (forecast)

Additive model

TS = T + SV

October

TS = 59 + 3.50

TS = 62.5

November

TS = 62 - 5.50

TS = 56.5

December

TS = 65 + 2.50

TS = 67.5

A regression equation is a statistical model that determines the specific relationship between a predictor variable (miles, time, units made etc) and the outcome variable (sales value, costs, units sold etc). The statistical equation Y = a + bx allows you to predict the outcome (forecast) with a relatively small amount of error.

(c) Calculate the values of a and b.

(2 marks)

Value of a: **£40000**

Value of b: **£0.25**

You need to use the high low method to forecast costs, where 'a' is the fixed cost amount regardless of miles driven and 'b' is the variable amount which rises and falls with miles driven (miles being the activity 'x').

TC = (FC + VC x Miles) or Y = a + bx.

In the above model fixed cost (FC) is not dependent on 'x' (miles driven in this case).
In the above model variable cost (VC) is dependent on 'x' (miles driven in this case).
For each cost we can forecast total cost (TC) for 'y' if we know 'x'.

High low method to solve a and b:

Miles	Total cost (£)
250000	102500
200000	90000
50000	12500

The above identifies the variable cost 'b' since if miles were to rise or fall the fixed cost 'a' will not change. So, for 'b' as a value, £12,500 is identified above as the variable cost for 50000 miles driven. £12,500 ÷ 50000 miles = £0.25 per mile.

To work out fixed cost 'a' (the constant), take any of the two pairs of data 200000 or 250000 miles driven and work the balance.

250000 miles chosen:

£102,500 = a + (£0.25 x 250000 miles)
£102,500 = a + £62,500
a = £102,500 - £62,500
a = £40,000

We now have the regression equation:

y = 40000 + 0.25x

(d) Using the information from (c) above. Calculate the forecast vehicle costs (£) for 180000 miles driven.

(2 marks)

£85000

For 180000 miles the forecast cost would be:

y = 40000 + (0.25 x 180000)
y = 85000

Task 5 (18 marks)

This task is a written task where you will need to type your answers. This task will be human not computer marked. It will cover the following syllabus areas:

Discuss how standard costing can aid the planning and control of an organisation.

- How standard costs can be established and revised.
- The different types of standard (ideal, target, normal and basic).
- How the type of standard can affect behaviour and variances.
- How the type of standard can impact on a variance.
- Flexible budgeting and how the calculation of the standard cost/budget is affected by changes in output.

Analyse and effectively present information to management based on standard costing information.

- How variances may interrelate.
- Identify the nature of variances.
- Identify what causes standard costing variances such as wastage, economies of scale, learning effect, inflation and skills mix.
- Identify possible actions that can be taken to reduce adverse variances and increase favourable variances.
- Identify elements of a variance that are controllable and non-controllable.
- Effectively communicate what a standard costing variance means in report format.

Tips for effective report writing ('DEPTH')

- **D**iversity (include a good RANGE of answers).
- **E**xamine information and requirements (APPLY (use) the scenario information in the exam task to match to the task requirements), ensure ALL of the requirements are met and the task information is extensively used in your answer.
- **P**lan before you type (in the window answer box in the task, put your headings and key words for answering the requirements) before you begin writing.
- **T**iming (15 or 20 mins per task, so don't over run).
- **H**eadings (include headings for your different answers to provide good structure).

The responses included below cover a range of possible points that you may include in your written response. This example is not intended to be exhaustive and other valid comments may be relevant.

Marking scheme (human not computer marked)

(0 marks). No response worthy of credit.

(33% or less awarded). Answer provides a very brief analysis and points made have little relevance to the scenario and use of supporting evidence is limited. Responses cannot access higher bands if they do not address all task requirements or support answers by evidence drawn from the information in the task scenario.

(33% to 67% awarded). Answer provides a brief analysis for all task requirements. The response makes good use of evidence to support points made. Answer demonstrates a good understanding of the subject matter examined. To achieve the highest marks in this band, the response will address all task requirements.

(67%+ awarded). Answer gives a detailed analysis for all task requirements (nothing left unanswered). Points made will be well supported by evidence drawn from the task scenario. A response that falls in this band will demonstrate a solid understanding of the subject matter and application of the information in the task scenario.

