Marginal Costing

4 K Limited produces goods at two sites and uses marginal costing.

At one site the company makes a single product. The following details are available.

Maximum capacity	14 500 units per month
Fixed costs	$216 000 per month

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Unit selling price	90
Costs per unit:	
Direct materials	25
Direct labour	36
Other variable costs	11

REQUIRED

(a) Calculate the break-even point per month in units.

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[2]

(b) Define the term 'margin of safety'.

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[2]

Additional information

The directors have decided to make the following changes:

1 Reduce selling price by 2%.

2 Introduce a sales commission of $2 per unit on every unit sold in excess of 5000 units per month.

3 Purchase direct materials in bulk and obtain a trade discount of 20%.

Buying direct materials in bulk will increase storage costs by $4000 per month.

Demand will be 98% of factory capacity.

REQUIRED

(c) Prepare a marginal costing statement to show the monthly profit based on these changes.

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[6]

(d) Explain **two** advantages of using a system of marginal costing.

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Additional information

At its other site the company makes three products: Product X, Product Y and Product Z. The following details are available.

	Product X	Product Y	Product Z
Contribution per unit	$15	$20	$27
Machine hours per unit	1.5	2.5	3
Maximum monthly output in units	600	300	200

Fixed costs per month are $14 100.

Each month the company plans to work to full capacity producing the maximum output of each product.

In August 2021 only two-thirds of the month's machine hours will be available.

REQUIRED

(e) Calculate the machine hours available in August 2021.

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Additional information

The company has a regular order to supply one major customer with 50% of the output of each product per month.

Two options are being considered to deal with the shortage of machine hours.

Option 1: The finance director has recommended the company makes the maximum profit possible in August 2021 and if necessary not complete all of the major customer's order.

Option 2: The sales director has recommended that the company should ensure it fulfils the major customer's order.

REQUIRED

(f) Calculate the profit or loss for August 2021 based on:

(i) Option 1

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(ii) Option 2

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(g) Advise which option the company should choose. Justify your advice by discussing **both** options. (Consider **both** financial and non-financial factors.)

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[Total: 30]

4 P Limited is a manufacturing business.

REQUIRED

(a) Define the following terms:

(i) Direct costs

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(ii) Stepped costs

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(b) State the formula for finding the margin of safety in units.

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(c) Explain the term 'limiting factor' when using marginal costing.

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Additional information

P Limited manufactures a single product. The factory has the capacity to make 40 000 units per month. All production is sold.

The following budgeted information is available for December 2021.

Sales	30 000 units at $48 per unit
Direct materials per unit	4.5 m at $4 per metre
Direct labour per unit	3 hours at $8.50 per labour hour
Fixed costs	$112 000

The company has a target profit of $40 000 per month.

REQUIRED

(d) Calculate the number of units to be sold for the company to achieve its target profit for December 2021.

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(e) Prepare a budgeted marginal cost statement for December 2021.

Budgeted marginal cost statement for December 2021

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Additional information

The directors have been told that demand for their product is likely to fall in future months. They are considering two proposals: Proposal A and Proposal B.

Proposal A

Produce a superior version of the product.

Sales	27 000 units per month at $57 per unit.
Direct materials	The same quantity of material per unit as currently used, but the price per metre would increase by 7.5%.
Direct labour	The rate would increase to $9.25 per hour and each unit would take 3.4 hours to make.
Additional fixed costs	Extra machinery costing $75 000 will be required. Machinery is depreciated at 20% per annum using the straight-line method. A loan would be required to finance the full cost of the machinery. Interest rates are currently 8% per annum.

REQUIRED

(f) Calculate the monthly profit to be made from proposal A.

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Additional information

Proposal B

The directors are also considering a proposal to produce a simpler version of the product with a selling price of $37 per unit. This proposal would require 76 000 labour hours per month. They estimate that 38 000 units per month could be sold.

This will produce a monthly profit of $49 500.

REQUIRED

(g) Advise the directors which proposal they should choose. Justify your choice by considering **both** financial and non-financial factors.

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[Total: 30]

Additional information

Factory B

T Limited manufactures a single product in Factory B.

Marginal costing is used at this factory.

The following information is available for December 2020 when production was 9000 units which included 1000 units produced using overtime.

	$
Direct materials	72 000
Direct labour	74 000
Other variable costs	22 500
Fixed costs	65 000
Total costs	233 500

Direct labour overtime is paid at 1.25 times the normal rate.

All production was sold at $30 per unit.

The directors have been considering changing the supplier of materials. The following information is available.

1 An overseas supplier is prepared to become the company's sole supplier of materials at $5.50 per unit including delivery costs.

2 The supplier can only provide sufficient materials for the company to make 7600 units per month.

3 The directors do not expect any other costs or the unit selling price to change. All production will be sold.

REQUIRED

(f) Calculate the maximum profit per month that can be made if materials were obtained from the overseas supplier and production limited to 7600 units.

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(g) Advise the directors whether or not they should change the supplier. Justify your advice by considering **both** financial and non-financial factors.

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[Total: 30]

4 T Limited manufactures a single product. The following budgeted information is available.

	Per unit $
Direct materials	8.40
Direct labour	14.50
Other variable costs	2.30
Fixed costs	8.00

Each unit is sold for $36. Budgeted monthly production and sales are 1200 units.

REQUIRED

(a) Calculate the monthly break-even point in units.

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(b) Calculate the margin of safety:

(i) in units

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(ii) in revenue

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(c) Identify **three** assumptions made when using break-even analysis.

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[Turn over

Additional information

In January 2021 the company made and sold 1120 units.

REQUIRED

(d) (i) Calculate the contribution to sales ratio.

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(ii) Calculate the profit made in January 2021.

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Additional information

In March 2021 a machine fault meant that only 75% of budgeted output could be produced. The directors considered two options.

Option A

1 Reduce normal output by 25%; as a result, materials cost would be affected because trade discount of 20% on bulk orders would not be available. All other costs would remain the same.

2 Buy in units from a competitor at $27.20 per unit. The competitor can supply a maximum of 250 units and will charge $125 for delivering this quantity.

Option B

1 Hire a replacement machine at a cost of $1600 for the month.

2 The replacement machine could make an additional 200 units per month.

3 All other costs would remain the same.

REQUIRED

(e) Calculate the profit for March 2021 for:

(i) Option A

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(ii) Option B

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(f) Advise the directors which option they should choose. Justify your advice by considering **both** options.

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4 B Limited is a manufacturing business. The business uses marginal costing techniques and manufactures three products, Ess, Tee and Ewe.

The following budgeted monthly information is available.

Per unit	Ess	Tee	Ewe
	$	$	$
Selling price	30	43	69
Direct material	18	22	36
Direct labour at $8 per hour	4	6	14
Variable overhead	2	3	5
Maximum monthly demand	300 units	400 units	360 units

Fixed overheads are budgeted to be $96 000 per annum.

REQUIRED

(a) Calculate the contribution per unit for **each** product.

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(b) Prepare a statement to show the maximum monthly contribution **and** maximum monthly profit that B Limited can earn.

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(c) Calculate the monthly direct labour hours that B Limited requires to meet the budgeted maximum monthly demand.

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Additional information

Due to a shortage of skilled labour, the directors are aware that only 900 direct labour hours per month will be available from 1 December 2021.

REQUIRED

(d) Calculate the maximum contribution **and** maximum profit for December 2021, taking into account the limited direct labour hours available.

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Additional information

In order to overcome the shortage of skilled labour and also be able to meet maximum demand, the directors are considering paying an overtime premium of 25% and paying a total monthly bonus of $200 to be shared between all workers.

REQUIRED

(e) Calculate the total contribution **and** total profit for the month of December 2021 if the directors decide to carry out this proposal.

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(f) Explain **two** disadvantages to a business of offering a bonus payment to its employees.

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4 EMM is a manufacturing business producing one product, a wooden desk.

The business is contracted to supply 220 desks each week to H Co, a large retailer, at a selling price of $44 per unit.

The costs incurred by EMM are as follows:

	$	
Direct material	36.00	per unit
Production labour		
Salaries	410.00	per week
Bonus	0.50	per unit
Finishing labour		
Salaries	180.00	per week
Bonus	0.30	per unit
Machine hire	120.00	per week
Administration costs	400.00	per week
Rent and rates	240.00	per week

REQUIRED

(a) Calculate the weekly break-even point in units.

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(b) **(i)** Define the term 'margin of safety'.

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(ii) Explain the usefulness of the margin of safety to a business.

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(c) Prepare a weekly profit statement using marginal cost principles.

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Additional information

EMM is concerned about future prospects. It has spare direct labour capacity and the machinery is not being fully utilised.

EMM has been approached by K Limited, a large furniture company, requesting a quotation to supply 80 desks each week. K Limited would require a small design change to the desks, and this would add $5.40 to the direct material cost. Workers on these desks would receive an additional finishing labour bonus of $0.20 per unit.

REQUIRED

(d) Calculate the selling price per unit that EMM should quote to K Limited in order to achieve a 20% contribution to sales ratio.

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Additional information

It has been decided to quote a price of $48 per unit to K Limited.

This work would involve employing extra finishing labour at a weekly salary of $120 and hiring an additional machine at $30 per week.

The contract with H Co to produce 220 desks each week would still be continued at a price of $44 per unit.

EMM has decided to set an annual target profit of $17 000.

REQUIRED

(e) Prepare a profit statement for EMM to show the **total** weekly contribution and **total** weekly profit if K Limited accepts the quotation.

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Additional information

K Limited have advised EMM that they will only proceed with the order if they are given 5% settlement discount for paying the account within seven days.

REQUIRED

(f) Calculate the total weekly profit of EMM if EMM agrees to giving the settlement discount.

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Additional information

D Limited, a competitor of G Limited, makes a single product. The factory has the capacity to make 850 units per month. Overtime working is not available at this factory.

The following information is available for **each unit** of production and is based on operating at full capacity.

	$
Selling price	49
Direct labour	16
Direct materials	9
Fixed costs	12

In April 2020 the factory was planned to operate at 80% capacity.

The directors of D Limited have received an offer from Wendy to supply 280 units at $45 per unit. Wendy stated that the offer would depend on the entire order of 280 units being supplied.

REQUIRED

(e) Calculate the profit for the month of April if the offer from Wendy is accepted.

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(f) Advise the directors whether or not they should accept the offer from Wendy. Justify your answer.

