All questions below are from HKALE Principles of Accounts Paper 2.

1. 2004.Q4(B) – Cost classification

(B) 'Fixed cost is in fact variable and the more units a company produces, the lower the cost becomes.' Comment on the above statement. (6 marks)

2. 2004.Q5(A)

(A) Define 'sunk cost' and 'opportunity cost'. (3 marks)

3. 2004.Q5(B) (modified wordings) – Decision: Manufacture or buy

Hong Tin Company, a local toy manufacturer, had the following cost data for last year relating to the production of 30 000 units of a component which is used for manufacturing the company's toys:

Variable costs	$
Direct materials	160 000
Direct labour	180 000
Electricity	100 000
Fixed costs	**$**
Indirect labour	200 000
Miscellaneous	340 000

An offer is received from an outside supplier for the supply of the component and the company has collected the following information for consideration:

(1) Annual requirement of the component is 30 000 units.
(2) The price quoted by the outside supplier was $11.50 per unit.
(3) Carriage inwards will be incurred for the purchased component at $1.00 per unit.
(4) Indirect labour will be increased by $36 000 annually for receiving, inspecting and handling of the purchased component.
(5) Miscellaneous fixed costs of $50 000 can be avoided annually if production of the component is discontinued.

Kelvin, the Production Manager, insisted that the company must continue to produce the component and said, 'A piece of special equipment, costing $120 000 and installed only a year ago, cannot be used for purposes other than the production of the component. If the production of the component is discontinued, the equipment can only be sold for $1000, despite its net book value** of $96 000.'

REQUIRED:

(a) Comment on Kelvin's rationale for insisting that the company must continue to produce the component. (4 marks)
(b) State, with supporting calculations, whether Hong Tin Company should continue to manufacture the component, or whether it should purchase the component from the outside supplier. (7 marks)
(c) State other factors that may influence Hong Tin Company in making the decision in (b). (6 marks)

**The original wording used was 'written down value'.

4. 2005.Q2(a) – Marginal costing vs. absorption costing

Yellow Stone Manufacturing Ltd commenced business in 2004 producing cleaning liquid Product X. Each bottle of Product X contains 1 litre of raw materials.

The production budget for the year ended 31 December 2004 on the basis of 100 000 bottles is shown below:

	$
Raw materials ($10 per litre)	1 000 000
Direct labour ($2 per labour hour)	800 000
Factory overhead – fixed	200 000

Other budget information:

Selling and distribution expenses	
Fixed	$150 000
Variable	$1 per bottle
Administrative expenses – fixed	$400 000
Selling price	$30 per bottle
Sales volume	90 000 bottles

REQUIRED:

(a)(i) Prepare the budgeted income statement for Product X based on absorption costing to show the budgeted net profit for the year ended 31 December 2004. (5 marks)
(ii) How will the budgeted net profit differ if marginal costing is used instead? (2 marks)

5. 2005.Q2(d) – decision making: produce a new product or not

During the year 2004, $240 000 was incurred for the development of a new Product Y. The variable production costs for each bottle of Product Y are:

Raw materials	$11
Direct labour	$24

The experience in 2004 shows that the company has spare capacity to deal with additional production. If the company maintains the production level of Product X at 120 000 bottles in 2005, it will be able to produce and sell 50 000 bottles of Product Y, and the following additional expenses are required for 2005:

Selling and distribution expenses	
Fixed	$70 000
Variable	$2 per bottle of Product Y
Administrative expenses	$80 000

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An engineer would be redeployed from another unit to supervise the production of Product Y, if any, in 2005. He would be paid at the current salary of $150 000 per annum and would return to his original post when Product Y ceases production. Product Y can be sold at $44 per bottle. However, Product Y will be sold for one year only because another new product will be launched in 2006. The whole amount of the development cost will be written off in 2005.

REQUIRED:

(d) As Product Y will be sold for one year in 2005 only, analyse the costs above and advise with supporting calculations whether the company should produce Product Y in 2005. (8 marks)

6. 2005.Q5(a) – (c) = CVP, (d) = decision:

Tin Tin Ltd manufactured and sold two products: Product D ant Product S. Information on the two products is as follows:

	Product D	**Product S**
Unit selling price	$1000	$150
Unit variable cost (including commission to salesman at 6% of sales)	$600	$50
Sales volume in 2004	1000 units	4000 units

The annual fixed costs (including administrative expenses) are $550 000.

REQUIRED:

(a)(i) Calculate the current breakeven point (in sales dollars) for the business as a whole. (Note: Assume the sales volume of Product D and Product S is maintained at the ratio of 1:4). (4 marks)

(ii) Define 'margin of safety'. Calculate the margin of safety (in dollar amount) for the business as a whole in 2004. (3 marks)

The market for Product D is saturated whereas the market for Product S is expanding. The sales manager estimated that the demand for Product D would be reduced by 50% in 2005. He suggested the following two alternatives:

Alternative 1: Abandon Product D and focus on Product S only.
Alternative 2: Reduce the production and sales of Product D by 50% to 500 units and sell them at the existing price; Increase the production and sales of Product S.