(a) Explain how each of the FOUR variances could have been affected by the information given above.

(12 marks)

Sales revenue

Adverse variance

- Actual sales were less than flexed budget.
- This cannot be due to less or more volume of customers because both the flexed budget and actual figures are based on the same number of customers (both 1080 customers in the last week).
- Sales promotions on major products would have reduced the price of goods sold to the customer and hence could be the reason why the sales variance is adverse.
- Another reason is the £80 average shop per customer budget assumption which could be volatile seasonally or randomly.

Cost of goods sold

Adverse variance

- Major shortages of certain inventory lines caused goods to be ordered from a different supplier, if a higher price was paid for these purchases made (rushed orders often can be more expensive), this may indicate why cost of sales is higher than flexed budget.
- The refrigerator failure for two days also meant that some chilled inventory lines perished and were thrown away. The cost of this food wasted would be included in cost of sales (the direct cost of goods sold), which may indicate why cost of sales is higher than flexed budget.

Cashiers and shelf fillers

Favourable variance.

A cashier that worked for the shop left at the beginning of the week and was not replaced. Staff are paid by the hour so I assume less hours were worked by staff during the week and less total wages were paid.

Supervision and other overheads

Adverse variance

- A rent rise and pay rise for the shop supervisor in the last week is more likely the two reasons why this variance is £600 more than flexed budget. None of these changes were reflected in the budget.
- The refrigerator failure for two days may also have added more cost to overheads for the week if it was serviced or repaired in the week.

(b) Explain with reasons any budget assumptions that may need to be amended for next week's budget.

(4 marks)

A rent rise occurred in the last week but the budget had not been adjusted. If the budget next week is not amended the adverse variance for overhead is likely to occur again. It would be an unrealistic comparison unless the standard for rent expenditure is changed.

A pay rise for the shop supervisor occurred in the last week but the budget had not been adjusted. It would be an unrealistic comparison unless the standard for supervisor salaries is changed.

If the cashier that left is not replaced the budget and standard cost for staff (cashiers and shelf fillers) will need to be amended, if less total hours will be worked by these staff then the standard efficiency expected and therefore staff cost will need to be adjusted.

(c) Give some practical advice to help set the new budget standards.

(4 marks)

Use challenging but 'realistic' targets and link higher bonuses as reward for higher levels of achievement e.g. higher bonuses for zero wastage of food, or a very high volume of customers or expenditure by customers.

Management should consult with and allow shop staff to participate when setting targets as they may have more local knowledge about the volume of customers and local staff costs in the area. Participation by staff when setting targets can motivate staff to achieve targets if they are consulted and have contributed to the targets that they will need to achieve.

Clear trust and communication developed between management and staff to ensure standards were agreed, fair and attainable.

Measurable correlation between performance and bonus outcomes. Staff must be able to understand how they can be paid more based on measurable pay and targets agreed.

Task 6 (15 marks)

Within this task you will be asked to use appropriate financial and non-financial performance techniques to aid decision making.

- Identify a range of selected key performance indicators.
- Calculate a range of key performance indicators and manipulate them.

Evaluate key financial and non-financial performance indicators:

- What the performance indicator means.
- How the various elements of the indicator affect its calculation.
- The impact of various factors on performance indicators including learning effect and economies of scale.
- How some performance indicators interrelate with each other.
- How proposed actions may affect the indicator.
- What actions could be taken to improve the indicator.
- How ethical and commercial considerations can affect the behaviour of managers aiming to achieve a target indicator.

The following are the types of performance indicators that you may be asked to calculate:

Indicators to measure liquidity and the cash cycle:

Current ratio = current assets / current liabilities

This can be expressed as a number only or as a number: 1, for example, if current assets are £10,000 and current liabilities are £8,000 the ratio is 1.25 or 1.25:1. In questions, students should just use 1.25 as their answer unless stated otherwise.

Quick ratio = (current assets - inventories) / current liabilities. This should be expressed as a single number in assessments.

The trade cycle

- Receivables (debtors) collection period (days) = receivables / revenue x 365 (days).
- Inventory Holding Period (days) = inventories / cost of sales x 365 (days).
- Payable (creditor) Period (days) = payables / cost of sales x 365 (days).
- Working capital cycle = inventory days + receivable days - payable days.