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[Total: 30]

4 DL Limited will soon be introducing a system of budgetary control. The directors are aware that this should provide a number of advantages. However, they are not sure how budgetary control will affect the company's departmental managers.

Additional information

DL Limited manufactures a single product at one of its factories. The following information is available about one unit of production.

Selling price	$69
Direct materials	2 kg at $3.30 per kg
Direct labour	5.2 hours at $8.30 per hour
Other variable costs	$2.24

The factory's fixed costs are $374 000 per annum.
The factory has the capacity to make 28 000 units per annum in normal working conditions.

REQUIRED

(b) Calculate the contribution per unit.

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Additional information

The annual target profit for this factory is $50 000. During the year ended 31 December 2019 24 500 units were made and sold and the target profit was not achieved.

REQUIRED

(c) Calculate by how much the target profit was **not** achieved for the year ended 31 December 2019.

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Additional information

The directors are considering two options to increase demand for the product above the current level of 24 500 units. The current factory capacity of 28 000 units could increase by a maximum of 20% by the use of overtime. Overtime will be paid at 1.25 times the basic rate.

Option A

1 Reduce the selling price of the product by $3 per unit.

2 Demand will increase by 40% on 2019 levels.

3 Suppliers of materials will provide an additional discount of 5%.

4 Fixed costs will not be affected.

Option B

1 Borrow $20 000 at an interest rate of 8% per annum to finance improvements to machinery.

2 This machinery will be depreciated at 20% per annum.

3 The cost of material will be reduced to $3 per kg.

4 An advertising campaign will be launched at a cost of $5000 per month.

5 The factory will operate at full capacity without the need for overtime working.

6 The selling price per unit will remain unchanged.

REQUIRED

(d) Calculate the annual profit if the directors choose:

(i) Option A

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(ii) Option B

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(e) Advise the directors which option they should choose, taking account of financial **and** non-financial factors. Justify your choice.

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[Total: 30]

4 Y Limited is a large manufacturing company with factories at several locations. The company uses a marginal costing system.

REQUIRED

(a) State **three** benefits to a business of break-even analysis.

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Additional information

At one factory a single product is manufactured which sells for $75 per unit. The budgeted costs of manufacture for one unit are as follows:

	$
Direct materials 2 kg at $12.50 per kg	25
Direct labour 3.5 hrs at $10 per labour hour	35

Fixed costs are budgeted to be $66 000 per month. It is possible to produce 7500 units in normal working conditions. Currently 5800 units are made and sold each month.

REQUIRED

(b) Calculate the monthly break-even point:

(i) in units

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(ii) in sales revenue

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(c) Calculate the forecast profit per month based on 5800 units.

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(d) Define the term 'margin of safety'.

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Additional information

The directors of Y Limited believe they can increase demand for their product by making some changes to the design. This would result in the following.

1 A $7 increase in the selling price per unit

2 A 10% increase in direct materials usage

3 A 20% increase per kg in direct materials cost

4 A forecast 40% increase in demand.

Overtime working is available if required. This will be paid at a 25% premium.

Additional machinery will be required at a cost of $24 000. The company's policy is to depreciate machinery over a 5-year period.

REQUIRED

(e) Prepare a marginal cost statement showing the monthly profit based on these changes.

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Additional information

At a different factory the company manufactures two products: Product A and Product B.

The following budgeted information is available.

	Product A	Product B
Monthly demand	300 units	200 units
Selling price per unit ($)	20	25
Direct materials per unit ($)	5	14
Direct labour hours per unit	0.75	0.5

Each product uses the same direct labour, but requires different direct materials. Direct labour is paid at $12 per hour.

The production manager is aware that only 285 hours of direct labour will be available in August 2020.

REQUIRED

(f) Prepare the optimum production plan.

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Additional information

The marketing director does not think that the optimum production plan should be implemented.

REQUIRED

(g) Advise the directors whether or not the company should implement the optimum production plan. Justify your answer referring to **both** financial and non-financial factors.

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[Total: 30]

At another factory the company manufactures bookcases. The following information is available.

Selling price per unit	$55
Materials per unit	$10
Direct labour per unit	$21
Fixed costs per month	$54 000
Factory capacity per month	3800 units

Recently demand for the product has fallen due to increased competition and the target profit of $12 500 per month has not been met.

The directors are considering the following options.

Option A

1 Reduce the selling price of each bookcase by $3 per unit.

2 Introduce a sales commission of 5% of selling price.

3 It is expected that demand will be 3800 units.

Option B

1 Change the design to improve quality resulting in an increase of 20% in the material cost per unit.

2 Labour hours per unit will increase by 10%.

3 The revised selling price of each bookcase will be $59.

4 Start an advertising campaign at a cost of $24 000 per annum.

5 It is expected that demand will be 3040 units.

REQUIRED

(e) Calculate the forecast profit per month for:

(i) Option A

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(ii) Option B

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[Turn over

(f) Recommend which option the directors should choose. Justify your answer.

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[Total: 30]

Additional information

Kevin currently uses marginal costing but is considering changing to absorption costing.

The following budgeted information per unit is available.

	$
Selling price	20
Direct material	6
Direct labour	3

Budgeted production	20 000 units per month
Budgeted fixed overheads	$100 000 per month.

At 1 January there was no inventory held.

The following actual results are available for January and February.

	January	February
Sales (units)	15 000	21 000
Production (units)	18 000	18 000
Fixed overheads	$100 000	$100 000

REQUIRED

(c) Prepare the income statement for **each** of the months of January and February using marginal costing.

Kevin
Marginal cost income statement

	January		February	
	$	$	$	$
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(d) Prepare the income statement for **each** of the months of January and February using absorption costing.

Kevin
Absorption cost income statement

	January		February	
	$	$	$	$
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(e) Prepare a statement reconciling the marginal cost profit with the absorption cost profit for January.

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(f) Advise Kevin whether or not he should change from marginal costing to absorption costing. Justify your answer.

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[Total: 30]

4 Connie manufactures three products: A, B and C. She has provided the following budgeted information for one unit of each product for the year ending 31 December 2021.

	Product A	Product B	Product C
	$	$	$
Selling price	15.00	20.00	25.00
Direct Materials	5.00	5.50	6.00
Direct Labour	4.00	5.00	7.50
Variable Overheads	2.50	3.50	2.50

Total fixed costs for the year are expected to be $100 000.
Forecast annual demand for **each** product is 12 000 units.

REQUIRED

(a) Explain what is meant by contribution.

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(b) Calculate the budgeted unit contribution for **each** product.

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(c) Calculate the budgeted **total** profit for the year ending 31 December 2021 if the demand is fully met.

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Additional Information

Connie has now discovered that her landlord may limit the use of the premises resulting in a total of only 78 000 machine hours being available.

The number of machine hours to make **each** product are:

Product A	2
Product B	4
Product C	4

Fixed costs will remain unchanged.

REQUIRED

(d) (i) Prepare the optimum production plan for the year ending 31 December 2021 based on the available machine hours.

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(ii) Calculate the budgeted **total** profit for the year ending 31 December 2021 based on the optimum production plan.

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Additional information

If Connie pays her landlord $65 000 she will be able to have unlimited machine hours.

REQUIRED

(e) Advise Connie whether or not she should pay her landlord $65 000. Justify your advice.

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(f) Define the following terms:

(i) Variable cost

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(ii) Semi-variable cost

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(iii) Fixed cost

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(g) State **three** assumptions made when using marginal costing.

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[3]

[Total: 30]

4 W Limited operates a system of marginal costing. The company makes two products, Product A and Product B. The directors provided the following budgeted information for a year.

	Product A	Product B
Production and sales (units)	10 000	6 000
	$	$
Allocated fixed overheads	130 000	120 000
Per unit		
selling price	60	80
direct material	14	16
direct labour	15	21
variable overheads	10	15

REQUIRED

(a) Prepare a statement for the year to show:

the budgeted **total** contribution for **each** product

the budgeted **total** profit for **each** product

the budgeted **total** profit.

	Product A $	Product B $	Total $

[8]

Additional information

Included in the allocated fixed overheads is rental of machinery at a cost of $100 000 a year. This cost is allocated 75% to Product A and 25% to Product B.

The directors are now considering two options.

Option 1: Continue with the existing machinery rental on the same terms.

Option 2: Taking out a new rental agreement for new machinery. The new rental agreement would consist of a fixed fee of $28 000 a year plus $4 for each unit produced. The fixed fee would be split across the products in the same proportions as under the current agreement.

REQUIRED

(b) Complete the following table to show the effect of Option 2.

	Product A	Product B	Total
Revised unit contribution			
Revised allocated total fixed overheads, total for the year			
Revised budgeted profit for the year			
Workings:			

[9]

(c) Advise the directors which option they should choose. Justify your answer using **both** financial and non-financial factors.

[7]

(d) Explain how unit contribution can be used by a business manufacturing multiple products when there is a shortage of production materials.

[4]

(e) State **two** other uses of marginal costing to a business.

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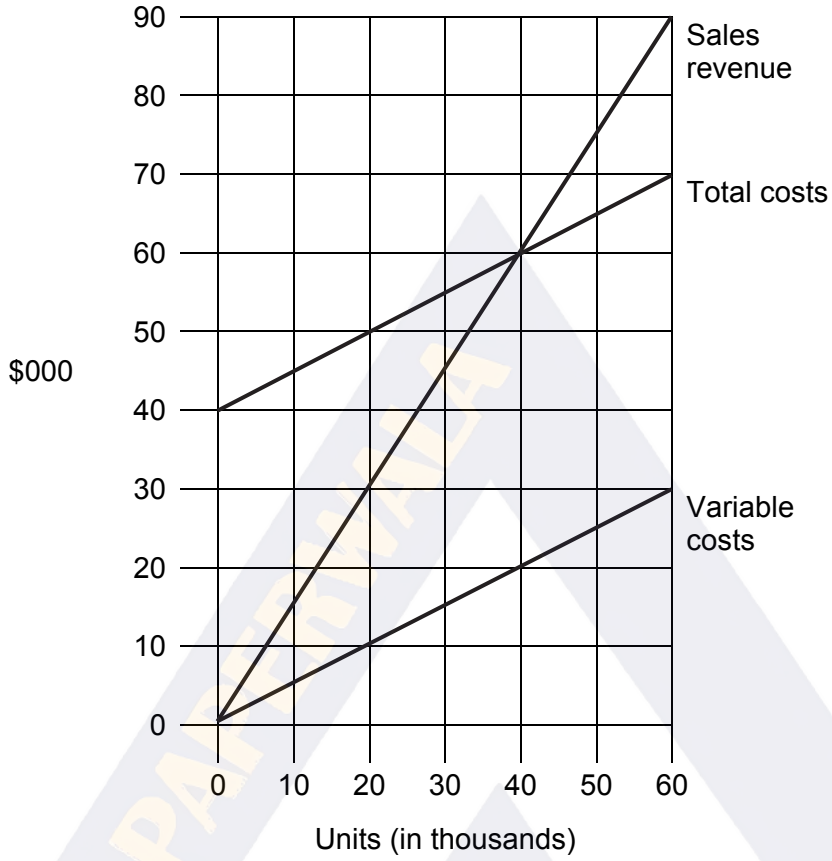
[Total: 30]

4 Ravi manufactures two products, Exe and Wye. Each product has allocated fixed costs. The following chart shows budgeted information for Exe.