For both alternatives, the following strategies will be adopted for Product S to boost its sales:

(i) Reduce selling price by 10%;
(ii) Increase the commission to salesman to 10% of sales; and
(iii) Incur additional promotional expenses of $166 000 in 2005.

The annual fixed costs would remain unchanged in all situations.

REQUIRED:

(b) Assuming Alternative 1 is adopted, calculate the breakeven point (in sales volume) of Product S in 2005. (3 marks)

(c) Assuming Alternative 2 is adopted, calculate the quantity of Product S to be sold in 2005 if Tin Tin Ltd is to maintain the company's net profit as that in 2004. (4 marks)

(d) Suppose the maximum capacity of Tin Tin Ltd is 100 000 machine hours while Product D and Product S will require machine hours of 60 hours and 8 hours for each unit of product respectively. Advise which alternative should be adopted, supporting with calculations on the respective total contributions under the two alternatives. (6 marks)

7. 2006.Q1 – comprehensive decision making

Healthy 99 started a business in 2003 as a retailer of Product X. Facing keen competition from a new shop nearby, the management of Healthy 99 is considering the following alternatives for 2006:

Alternative A

Take no action and accept a fall in sales.

Alternative B

Arrange advertising amounting to $100 000 per month to boost the sales of Product X

Alternative C

Introduce a new, environmentally friendly product, Product Y.

Additional information:

(i) The average monthly sales of Product X in 2005 was 1000 units. The average monthly sales in 2006 under the three alternatives are estimated as follows:

Alternative	Estimated average monthly sales	
	Product	Quantity (units)
A – take no action	X	700
B – Arrange advertising	X	900
C – Introduce Product Y	X	600
	Y	300

Product X is selling at a unit price of $800. Product Y will be sold at $400 per unit.

(ii) Sales Support
Healthy 99 has three salesman with a monthly salary of $20 000 each. On top of the salary, there is an incentive pay based on 5% of gross sales to the salesman for both Product X and Product Y. No additional salesman will be recruited if Alternative C is chosen.

(iii) Cost of goods sold
Product X and Product Y will cost $250 per unit and $90 per unit respectively in 2006. In addition, a royalty of $40 has to be paid to the patent owner for each unit of Product Y sold. Healthy 99 does not keep any stock as the delivery lead time is very short.

(iv) After-sales Service
After-sales service is provided free of charge once per unit to the customers of Product X in the month of sale, incurring a variable cost of $70 per service. This service will not be offered to customers of Product Y.

(v) Rental
The existing shop is rented under a 10-year tenancy agreement at a fixed monthly rental $150 000. If Product Y is launched, an additional area will be rented on a monthly basis from the same landlord at $16 000 per month.

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REQUIRED:

(a) Calculate the contribution per unit of Product X and Product Y respectively. (5 marks)
(b) Based on financial analysis only, advise Healthy 99 which of the three alternatives it should take. (8 marks)
(c) Assume that the sales (units) ratio for Product X and Product Y is fixed at 2:1. Calculate the breakeven quantities of Product X and Product Y to be sold per month under Alternative C. (4 marks)

Sunshine Club, a potential client, approaches Healthy 99 for a bulk purchase scheme on Product X. Each of its member (400 in total) will be allowed to purchase one unit of Product X at 30% discount, with the free after-sales service provided at the club's premises. In return for the deal, Healthy 99 will give a lump sum of $20 000 to Sunshine Club for sponsoring the club's activities.

Healthy 99 estimates that (i) 80% of the members of Sunshine Club will take advantage of the bulk discount; (ii) the after-sales service provided at the club's premises will incur a total cost of $25 000, which includes the variable cost of $70 per unit; and (iii) sales of Product X to other customers will reduce by 50 units as the salesman have to serve Sunshine Club.

The 5% incentive pay will not be allowed on this bulk purchase of Sunshine Club.