Indicators to measure gearing and interest cover:

Gearing ratio can be calculated as either total debt / total debt + total equity x 100% which is the preferred method, or total debt / total equity x 100%. Total debt is all non-current liabilities and includes overdrafts (where given or applicable).

Interest Cover = profit from operations / finance costs (i.e. interest) = X times.

Indicators to measure efficiency and productivity:

ROCE (return on capital employed) = profit from operations / capital employed x 100%. This ratio is always expressed as a percentage.

Capital employed = working capital + non-current assets.
This can also be calculated as total equity + non-current liabilities.

RONA (return on net assets) = Net income or profit from operations / net assets x 100%. Net income will be equal to the net profit in the statement of profit or loss (income statement). This ratio is also always expressed as a percentage.

Asset Turnover (net assets) = revenue / total assets - current liabilities = X times.

Asset Turnover (non-current assets) = revenue / non-current assets = X times.

Administration costs as a percentage of revenue, any cost as a percentage of revenue = cost / sales revenue x 100%.

Value added = revenue - the cost of materials used and bought in services.

Productivity measures are likely to be measured in units of output or related to output in some way. Examples include the number of vehicles manufactured per week, operations undertaken per day, passengers transported per month, units produced per worker per day, rooms cleaned per hour, or meals served per customer.

Indicators to measure profitability:

Gross profit margin = gross profit / sales revenue x 100%.

Operating profit margin = profit from operations / sales revenue x 100%.

Indicators to measure quality of service and cost of quality:

The number of defects/units returned/warranty claims/customer complaints, the cost of inspection/ repairs/re-working.
Prevention costs, appraisal costs, internal failure costs, external failure costs.

Tasks may require the calculation of specific performance indicators. If this is the case the calculation of the indicator will either be obvious or the formula for the indicator will be provided. For example, if the task is based on a hotel, the occupancy rate calculation should be obvious, the number of rooms sold in the month divided by the total number of room nights available in the month. If the indicator is more complicated the formula will be given.

Marking scheme (human not computer marked)

(0 marks). No response worthy of credit.

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(67%+ awarded). Answer gives a detailed analysis for all task requirements (nothing left unanswered). Points made will be well supported by evidence drawn from the task scenario. A response that falls in this band will demonstrate a solid understanding of the subject matter and application of the information in the task scenario.

The responses included below will cover a range of possible points that you may include in your written response. These examples are not intended to be exhaustive and other valid comments may be relevant.

(a) Identify SIX suitable performance measures to assess the performance of AAA for the last year.

(6 marks)

Examples may include:

- Warranty claims
- Product returns
- Average sales price
- Average production cost
- Sales per employee
- New product lines successfully launched
- Gross profit margin

(b) Calculate the performance measures you have selected in (a) above using the actual years information given. Explain any likely causes for each measure being better or worse when compared to budget.

(9 marks)

Warranty claims (per 1000 units sold) were 56 per 1000. This in absolute terms 2.35 million units x 0.056 = 131600 warranty claims for last year. 56 per 1000 is also worse than the budget which was expected to be only 30 per 1000.

Product returns due to faults (per 1000 units sold) were 28 per 1000. This in absolute terms 2.35 million units x 0.028 = 65800 returns for last year. As a percentage 2.8% (28 ÷ 1000 x 100%), 28 per 1000 is also worse than the budget which was expected to be only 20 per 1000.

This suggests serious quality problems within the manufacturing process. It seems that poor quality management is causing higher levels of warranty claims and product returns.

The average sales price per unit was £763 compared to the budgeted price of £809 (actual price per unit 5.7% lower than budgeted price). This could be due to declining prices overall within the industry, sales promotions on TV sets sold or greater competition.

The average production cost per unit is £262 which is £3 higher than budget. This indicates ether lower efficiency or productivity. A lower number of units normally gives a higher fixed cost per unit, the fall in sales for last year could indicate lower productivity.

Sales per employee in units (alternatively you could use sales revenue £ per employee) were 2.35 million units ÷ 2259 employees = 1040 units. This indicates lower productivity. Due to the quality problems being suffered by AAA it may be that more labour hours are being spent on reworks.