REQUIRED

(a) Identify the following values **in dollars** from the chart:

(i) Break-even point

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(ii) Allocated fixed costs

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..... [1]

(iii) Margin of safety

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..... [1]

(iv) Profit

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..... [1]

Additional information

The following budgeted information is available for Wye:

Sales (units)		105 000
		$
Sales revenue		315 000
Direct labour	0.5 hours × $4 per hour	210 000
Direct materials	0.25 kilos × $2 per kilo	52 500
Allocated fixed costs		34 500

Ravi is concerned that the budgeted profit for Wye is not very high. He believes the following changes could increase the profit but will have no effect on sales volume.

1 Increase the selling price per unit by 5%.

2 Use skilled labour which will increase the cost per hour by 5%.

3 Use better quality material which will increase the cost per kilo by 2%.

4 Increase the advertising cost by $6000.

5 Offer the sales team a bonus of 2% of the sales revenue earned from all sales above 80 000 units.

REQUIRED

(b) Calculate, for product Wye **only**, the effect of these changes on the budgeted **total** profit for 105 000 units.

[10]

(c) Calculate, for product Wye **only**, the effect of these changes on the budgeted break-even point in dollars.

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(d) Calculate, for product Wye **only**, the effect of these changes on the budgeted margin of safety in units.

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(e) Recommend whether or not Ravi should proceed with these changes. Justify your answer.

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(f) State **four** advantages to a business of planning for the future.

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[Total: 30]

Additional information

The following budgeted information is available for the year ending 30 June 2020.

1 Sales ($12 per unit)

	$
1 July – 30 Sept 2019	171 000
1 Oct – 31 Dec 2019	171 000
1 Jan – 31 Mar 2020	186 000
1 Apr – 30 June 2020	192 000

2 Costs for the **year**

	$
Advertising	24 000
Direct labour	270 000
Direct material C	48 000
Direct material D	90 000
Fixed production overheads	30 000

3 The salesperson receives a basic salary plus commission payment.

Basic salary	$51 000 per annum
Commission	3.5% of sales revenue

REQUIRED

(c) Calculate for the year ending 30 June 2020:

(i) the **total** budgeted fixed selling expenses

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..... [1]

(ii) the **total** budgeted variable selling expenses

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(iii) the **total** budgeted contribution

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(iv) the **total** budgeted profit.

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Additional information

Ethan has received an order, directly from a customer, for an **additional** 15 000 pots at a selling price of $8 per pot. The order is to be delivered in November 2019.

The following information is relevant to this order.

1 The existing labour force can produce a maximum of 70 000 pots each year.

2 Additional temporary labour can be hired at $5.25 per unit.

3 The current supplier can only guarantee the material prices for a maximum of 70 000 pots. To purchase extra material C to produce any units in excess of 70 000 the cost will increase by 5% and the cost of material D will increase by 2%.

4 There is sufficient space in the factory to produce the order.

REQUIRED

(d) Calculate the additional profit or loss made on this order.

[13]

(e) Advise Ethan whether or not he should accept the order. Justify your answer taking into account **both** financial and non-financial factors.

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Additional information

At a second site, D Limited manufactures garden chairs and uses a system of marginal costing. There are three models: basic, super and deluxe. Total budgeted fixed costs per annum are $234 000. Budgeted direct labour hours are 156 000 per annum. Fixed overhead costs are absorbed on the basis of direct labour hours.
The following forecast figures are available for September 2018.

	Basic	Super	Deluxe
Contribution per chair	$3	$9	$12
Direct labour hours per chair	3	4.5	5.5

A director has suggested that production of the model which provides the least profit should be discontinued and resources switched to the production of the other models.

REQUIRED

(f) Recommend whether or not production of the model which provides the least profit should be discontinued. Justify your answer using **both** financial and non-financial factors.

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[Total: 30]

Additional information

Aramis's accountant has suggested that he uses marginal costing. He has provided the following analysis for one product:

		$
Direct materials		710
Direct labour	Drilling	225
	Finishing	85
Overhead absorbed	Drilling	115
	Finishing	45
Selling and administration costs		280

Half of the selling and administration costs are variable.

Aramis requires that all products achieve a profit margin of at least 15%.

A new customer has approached Aramis and offered to pay him $1300 for his product. The normal selling price for this product is $1750.

REQUIRED

(e) Advise Aramis whether or not he should accept the order. Justify your answer using **both** financial and non-financial factors.

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(f) State **four** factors that a business should consider before changing its supplier.

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4 .....

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[Total: 30]

4 Zinan is a manufacturer and makes a single product. He currently uses marginal costing.

The following budgeted information is available for two years.

	Year 1	Year 2
	$	$
Direct labour	38 500	45 500
Direct material	24 750	29 250
Factory costs	13 750	15 250
	Units	Units
Sales	10 000	11 000
Production	11 000	13 000

The following information is also available.

1 Of the factory costs, $5500 are fixed for each year and the remainder are variable.

2 Variable cost per unit is not expected to change.

3 Fixed selling costs are $3500 for Year 1. These are expected to increase by 2% for Year 2.

4 Variable selling costs are expected to be 5% of the sales revenue for each year.

5 The selling price is $18 per unit.

6 There was no opening inventory in Year 1.

REQUIRED

(a) Calculate the budgeted variable cost of production per unit.

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..... [2]

(b) Calculate the **total** budgeted contribution for **each** year.

[6]

Additional information

During actual production of a large order for 3000 units, Zinan discovers that the customer has ceased trading. If he cannot find another customer for these units he will have to decrease production for Year 1 and reduce staff.

To prevent this from happening, Zinan is proposing to attract new customers for the 3000 units with a marketing campaign.

The following information is available in respect of **only** the 3000 units.

1 The budgeted selling price would be reduced by 7.5%.

2 Advertising costs would be $1000.

3 There would be additional direct labour costs of $0.15 per unit.

REQUIRED

(g) Prepare a statement to calculate the effect on profit for Year 1 if the proposal is accepted.

[3]

(h) Advise Zinan whether or not he should go ahead with the marketing campaign. Justify your answer using **both** financial and non-financial factors.

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..... [5]

[Total: 30]

4 DP Limited is a large manufacturing and retailing company. The following information is available.

Current selling price per unit	$3.60
Current weekly sales	2 000 units
Contribution margin	45%

REQUIRED

(a) Calculate the **total** contribution that the company would earn over the four-week period.

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..... [2]

Additional information

The directors are planning to hold a four week price promotion on its most popular product.

The directors plan to reduce the selling price of the product by 20% over the whole four weeks of the promotion. They forecast that **additional** sales of the product will be 150% of the current sales.

The company will incur additional fixed costs of $6000 to run the promotion. The directors forecast that unit variable costs will remain as they currently are.

REQUIRED

(b) Calculate the **total** forecast units to be sold if the directors proceed with the promotion.

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..... [2]

(c) Calculate the **additional** profit or loss if the company proceeds with the promotion.

[7]

(d) Calculate the percentage by which current unit sales must increase for the promotion to break even.

[4]

(e) Advise the directors whether or not they should proceed with the promotion. Justify your answer using **both** financial and non-financial factors.

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4 DH Limited manufactures a single product. The following information is available for one unit of that product:

	$
Selling price	20
Direct material	8
Direct labour	5
Variable overhead	3
Fixed overhead	2

Budgeted production is 200 000 units per annum.

REQUIRED

(a) Calculate the annual break-even point in units.

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..... [2]

(b) Calculate the **total** budgeted annual contribution and **total** budgeted annual profit.

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..... [2]

Additional information

The directors are considering reducing the selling price of the product by 10%. The new selling price would be lower than that of competitors. The directors are confident that as a result of this, sales volume would increase by 50%.

In order to produce the budgeted units, the company's labour force is currently working at 80% capacity. Workers will be paid an overtime premium of 25% for all production over 100% capacity.

The additional production would enable the company to qualify for 12.5% discount on all direct materials.

The revised production would result in the fixed overhead cost per unit reducing by 30% for **all** units produced.

REQUIRED

(c) Calculate the **total** budgeted annual profit if the directors proceed with their plans.

[8]

(d) Calculate the revised break-even point in units if the directors proceed with their plans.

[2]

(e) Calculate the margin of safety in units **and** as a percentage if the directors proceed with their plans.

[2]

(f) Advise the directors whether or not they should proceed with their plans to reduce the selling price. Give reasons for your answer.

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Additional information

The company has used the same direct material supplier for many years, but the directors have now been informed that there will possibly be a shortfall of available material in the next six months. They have sourced an alternative material from a new supplier at the same price.

REQUIRED

(g) State **three** issues the directors should consider before changing a supplier.

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..... [3]

4 G Limited produces a single product and uses break-even analysis.

REQUIRED

(a) State what is meant by the term 'break-even point'.

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..... [1]

(b) State **three** uses of marginal costing.

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[3]

Additional information

The company's factory is operating at full capacity and produces 5000 units a year. All units produced are sold. Its break-even point has been calculated as 2400 units.

Budgeted information for current production is as follows.

Per unit	
direct materials	4 kilos at $6 per kilo
direct labour	8 hours at $10 per hour
variable overheads	$12 per unit

	$
Annual revenue	1 000 000
Total annual fixed costs	201 600
Profit for the year	218 400

The company has the opportunity to buy some land so that the factory could be extended. The directors believe the company could sell 8000 units a year if the selling price was reduced.

If the factory was extended and production increased, the directors estimate the following changes would take place.

The selling price would be reduced by $5 per unit.
The price of direct materials would fall to $5.80 per kilo.
The direct labour rate would rise to $10.80 per hour.
Total fixed costs would increase by 50%.

REQUIRED

(c) Suggest a reason for:

(i) the decrease in the direct material price

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..... [1]

(ii) the increase in the direct labour rate.

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..... [1]

(d) Explain why fixed costs might increase by 50%.

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(e) Calculate:

(i) the profit for the year if the expansion went ahead

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..... [6]

(ii) the profit per unit if the expansion went ahead

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..... [1]

(iii) the contribution to sales ratio if the expansion went ahead.

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..... [2]

(f) Calculate the revised break-even point. Express your answer in terms of **both** revenue and units.

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..... [3]

Additional information

The purchase of land and site development would be financed with a long-term loan.

REQUIRED

(g) Explain how the proposed expansion of the factory might affect the shareholders' view of the safety of their investment.

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[Turn over

(h) Advise the directors whether or not they should proceed with the expansion of the factory. Justify your answer.

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[Total: 30]

4 J Limited produces and sells a single product. The budgeted operating statement of the company for the year ending 31 March 2019 is as follows:

	$000	$000
Sales income (20 000 units)		2 900
Direct materials	500	
Direct labour	300	
Production overheads	680	
		(1 480)
Gross profit		1 420
Selling overheads		(898)
Profit for the year		522

The variable production overheads will be $5 per unit.

The variable selling overheads will be $10 per unit.

REQUIRED

(a) (i) Calculate the budgeted contribution per unit.

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..... [4]

(ii) Calculate the budgeted margin of safety in units.

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..... [5]

(iii) Calculate the budgeted margin of safety as a percentage.

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..... [1]

Additional information

The sales manager believes that production and sales can be increased to 25 000 units per year based on the following plan.

1 The company spends $250 000 on an advertising campaign which will last for one year only.

2 The unit selling price is reduced by 15%.

3 The direct material unit cost is reduced by 5%.

REQUIRED

(b) Prepare statements to calculate the following in the first year if the directors decide to proceed with this plan.

(i) the revised budgeted contribution

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..... [6]

(ii) the revised budgeted total profit

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..... [2]

Additional information

If the directors decide to proceed with the sales manager's plan they would do so for a period of 3 years.

If the directors decide **not** to proceed with the sales manager's plan they estimate that profit for the years ending 31 March 2019, 31 March 2020 and 31 March 2021 will be $522 000, $322 000 and $220 000 respectively.

REQUIRED

(c) Advise the directors whether or not they should accept the sales manager's plan. Justify your answer using **both** financial **and** non-financial factors and any relevant calculations.

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4 Miu owns a manufacturing business making a single product.

REQUIRED

(a) State the difference between a cost unit and a cost centre.

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..... [2]

(b) State the difference between a production cost centre and a service cost centre.

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..... [2]

(c) State what is meant by contribution.

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..... [2]

Additional information

Miu currently uses marginal costing to value her inventory. The following budgeted information is available for the months of January and February:

Per unit	$
Selling price	12
Variable production cost	5

	January	February
	$	$
Fixed production overhead costs	9000	9000
Fixed administrative costs	800	800
	Units	Units
Sales	3600	5400
Production	4500	4500

There was **no** opening inventory in January.

Production is expected to be 54 000 units for the year.

REQUIRED

(d) Prepare a budgeted profit statement for **each** of the two months, January and February, using **marginal costing**. Clearly show the opening and closing inventories each month.

Budgeted Profit Statement

	January		February	
	$	$	$	$

[7]

Additional information

Miu is considering using absorption costing to value her inventory.

REQUIRED

(e) Calculate the production overhead absorption rate per unit.

[1]

(f) Prepare a budgeted profit statement for **each** of the two months, January and February, using **absorption costing**. Clearly show the opening and closing inventories each month.

Budgeted Profit Statement

	January		February	
	$	$	$	$

[8]

(g) Reconcile the difference in budgeted profit figures in parts **(d)** and **(f)**.

	January $	February $

[3]

(h) Advise Miu whether or not she should change from marginal costing to absorption costing. Give reasons to justify your answer.

[5]

[Total: 30]

4 Ken produces components for mobile telephones. The following budgeted data is available for the year ending 31 December 2018:

	Per unit $
Selling price	5.25
Direct materials	0.50
Direct labour	0.75
Direct expenses	0.25
Break-even point	16 000 units

REQUIRED

(a) Calculate the budgeted fixed costs for the year ending 31 December 2018.

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..... [3]

Additional information

The budgeted profit for the year ending 31 December 2018 is $75 000.

REQUIRED

(b) Calculate for the year ending 31 December 2018:

(i) budgeted number of units to be sold

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..... [2]

(ii) budgeted contribution to sales (C/S) ratio (to **two** decimal places)

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..... [2]

(c) State the meaning of C/S ratio.

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..... [1]

(d) **(i)** State the name given to the difference between the budgeted total sales units and the budgeted break-even sales units.

..... [1]

(ii) Explain the significance of this difference to a business.

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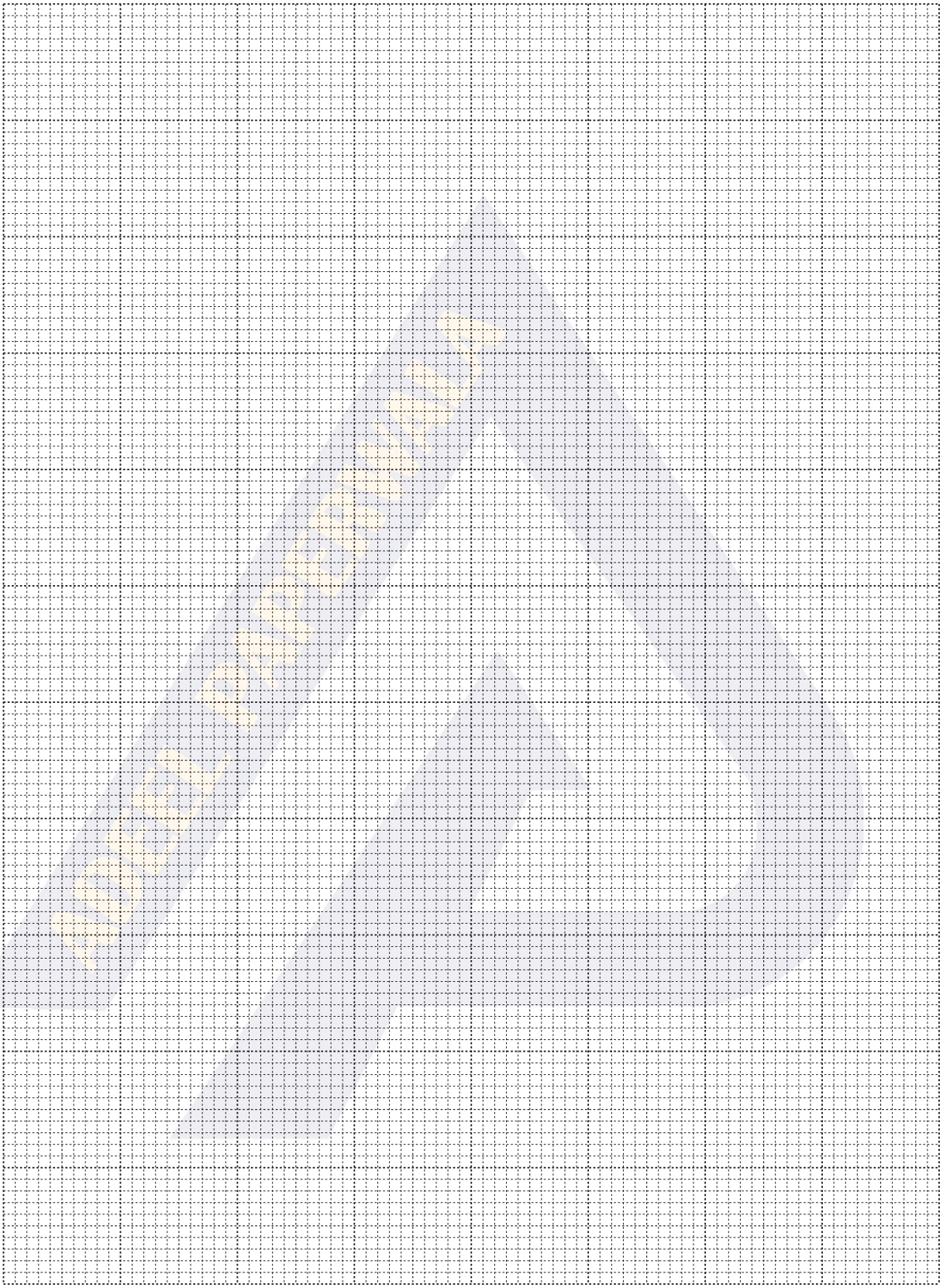
(e) Prepare the break-even chart for Ken based on the relevant data. Clearly identify the area of profit, the area of loss and the break-even point.



[7]

(f) State **three** limitations of a break-even analysis.

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..... [3]

Additional information

Ken is considering increasing the selling price to $6.00 per unit from 1 January 2019. He expects that all costs will remain unchanged.

REQUIRED

(g) Calculate the number of units Ken must sell **each** month so the budgeted total contribution is the same as in 2018.

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..... [5]

(h) Advise Ken whether or not he should increase the selling price taking into account both financial and non-financial factors.

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[4]

[Total: 30]

4 FPL Limited manufactures one type of product. Their sales staff receive 10% commission on the selling price.

The following information was available for the quarter ended 30 September 2016:

	$
Sales (58 000 units)	203 000
Direct materials	48 140
Direct labour	38 860
Variable production overheads	23 200
Fixed production overheads	20 450
Fixed administration overheads	32 250
Selling expenses	35 900

Selling expenses include the sales commission, but all other selling expenses are fixed.

REQUIRED

(a) Prepare a marginal cost income statement for the quarter ended 30 September 2016.

[4]

(b) Calculate the break-even point in units for the quarter.

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..... [2]

Additional information

The directors' target profit is $20 000 per quarter. They were concerned that the profit for the quarter ended 30 September 2016 was below the target profit.