AAA is failing to meet its innovation target. The new product lines successfully launched were 1 in 12 developed (1 ÷ 12 x 100%) = 8.3% compared to a budget of 4 in 10 developed which would be 40%, this could indicate poor research and development is being undertaken when trying to launch a successful product, good research is required into customer needs and a competitor analysis undertaken when trying to develop and launch more creative products and features for televisions that customers want to buy.

Gross profit margin is (£1,177 million ÷ £1,793 million x 100%) = 66%, and this is below the budget (£1,320 million ÷ £1,941 million x 100%) = 68%. The gross margin is being squeezed indicating less profit earned for each sale made, both the fall in sales price and rise in average cost are why the measure is worse than expected.

Task 7 (18 marks)

This task will require you to:

- Recognise the difference between contribution and profit.
- Calculate measures of contribution and profitability.
- Calculate contribution per unit and contribution per £ of turnover.
- Recognise when to use contribution analysis as a decision-making tool.
- Calculate the break-even point and margin of safety.
- Calculate the optimal production mix when labour, materials or machine hours are restricted and opportunity costs of limited resources.
- Calculate the outcomes of the various decision-making tools above to aid the decision-making process.

When using decision-making techniques students need to know:

- The optimal production mix when resources are limited.
- The break-even point and margin of safety.
- Break-even= fixed costs / contribution per unit.
- Margin of safety= (budgeted sales - break-even) / budgeted sales x 100%.
- Ways to analyse decisions about make or buy, closure of a business segment, automation and he use of relevant and non-relevant costing information to aid decision making.

(a) Complete all cells in the forecast statement shown below to recommend how many jars of each type of jam should be made this month.

(12 marks)

Per unit	Economy Jam	Standard Jam	Premium Jam
Contribution per unit (£). Rounded to 2.d.p.	0.41	0.11	0.63
Kg of strawberries required each jar. Rounded to 1.d.p.	0.1	0.4	0.6
Contribution per Kg of strawberries (£). Rounded to 2.d.p.	4.10	0.28	1.05
Ranking	1	3	2
Optimal production (jars)	10000	5000	5000

Limiting factor analysis is a useful management decision making tool. A limiting factor is a resource used for production that is in short or limited supply (scarce) and for this reason, the maximum sales demand for each product sold cannot be achieved. Limiting factor analysis is used in circumstances when different types of product are made and each product uses the same limited factor that is in short supply e.g. materials, labour or machine hours. The analysis works out an optimal (the 'best') production plan that will maximise total contribution and therefore profits (after fixed overhead is deducted from total contribution).

To perform a limiting factor analysis, you first work out how much contribution each type of product earns, for each unit of limiting factor that it requires to be made. You then rank each type of product in order of its profitability. You then focus on making those products which earn the highest amount of contribution (therefore profit) for each unit of limiting factor required. This will maximise contribution and therefore profit for the business.

Optimal ('the best') product plan

	Kg
Economy (RANK 1) 10000 jars x 0.1kg =	1000
Premium (RANK 2) 5000 jars x 0.6kg =	3000
Total strawberries used to make the first two products	4000
Balance (Kg) left to make Standard jam (RANK 3)	**2000**
Maximum available	6000

Standard jams require 0.4 Kg of strawberries per Jar:

Balance (Kg) left 2000 Kg ÷ 0.4Kg per jar = jars you can make	5000

Note: sales demand for standard jam is 15000 jars, only 5000 can be made.

(b) Complete the following sentences, using your results from (a) above.

(6 marks)

The total contribution earned from the optimal production plan, given a shortage of strawberries for this month would be £**7800**.

The amount of profit earned for this month would be £**2800**.

Contribution earned:	**£**
Economy (RANK 1) 10000 jars x £0.41 contribution per jar	4100
Premium (RANK 2) 5000 jars x £0.63 contribution per jar	3150
Standard (RANK 3) 5000 jars x £0.11 contribution per jar	550
Total contribution earned	7800
Fixed overhead	5000
Profit	2800

Task 8 (15 marks)

This task will expect you to evaluate a range of cost management techniques to enhance value and aid decision making.