The directors realised that action must be taken in order to increase the profit.

In order to improve the profits they are considering two proposals.

Proposal A

1 Retain the current selling price.

2 Reduce the number of employees in administrative staff, saving $48 000 per annum.

3 Source less expensive materials to reduce direct material cost by $0.10 per unit.

4 Reduce the sales commission by 2%.

Proposal B

1 Improve the product and increase the selling price by 10%. This will increase the direct material cost by $0.15 per unit.

2 Spend $5000 per quarter on advertising to raise awareness of the improved product.

3 Reduce the numbers of administrative staff, saving $48 000 per annum.

4 Retain the sales commission at 10%.

REQUIRED

(c) Calculate the number of **units** required to be sold **per quarter** to achieve a profit of $20 000 for:

(i) Proposal A

[4]

(ii) Proposal B

[6]

(d) Recommend to the directors which proposal they should adopt. Justify your answer by discussing the benefits and drawbacks of **each** proposal.

Recommendation .....

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Proposal A

Benefits .....

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Drawbacks .....

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Proposal B

Benefits .....

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Drawbacks .....

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[8]

4 Y Limited manufactures three products, Exe, Wye and Zed. The following budgeted information is available for the month of July 2017:

Per unit	Exe	Wye	Zed
Selling price	$96.00	$128.00	$140.00
Direct material at $4 per kilo	7 kilos	9 kilos	15 kilos
Direct labour at $8 per hour	3 hours	4 hours	4 hours
Machine hours	1.00	2.50	5.00
Variable overhead	$2.40	$3.20	$3.20
Fixed overhead	$10.00	$25.00	$50.00
Maximum monthly demand	100 units	120 units	60 units

Fixed overheads are forecast to be $7000 per month.

Y Limited has enough resources and capacity to meet the maximum monthly demand.

REQUIRED

(a) Calculate the contribution per unit for **each** product.

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..... [3]

(b) Prepare a statement to show the maximum contribution **and** maximum profit that Y Limited can earn for the month of July 2017.

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..... [3]

(c) Calculate the **total** machine hours required to meet maximum demand for the month of July 2017.

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..... [1]

Additional information

Due to a machine breakdown, only 500 machine hours will be available for July 2017 production.

REQUIRED

(d) Calculate the maximum contribution **and** the maximum profit for the month of July 2017, taking into account the limited machine hours available.

[10]

Additional information

The directors of Y Limited have been told that they could hire a replacement machine for the month of July 2017 at a cost of $2500.

REQUIRED

(e) Advise the directors whether or not they should hire the replacement machine. Justify your answer by considering **both** advantages and disadvantages of hiring the replacement machine.

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[4]

(f) State **three** short-term decisions, other than limiting factor decisions, where marginal costing would be useful.

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[3]

[Turn over

Additional information

Anna has recently opened another factory making cases for the electronic games. She is considering closing this factory as she believes it is unprofitable.

The following estimated data is available based on orders for the next six months:

Per unit	$
Selling price	12
Variable costs	5
Total fixed costs	21 000
Estimated demand	2800 units

REQUIRED

(g) Calculate the break-even point in units.

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..... [3]

(h) Advise Anna whether or not she should close this factory giving **both** financial and non-financial reasons for your answer.

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..... [4]

[Total: 30]

4 J Limited manufactures a single product, a leather suitcase. The following forecast information is available.

Costs **per unit**	$
Direct materials	15
Direct labour	8
Variable production overheads	2

Fixed costs **per month**	$
Salaries	1450
Rent and rates	650
Advertising	1000
Other fixed costs	1100

The directors calculate the selling price by adding a mark-up of 80% on to the variable costs.

The company has orders to supply 240 suitcases per month. This involves working at 75% capacity.

REQUIRED

(a) State **two** benefits and **two** limitations of break-even analysis.

Benefits

1 .....

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2 .....

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Limitations

1 .....

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2 .....

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[4]

(b) Calculate the break-even point in **units** per month.

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..... [3]

(c) Calculate the **monthly** margin of safety

(i) in units; .....

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(ii) in revenue. .....

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..... [2]

(d) Calculate the **maximum** monthly profit if the company is working at 100% capacity.

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..... [3]

Additional information

The directors have been approached by Bart, a retailer, who requires a regular monthly order of 150 suitcases. Bart is offering to pay $42 per suitcase.

The directors are aware that this order will take production over the current capacity and the following would result:

1 All suitcases over the current maximum production capacity would incur an additional $2 per unit direct labour cost to allow for overtime payments.

2 Additional storage facilities would have to be found at a monthly rental of $200.

The directors are also concerned that the target annual profit set by them of $30 000 is not being achieved.

They have decided to increase by 10% the selling price of all production **except** the new contract. They also plan to increase the advertising expenditure by $500 per month and are confident that monthly sales to existing customers will remain at 240 suitcases per month.

REQUIRED

(e) Prepare a statement, in marginal cost format, to show J Limited's maximum forecast **total** profit per **month** if the directors accept the new contract.

[8]

(f) Advise the directors whether or not they should accept the new contract with Bart and increase the selling price. Justify your answer by explaining **two** benefits and **two** limitations.

Advice

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Benefits

1 .....

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2 .....

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Limitations

1 .....

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2 .....

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[7]

4 S Limited manufactures three different products.

The following budgeted information is available:

Products	A	B	C
	$	$	$
Monthly sales revenue	72 000	27 000	165 000
Unit costs			
Direct materials ($1 per kilo)	6	9	3
Direct labour	2	7	8
Variable overheads	1	2	1
Selling price per unit	18	27	33

Total monthly fixed overheads are expected to be $138 000.

The directors of S Limited have been informed that only $39 000 worth of direct materials would be available in December 2017.

All products use the same type of direct material and no price increase would occur due to the shortage. No changes are anticipated in selling prices, fixed overheads or unit variable costs.

Due to an increased demand, the directors do not want to discontinue any of the products and wish to produce a minimum of 1000 units of each.

REQUIRED

(a) Prepare a statement to show the maximum budgeted profit the company will make in December 2017 taking into account the shortage in materials and minimum production requirement.

	Product A	Product B	Product C
Contribution per unit ($)			
Contribution per limiting factor ($)			
Ranking			

Budgeted profit statement for December 2017

	Production (units)	Contribution per unit $	Total $
Product A			
Product B			
Product C			
Total contribution			
Less: Fixed overheads			
Budgeted profit / loss			

[11]

(b) Prepare a statement to show the maximum budgeted profit the company will make in December 2017 taking into account the shortage in materials but **without** the minimum production requirement.

Budgeted profit statement for December 2017

	Production (units)	Contribution per unit $	Total $
Product A			
Product B			
Product C			
Total contribution			
Less: Fixed overheads			
Budgeted profit / loss			

[6]

(c) Advise the directors of S Limited whether or not they should produce a minimum of 1000 units of each product. Justify your answer.

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(d) Define the term ‘margin of safety’.

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(e) Explain the usefulness of margin of safety to a company.

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[Total: 30]

4 Costello Limited is a manufacturing business that produces one product, a wooden bookcase. All production is sold to just one customer, Dando plc.

Costello Limited is contracted to produce 220 bookcases for the customer each week at a contract price of $30 per bookcase.

Employees are paid a fixed salary each week plus a bonus based on output.

The costs incurred by Costello Limited are as follows:

	$
Direct material cost	22.00 per unit
Production labour	
Salaries	345.00 per week
Bonus	0.50 per unit
Finishing labour	
Salaries	280.00 per week
Bonus	0.25 per unit
Machine hire	150.00 per week
Administration costs	500.00 per week
Property costs	260.00 per week

REQUIRED

(c) Prepare an **annual** profit statement using marginal costing.

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3 Colebrook Limited manufactures one product. The following information is available.

Direct material	$3.20 per unit
Direct labour	$2.40 per unit
Selling price	$14.00 per unit
Budgeted fixed overhead	$88 000 per month
Budgeted production	16 000 units per month

The following information is available for February and March 2015.

	February	March
Actual sales (units)	13 000	17 000
Actual production (units)	15 000	15 000

There was no inventory of finished units at 1 February 2015. The actual fixed overhead cost was the same as the budgeted cost.

REQUIRED

(a) Calculate the contribution per unit.

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..... [2]

Question 3(b) is on the next page.

(b) Prepare the income statement for **each** of the months February and March 2015 using marginal costing.

[9]

Additional information

Colebrook Limited is considering changing to absorption costing.

(c) Calculate the overhead absorption rate per unit produced.

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(d) Prepare the income statement for **each** of the months February and March 2015 using absorption costing.

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(e) Prepare a statement reconciling the marginal costing profit with the absorption costing profit for February **only.**

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(f) Explain why there is a difference in the profit between the two methods.

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[Total: 30]

3 Airlie Limited manufactures one product. The following information is available for the production of one unit of product for the year ending 30 June 2014.

	$
Selling price	32.00
Direct materials	6.50
Direct labour	8.50
Fixed factory overheads	5.00
Variable factory overheads	3.00
Fixed selling and administration overheads	3.50
Variable selling and administration overheads	2.50

The budgeted output is 18 000 units per year, which represents 75% of total production capacity.

REQUIRED

(a) Calculate the breakeven point in units.

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..... [5]

(b) Calculate the breakeven point as a percentage of capacity.

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(c) Prepare a marginal cost statement to show Airlie Limited's budgeted total profit for the year ending 30 June 2014 based on the budgeted output of 18 000 units.

Marginal cost statement
year ending 30 June 2014

	$	$

[3]

Additional information

1 The directors are considering purchasing additional machinery at a cost of $45 000.

2 This will increase capacity by 10%.

3 The machinery will be written off over five years, with an estimated residual value of $5000.

4 The directors plan to reduce the selling price by 12.5% and this will increase demand by 50%.

5 Fixed selling and administration overheads will increase by 10%.

REQUIRED

(d) Calculate the revised breakeven point in units.

[5]

(e) Calculate the revised breakeven point as a percentage of capacity.

[3]

(f) Prepare a marginal cost statement to show Airlie Limited's revised total profit for the year ending 30 June 2014 if the machinery is purchased.

Revised marginal cost statement
year ending 30 June 2014

	$	$

[4]

(g) Advise the directors whether they should go ahead with their plans. Give reasons for your answer.

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[Total: 30]

3 Sparkle produces one product, the Esprit. During the year ended 31 December 2013, the company produced 15 000 units of Esprit and incurred the following total costs:

	$
Direct materials	90 000
Direct labour	67 500
Variable production overhead	45 000
Fixed production overhead	60 000
Other fixed overheads	25 000

Each Esprit is sold for $26.00

There was no opening inventory of finished goods at 1 January 2013, and only 13 000 units were sold in the year ended 31 December 2013.

REQUIRED

(a) Calculate the marginal cost of producing one unit of Esprit.

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..... [4]

Additional information

Sparkle absorbs fixed production overheads on a unit basis. Other fixed overheads are not absorbed.

REQUIRED

(b) Calculate the cost of producing one unit using absorption costing.

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..... [5]

(c) Calculate the profit for the year ended 31 December 2013 if Sparkle values inventory on a marginal cost basis.

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(d) Calculate the profit for the year ended 31 December 2013 if Sparkle values inventory on an absorption cost basis.

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(e) Prepare a statement reconciling the profit from **3(c)** with your profit from **3(d)**.

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(f) Explain the reason why valuing inventory on a marginal cost basis produces a different profit figure than valuing it on an absorption cost basis.

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Additional information

The directors of Sparkle have discovered that $7 500 fixed production overhead was incorrectly analysed as direct materials.

REQUIRED

(g) Explain the effect that this error will have on contribution and profit when using marginal costing.

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..... [4]

[Total: 30]

3 KC Global Limited provides the following budgeted information.

	January 2015	February 2015
Production	10 000 units	10 000 units
Sales	7 000 units	13 000 units
Production costs per unit:		
Direct materials	$4.50	$4.50
Direct labour	$6.00	$6.00
Variable overheads	$2.50	$2.50

Additional information

1 The budgeted selling price per unit is $17.

2 Budgeted production for the year is 120 000 units spread equally over the year.

3 There is no opening inventory at 1 January 2015.

4 Annual fixed overheads are budgeted to be $324 000.

5 Fixed overheads are absorbed on a unit basis.

REQUIRED

(a) Calculate the monthly breakeven point in units.

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..... [2]

(b) Prepare forecast profit statements for January and February 2015 using absorption costing.

	January 2015 $	February 2015 $

[4]

(c) Prepare forecast profit statements for January and February 2015 using marginal costing.

	January 2015 $	February 2015 $

[4]

(d) Prepare a reconciliation statement showing the difference between the absorption costing profit and the marginal costing profit for January and February 2015.

	January 2015 $	February 2015 $
Absorption costing profit		
Marginal costing profit		

[4]

(e) Explain why the absorption costing statement produces a different profit figure to the marginal costing statement.

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Additional information

The directors of KC Global Limited are considering an advertising campaign starting in January 2015. This will cost $60 000 spread evenly over the year. The volume of sales and production would both increase by 10%.

REQUIRED

(f) Prepare a revised profit statement for January 2015, using absorption costing.

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(g) State **three** situations where marginal costing would help in making a short term decision.

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(h) Evaluate the limitations of marginal costing.

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[Total: 30]

4 Rodriguez Limited is a manufacturing business producing two products, Product X and Product Y. The following budgeted information is available for the next month:

	Product X	Product Y
Budgeted production (units)	5000	7000
Costs per unit:	$	$
Materials	12.50	10.75
Labour	18.40	27.60
Variable overheads	9.10	6.65
Fixed overheads	5.75	4.80

Additional information

1 Both products are sold with a 20% mark-up on marginal cost.

2 Direct labour is paid at a rate of $4.60 per hour.

REQUIRED

(a) Calculate for each product

(i) unit contribution in dollars,

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..... [2]

(ii) total direct labour hours required to meet budgeted production.

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..... [2]

Additional information

The business only has a total of 59 000 direct labour hours available.

REQUIRED

(b) Calculate the maximum profit that can be achieved from the total direct labour hours available.

[7]

Additional information

The company has two possible options to enable it to achieve the budgeted production.

Option 1 Pay existing staff overtime. This will be paid at a rate of $5.75 per hour.

Option 2 Buy in the required products from an external supplier at a cost of $50 per unit.

REQUIRED

(c) (i) Evaluate the options available to the company to achieve the budgeted production.

Support your answers with calculations.

Option 1 .....

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Option 2 .....

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(ii) Recommend which option the company should choose. Justify your answer.

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(d) (i) State **three** advantages of budgetary control.

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(ii) State **three** disadvantages of budgetary control.

1 .....

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2 .....

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3 .....

..... [3]

[Total: 30]

3 Zumbi Limited manufactures three products, Ess, Tee and Ewe. The following information is available for December 2014.

	Ess ($)	Tee ($)	Ewe ($)
Selling price	22	28	31
Direct materials ($2 per metre)	6	6	8
Direct labour ($8 per hour)	8	10	12
Variable overheads	4	5	6

Maximum demand for the month (in units):

Ess	19 500
Tee	16 500
Ewe	15 000

REQUIRED

(a) Calculate the contribution per unit for each product.

	Ess ($)	Tee ($)	Ewe ($)

[7]

Additional information

1 Due to the production process, Zumbi Limited must manufacture batches of three units of Ess for every two units of Tee.

2 Ewe is always produced in batches of five.

REQUIRED

(b) Calculate the contribution per batch.

	Ess ($)	Tee ($)	Ewe ($)

[7]

Additional information

1 Zumbi Limited has a contract to supply 7000 units of Ewe each month. The company must honour this contract.

2 The maximum production capacity is a total of 40 000 units per month.

3 All goods will be sold in the month they are produced.

4 Annual fixed overheads are $2 160 000.

REQUIRED

(c) Prepare a statement for December 2014 showing the maximum monthly profit.

[8]

Additional information

Zumbi Limited has the opportunity to purchase unlimited quantities of product Ewe from an outside supplier at a cost of $30 per unit.

REQUIRED

(d) Discuss the advantages and disadvantages to the company if it purchases Ewes from the outside supplier.

Advantages

Disadvantages

[6]

(e) Advise the directors if they should purchase Ewes from the outside supplier.

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..... [2]

[Total: 30]

3 Clarke Limited manufactures one product, the Apex. The following forecast information for the Apex is available for the year ending 31 December 2014:

For Examiner's Use

Per unit:	
Selling price	$45.50
Direct material ($4 per metre)	$14.00
Direct labour ($12 per hour)	$18.00
Variable production overhead	$ 3.00
Sales demand	4 000 units

Fixed overheads are forecast to be $23 100 for the year.

REQUIRED

(a) Calculate the breakeven point in units for the sales of the Apex.

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..... [4]

(b) Calculate the margin of safety for the Apex in terms of revenue.

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Clarke Limited has decided to introduce two new products in addition to the Apex; the Bond and the Cord. Both products use the same direct material and the same grade of direct labour as the Apex. The following forecast information is available for the year ending 31 December 2014:

For Examiner's Use

Per unit:	Bond	Cord
Selling price	$52.00	$67.50
Direct material ($4 per metre)	$16.00	$20.00
Direct labour ($12 per hour)	$24.00	$30.00
Variable production overhead	$ 4.00	$ 5.00
Sales demand	6 000 units	2 000 units

Fixed overheads are expected to double as a result of producing all three products.

REQUIRED

(c) Calculate the contribution per unit of the Bond and the Cord.

[2]

(d) Calculate the total quantity of direct material required by Clarke Limited for the year ending 31 December 2014.

[4]

(e) Clarke Limited has been told that due to a shortage of direct material, only 40 000 metres will be available for the year. Calculate the maximum forecast profit for Clarke Limited for the year ending 31 December 2014 using 40 000 metres of direct material.

For Examiner's Use

[13]

(f) Explain why profit calculated using marginal costing would be different to that calculated using absorption costing.

[4]

[Total: 30]

For Examiner's Use

3 Blue Skies Ltd manufactures three types of tent: Beach, Explorer and Family.

The company provides the following forecast data for the year ending 30 April 2013:

	Beach	Explorer	Family
Forecast demand (units)	30 000	40 000	24 000
Per Unit	$	$	$
Selling price	70	130	200
Raw materials	30	36	54
Direct labour	8	20	38
Variable overhead	6	26	48

The same waterproof material is used in the manufacture of each tent.

The cost of material is estimated to be $6 per square metre.

Fixed costs for the year ending 30 April 2013 are estimated to be $3 500 000.

REQUIRED

(a) (i) Calculate the unit contribution for each product.

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[5]

For Examiner's Use

(ii) Calculate the total contribution and profit for the year based on forecast demand.

[5]

There is only one supplier capable of producing waterproof tent material of the required quality.

They have informed Blue Skies Ltd that the maximum amount they can supply in the year will be 546 000 square metres.

REQUIRED

(b) Calculate the contribution per square metre for each product produced.

[3]

(c) Using the quantity of material that is available for production, calculate the number of **each** type of tent that should be produced so that total profit is maximised.

For Examiner's Use

[7]

(d) Using the quantity of material that is available, prepare a marginal cost profit statement.

Clearly show the contribution made by **each** type of tent and the **total** profit made in the year.

[5]

(e) The directors determine that at least 27 000 units of the Beach tent have to be produced in the coming year.

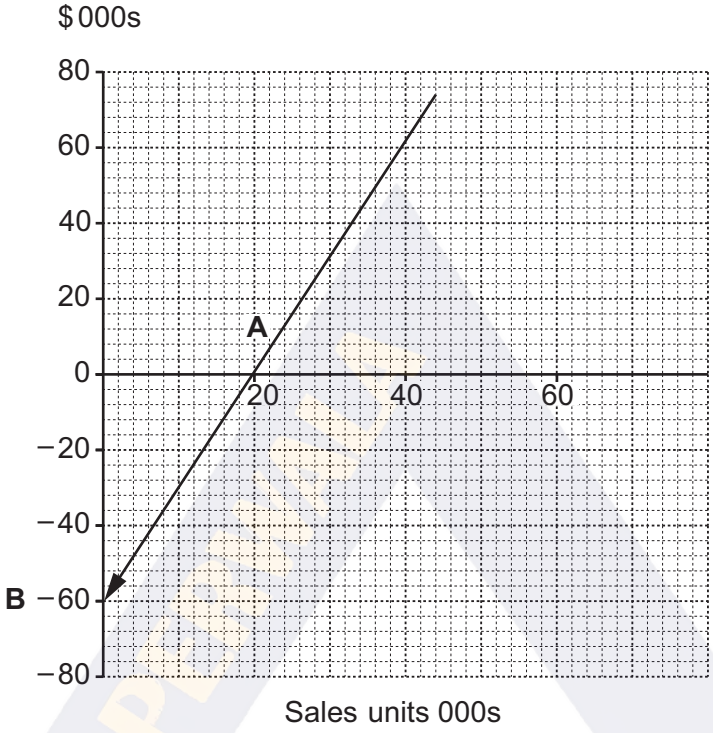
For Examiner's Use

Prepare a revised marginal cost statement to show the contribution made by **each** type of tent and **total** profit made in the year.