This may include the following:

- Use life cycle cost to aid decision making.
- Use target costing to aid decision making.
- Calculate and interpret activity based costing (ABC) information.
- Evaluate the commercial factors that underpin the life cycle of a product.
- Take account of ethical considerations throughout the decision-making process.

(a) Complete the table shown below using activity-based costing (ABC).

(5 marks)

	£	Elf £	Reindeer £	Total overheads £
Cost driver per material requisition	500			
Cost driver per Kw	2			
Total materials handling cost £		300000	100000	£400,000
Total energy cost £		200000	100000	£300,000

Workings:

Cost driver per material requisition

	Elf	Reindeer	Total
Number of material requisitions	600	200	800

Materials handling overhead £400,000 ÷ 800 material requisitions = £500 per requisition

Cost driver per Kw

	Elf	Reindeer	Total
Energy consumed (Kw)	100000	50000	150000

Energy overhead £300,000 ÷ 150000 Kw = £2 per Kw

Total materials handling cost £

Elf £500 x 600 requisitions =	300000
Reindeer £500 x 200 requisitions =	100000
	400000

Total energy cost £

Elf £2 x 100000 Kw =	200000
Reindeer £2 x 50000 Kw =	100000
	300000

(b) Using the information in (a) above, calculate the fixed overheads for each product made in the table shown below. Assume budgeted fixed overheads are absorbed on a budgeted labour hour basis.

(4 marks)

	Elf £	Reindeer £
Budgeted fixed overheads	**350000**	**350000**

Workings:

Materials handling overhead	£400,000
Energy overhead	£300,000
Budgeted fixed overhead	£700,000

Elf: Budget fixed overhead £700,000 x (150000 hours ÷ 300000 hours) **= £350,000**
Reindeer: Budget fixed overhead £700,000 x (150000 hours ÷ 300000 hours) **= £350,000**

Calculation of labour hours	Elf	Reindeer	Total
Direct labour - hours per unit	3.00	5.00	
Budgeted production (units)	50000	30000	
Budgeted labour hours	**150000**	**150000**	**300000**

(c) Explain the advantages and disadvantages of FC using an activity-based costing system.

(6 marks)

Marking scheme (human not computer marked)

(0 marks). No response worthy of credit.

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The solutions cover a range of possible points that you may include in your written response. These examples are not intended to be exhaustive and other valid comments may be relevant.

Absorption costing is a simple way compared with ABC to charge fixed production overheads to different types of product made. Overhead absorption rate = budgeted overhead ÷ budgeted activity (units or hours).

This costing method can use budgeted units, labour hours or machine hours to charge overhead to products. It's a simple but less accurate method when compared with ABC because overheads are not just driven by units made or hours worked, they can be driven by many other things which can paint a more accurate picture if product costing.

Activity based costing (ABC) is an extension of the same concept as absorption costing and is a more modern costing method for product costing. It looks in more detail about what causes each type of overhead to be incurred using 'cost drivers', activities that more likely cause each type of overhead to be incurred.

For example, Kw of energy consumed by products is likely to drive energy overhead for each product and material requisitions (departments requesting the issue of materials from stores) is likely to drive materials handling costs such as warehouse costs that support each product. This paints more objective picture than if using labour hours which have no relationship and are unlikely to drive energy or materials handling costs.

Advantages of ABC

More efficient management of resources (energy, or the warehouse in this case) by understanding what is more likely to drive overheads. If management reduce Kw of energy consumption or the number of material requisitions, it is more likely this will help to drive costs down.

Better product costing information for pricing decisions and profitability analysis. The task showed two completely different fixed overhead costs for each product depending on whether absorption costing or ABC is used. ABC is generally more objective and a more accurate cost per unit will help identify the right price to charge for each product to ensure profits and give a more objective assessment of profits earned from each unit sold.

Disadvantages of ABC

Time consuming and a more expensive costing system than absorption costing because a more detailed analysis of each type of overhead and resource consumed is needed, unlike absorption costing, many cost drivers are required to be calculated.

ABC is limited if only a small range of products or a single product is produced.

ABC assumes that overheads are driven 'directly' by the volume of an activity chosen, almost like a variable cost, however in reality overhead tends to behave like a 'stepped fixed cost'. For example, when assisting with cost reduction just because material requisitions are reduced it does not guarantee cost reduction for the warehouse will be achieved.