[5]

[Total: 30]

4 Lin, a manufacturer, makes three products: X, Y and Z. He uses cost-volume-profit (CVP) analysis in his business.
He has prepared the following profit/volume (P / V) chart for product X for the year ending 31 December 2016.



REQUIRED

(a) Identify from the P / V chart for the year ending 31 December 2016:

(i) what point A 20 000 represents

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..... [1]

(ii) what point B ($60 000) represents

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..... [1]

(b) State what is meant by P / V ratio.

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..... [1]

(c) State **two** benefits and **two** drawbacks of CVP analysis.

Benefits

1 .....

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2 .....

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Drawbacks

1 .....

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2 .....

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[4]

Additional information

Lin has provided you with the following budgeted information for the year ending 31 December 2016.

	X	Y	Z
Annual sales (units)	15 000	5 000	8 000
	$	$	$
Selling price (per unit)	8	10	7
Variable cost (per unit)	5	4	2
Annual allocated fixed costs	60 000	25 000	30 000

Lin is considering stopping production of X.

[Turn over

REQUIRED

(d) Calculate for the year ending 31 December 2016:

(i) the total contribution for each product

[3]

(ii) the total profit or loss for each product

[1]

(e) Discuss whether or not Lin should continue to produce all three products. Justify your answer.

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..... [4]

Additional information

Since preparing his budget, Lin has received two separate orders.

For order 1 the customer has offered an amount in total of $10 000.
For order 2 the customer has offered a price per unit for each separate product.

The details are as follows:

Order 1

	units
X	1000
Y	1000
Z	1000

Proposed total order price $10 000

Order 2

	units	proposed price per unit $
X	1000	6
Y	1000	5
Z	1000	4

Lin has spare production capacity and the fixed costs will not be affected by the orders.

REQUIRED

(f) Calculate the contribution gained or lost on **each** order.

[5]

(g) Advise Lin whether or not **each** of the orders should be accepted. Justify your decision.

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(h) Explain, giving **two** reasons, why a business needs to plan for the future.

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..... [4]

[Total: 30]

4 Rahel manufactures a single product X and wishes to know the break-even point.

REQUIRED

(a) State what is meant by break-even point.

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..... [1]

Additional information

The following budgeted information is available for product X.

Selling price per unit	$2.00
Contribution to sales ratio	62.5%
Fixed costs	$50 000
Production and sales	100 000 units

REQUIRED

(b) Calculate the break-even point in units and $ revenue.

(i) in units .....

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(ii) in revenue .....

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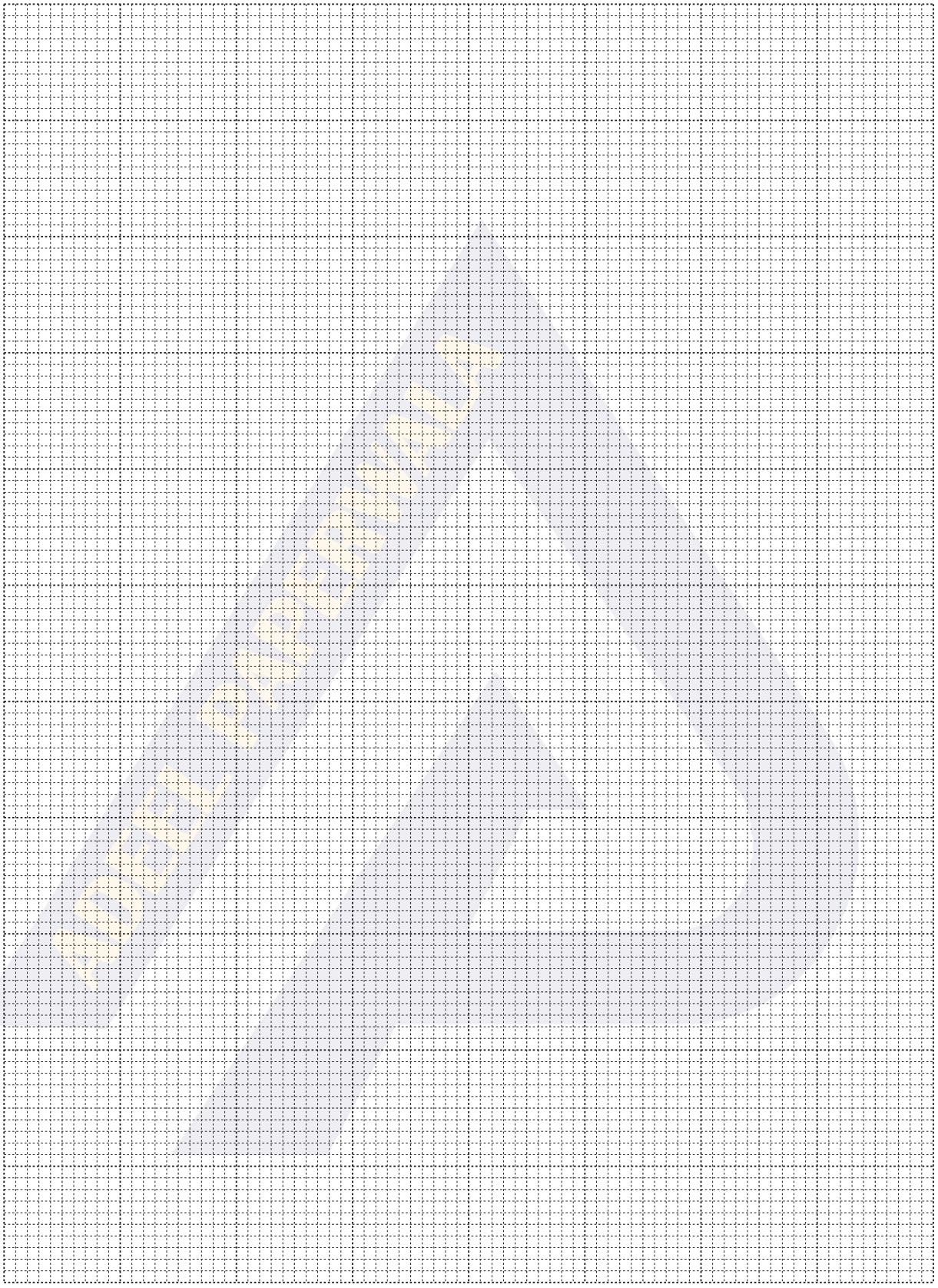
..... [4]

(c) Prepare a break-even chart for product X.



[4]

(d) Calculate the margin of safety.

(i) in units .....

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(ii) as a percentage .....

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..... [4]

Additional information

Rahel is considering opening another factory to produce two new products: Y and Z.

The following information is available.

	Y $ per unit	Z $ per unit
Direct material	2	4
Direct labour ($5 per hour)	10	5
Variable overhead	1.5	1.5
Selling price	23	18

Forecast demand for April is 4000 units of Y and 6000 units of Z.

REQUIRED

(e) Calculate the contribution per unit of **each** product Y and Z.

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..... [2]

Additional information

During April, fixed costs are forecast to be $60 000.

REQUIRED

(f) Calculate the forecast profit for the new factory for the month of April.

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..... [1]

Additional information

During April, direct labour hours are expected to be limited to 10 000 hours.

REQUIRED

(g) Calculate the revised profit taking into account the limited direct labour hours.

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..... [5]

Additional information

Rahel has to meet the forecast demand in April as she has contracts with her customers. In order to achieve this she has two alternatives.

1 Ask the workers to work overtime.

2 Buy in the products from another supplier.

REQUIRED

(h) Advise Rahel which option she should choose. Justify your answer.

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..... [5]

[Total: 30]

4 Costello Limited is a manufacturing business that produces one product, a wooden bookcase. All production is sold to just one customer, Dando plc.

Costello Limited is contracted to produce 220 bookcases for the customer each week at a contract price of $30 per bookcase.

Employees are paid a fixed salary each week plus a bonus based on output.

The costs incurred by Costello Limited are as follows:

	$
Direct material cost	22.00 per unit
Production labour	
Salaries	345.00 per week
Bonus	0.50 per unit
Finishing labour	
Salaries	280.00 per week
Bonus	0.25 per unit
Machine hire	150.00 per week
Administration costs	500.00 per week
Property costs	260.00 per week

REQUIRED

(a) Calculate the **weekly** break-even point in units.

[5]

(b) Calculate the weekly margin of safety in **units** and in **revenue**.

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..... [2]

Additional information

The directors of Costello Limited are concerned about the future prospects of the company. Employees have spare capacity and the machinery is not being fully utilised.

The company has been approached by a large retailer asking for a quotation to produce 100 bookcases each week. The retailer requires the bookcases to have a different finish that would add $2.25 to the direct material cost.

REQUIRED

(d) Calculate the selling price that the directors should charge the retailer in order to achieve a 20% contribution to sales ratio.

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Additional information

Having considered the situation, the directors have decided to quote a price of $29 per bookcase to the retailer. The additional work will involve employing one additional member of staff at a weekly salary of $140.
The contract with Dando plc to produce 220 bookcases per week would still be maintained at the price of $30 per bookcase.

REQUIRED

(e) Prepare a profit statement for Costello Limited to show the **total** annual contribution and **total** annual profit if the retailer accepts the quotation.

[5]

(f) Advise the directors whether or not they should proceed with the additional order for the retailer. Give reasons for your answer.

[4]

3 Bould Limited manufactures two products, Wye and Zed. The forecast data for the year ending 30 June 2016 is as follows.

	Wye $	Zed $
Revenue from Wye – 70 000 units at $12	840 000	
Revenue from Zed – 90 000 units at $8		720 000
Materials	(259 000)	(180 000)
Labour	(233 000)	(372 000)
Overheads	(190 000)	(207 000)
Profit / (Loss)	158 000	(39 000)
Labour includes fixed costs	65 000	48 000
Overheads include fixed costs	36 000	45 000

REQUIRED

(a) Calculate the contribution per unit of Wye.

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(b) Calculate the contribution per unit of Zed.

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(c) Calculate the break-even point in units of Zed.

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..... [2]

(d) Calculate the break-even point in revenue of Zed.

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..... [2]

(e) Calculate the margin of safety in revenue for Zed.

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..... [2]

Additional information

The directors are concerned about the forecast loss of manufacturing Zed and are considering two proposals.

Proposal 1
Increase the selling price of Zed by $1.20 per unit.
The sales volume is expected to fall by 5% as a result.

Proposal 2
Stop manufacturing Zed.
This will incur redundancy costs of $20 000.
There would be an increased additional budget facility for advertising Wye, which would increase sales volume of Wye by 40%.

REQUIRED

(f) Calculate the revised forecast profit of Bould Limited for the year ended 30 June 2016 if proposal 1 is adopted.

[5]

(g) Calculate the revised forecast profit if proposal 2 is adopted.

[5]

(h) Advise, with reasons, which proposal the directors should adopt.

Proposal .....

Evaluation .....

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..... [6]

[Total: 30]

3 A division of Hobbs Limited manufactures one product, the Wye. The directors had prepared the following forecast for the year ending 30 June 2016.

	$000
Sales revenue	4400
Direct materials	1400
Direct labour	1000
Variable administration costs	400
Fixed administration costs	300
Other fixed overheads	1200

Budgeted sales for the year ending 30 June 2016 are expected to be 40 000 units.

REQUIRED

(a) Calculate for product Wye:

(i) the contribution per unit

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..... [2]

(ii) the budgeted break-even point in units

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..... [2]

(iii) the margin of safety in units

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..... [1]

Additional information

The directors have been warned that trading conditions are likely to change in the coming year and they plan to make the following changes to their forecasts.

1 Reduce the selling price of the product by 10%.

2 Budget for a 20% increase in sales.

3 Budget for a 3% increase in direct labour.

4 Budget for a 10% decrease in fixed costs.

REQUIRED

(b) Calculate for product Wye:

(i) the revised contribution per unit

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..... [4]

(ii) the revised break-even point in units

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..... [2]

(iii) the revised margin of safety in units

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..... [1]

Additional information

Another division of Hobbs Limited also manufactures one product, the Exe.

The following data is available for the year ending 30 June 2016.

Unit selling price	$20
Unit variable costs	$15
Budgeted fixed costs per annum	$30 000
Budgeted sales	8000 units

REQUIRED

(c) Calculate the monthly break-even point in **revenue.**

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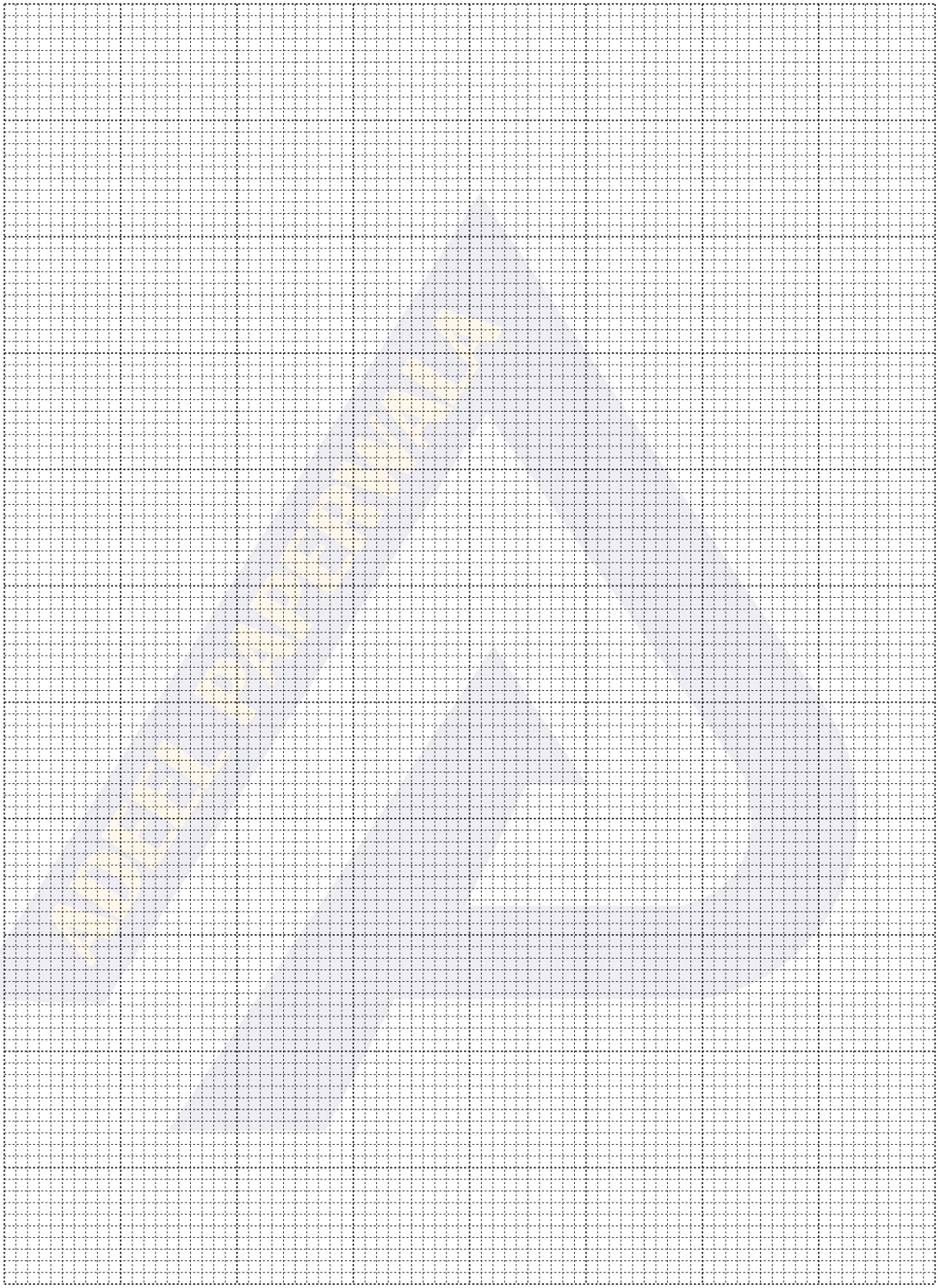
..... [2]

(d) Prepare a break-even chart for product Exe for the year ending 30 June 2016. Clearly indicate the areas of profit and loss.



[7]

(e) State **three** assumptions the accountant must make when preparing a break-even chart.

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2 .....

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3 .....

..... [3]

Additional information

The company uses marginal costing in order to calculate its break-even point for its 'make or buy' decisions.

REQUIRED

(f) State **three** further reasons why a business might use a marginal costing system.

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[Total: 30]

3 Airlie Limited manufactures one product. The following information is available for the production of one unit of product for the year ending 30 June 2014.

	$
Selling price	32.00
Direct materials	6.50
Direct labour	8.50
Fixed factory overheads	5.00
Variable factory overheads	3.00
Fixed selling and administration overheads	3.50
Variable selling and administration overheads	2.50

The budgeted output is 18 000 units per year, which represents 75% of total production capacity.

REQUIRED

(a) Calculate the breakeven point in units.

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..... [5]

(b) Calculate the breakeven point as a percentage of capacity.

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..... [3]

(c) Prepare a marginal cost statement to show Airlie Limited's budgeted total profit for the year ending 30 June 2014 based on the budgeted output of 18 000 units.

Marginal cost statement
year ending 30 June 2014

	$	$

[3]

Additional information

1 The directors are considering purchasing additional machinery at a cost of $45 000.

2 This will increase capacity by 10%.

3 The machinery will be written off over five years, with an estimated residual value of $5000.

4 The directors plan to reduce the selling price by 12.5% and this will increase demand by 50%.

5 Fixed selling and administration overheads will increase by 10%.

REQUIRED

(d) Calculate the revised breakeven point in units.

[5]

(e) Calculate the revised breakeven point as a percentage of capacity.

[3]

(f) Prepare a marginal cost statement to show Airlie Limited's revised total profit for the year ending 30 June 2014 if the machinery is purchased.

Revised marginal cost statement
year ending 30 June 2014

	$	$

[4]

(g) Advise the directors whether they should go ahead with their plans. Give reasons for your answer.

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[Total: 30]

3 KC Global Limited provides the following budgeted information.

	January 2015	February 2015
Production	10 000 units	10 000 units
Sales	7 000 units	13 000 units
Production costs per unit:		
Direct materials	$4.50	$4.50
Direct labour	$6.00	$6.00
Variable overheads	$2.50	$2.50

Additional information

1 The budgeted selling price per unit is $17.

2 Budgeted production for the year is 120 000 units spread equally over the year.

3 There is no opening inventory at 1 January 2015.

4 Annual fixed overheads are budgeted to be $324 000.

5 Fixed overheads are absorbed on a unit basis.

REQUIRED

(a) Calculate the monthly breakeven point in units.

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..... [2]

3 Clarke Limited manufactures one product, the Apex. The following forecast information for the Apex is available for the year ending 31 December 2014:

For Examiner's Use

Per unit:	
Selling price	$45.50
Direct material ($4 per metre)	$14.00
Direct labour ($12 per hour)	$18.00
Variable production overhead	$ 3.00
Sales demand	4 000 units

Fixed overheads are forecast to be $23 100 for the year.

REQUIRED

(a) Calculate the breakeven point in units for the sales of the Apex.

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(b) Calculate the margin of safety for the Apex in terms of revenue.

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3 Kirkton manufactures a single product, the Kirk. The following information relates to one unit of Kirk:

For Examiner's Use

Per unit	$
Selling price	35.00
Variable production costs	13.50
Fixed production costs	3.50
Variable selling costs	1.50
Fixed selling costs	1.00

Kirkton produces and sells 800 Kirks a week.

REQUIRED

(a) (i) Calculate the weekly breakeven point in units.

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..... [3]

(ii) Calculate the weekly breakeven point in revenue.

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..... [2]

(iii) Calculate the margin of safety in revenue.

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(iv) Calculate the margin of safety as a percentage.

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..... [2]