REQUIRED:

(d) Based on the financial information above, advise whether Healthy 99 should accept the scheme proposed by Sunshine Club. (7 marks)

(e) Suggest three other factors that Healthy 99 has to consider in deciding whether it should accept the scheme. (6 marks)

8. 2007.Q2(a) – (c), cost behaviour, budgeted contribution and profit

Starry Ltd had the following information for preparing the 2007 master budget for Product X:

Selling price	$160 per unit
Direct material	0.5kg per unit at $48 per kg
Direct labour	5 hours per unit at $15 per hour

In the production process, only the following three types of factory overheads are incurred, each of which demonstrating a different cost behaviour. The maximum production capacity was 30 000 units. Information relating to factory overheads at different levels of production was shown as follows:

Level of production (units)	15 000	18 000	21 000	24 000	27 000	30 000
Factory overheads	$	$	$	$	$	$
- Type 1	180 000	180 000	(i)	180 000	180 000	180 000
- Type 2	240 000	240 000	240 000	300 000	(ii)	300 000
- Type 3	355 000	400 000	445 000	(iii)	535 000	580 000
-	775 000	820 000	?	?	?	1 060 000

REQUIRED:

(a) Find the missing figures (i) to (iii) in the above table. (4 marks)
(b) Based on your answer to (a), identify and describe the cost behaviour for each of the three types of factory overheads. (3 marks)
(c) Calculate the contribution per unit of Product X and the total budgeted gross profit for the year 2007 at the level of maximum capacity. (4 marks)

9. 2007.Q5(a)(b), CVP analysis

Porsha Company used to product only one product, Product X. It operates at its full production capacity of 10 000 units per month, and it costs consisted of the following:

(i) Direct material cost $89 per unit.
(ii) Labour cost amounted to $750 000 in total. $500 000 were fixed in nature attributable to the employment of full-time workers paid on a monthly basis. The remaining required direct labour was filled up by part-time worker hired and paid on an hourly basis.
(iii) Both production overhead and administration expenses were fixed in nature and amounted to $200 000 and $250 000 respectively.
(iv) Sales commission to sales agents was $10 per unit sold.

REQUIRED:

(a) Calculate the total variable cost per unit of Product X. (2 marks)

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In October 2006, the management of the company had a meeting to discuss whether or not to product and sell a new product, Product Y. The sales department anticipated that the demand for Product Y would last at least 5 years. Additional factory space costing $10 000 per month and a new machine costing $120 000 with a useful life of 5 years were required. The company adopted the straight line method of depreciation and zero scrap value was expected from the new machine at the end of Year 5.

The new factory space would solely be used for the production of Product Y. The variable production cost of Product Y was estimated at $90 per unit, and the sales commission at $10 per unit. The company expected to sell it at $200 per unit, which would be the same as the selling price of Product X.

REQUIRED:

(b) Based on the above, calculate the following if Product Y was introduced:

(i) The monthly sales (in units) of Product Y for Porsha Company to break even, assuming that the company continue to sell 10 000 units of Product X; (6 marks)

(ii) The monthly sales (in units) of Product Y for Porsha Company to achieve a monthly target profit of $9200, assuming that the production and sales of Product X will decrease to 9000 units due to keen competition. (3 marks)

10. 2011.Q3(a)(b)(c)(d) – Marginal vs. Absorption, CVP, Decision (New product launch)

Natural Company started manufacturing a single product, Product X, on 1 January 2010. The accountant of the company had prepared the following income statement for the year ended 31 December 2010 using absorption costing (for internal use):

	$	$
Sales		25 300 000
Less: Cost of sales		
Cost of production	21 375 000	
Closing inventory (32 000 units)	(2 400 000)	18 975 000
		6 325 000
Under-absorbed fixed production overheads		(525 000)
Adjusted profit		5 800 000
Selling expenses		(3 170 000)
Administrative expenses		(1 682 000)
Net profit		948 000

Actual fixed production overheads were $4 800 000 for the year and was absorbed at $15 per unit of product. Administrative expenses were fixed. Selling expenses, except for the 8% commission on sales paid to sales agencies, were also fixed.

REQUIRED:

(a) Prepare for Natural Company the income statement for the year ended 31 December 2010 using marginal costing. (6 marks)

(b) Based on your answers in (a), calculate the breakeven sales (in units) for the year ended 31 December 2010. (3 marks)

In 2011, due to fierce competition and cost pressure, it is projected that the contribution per unit of Product X will be reduced to $28 and $25 in 2012 and 2013 respectively. The management of Natural Company is considering launching Product Y. With the launch of Product Y, the sales of Product X will be maintained at 253 000 units per year in 2012 and 2013. Without the launch of Product Y, Natural Company can sublease its idle resources to Lucky Company under a two-year contract with an annual rental of $500 000 starting from 1 January 2012. However, the sales of Product X will be reduced to 177 100 units per year in both 2012 and 2013.

Information relating to Product Y in 2012 and 2013 is as follows:

(i) Selling prices per unit of Product Y in 2012 and 2013 will be set at $102 and $72 respectively. Projected annual sales are 40 000 units in 2012 and 30 000 units in 2013. Product Y is expected to be marketed in 2012 and 2013 only.

(ii) For each unit of Product Y, 0.8 kg of materials A is required. The list price of material A is $50 per kg in 2011. However, the list price will be 5% and 10 % higher in 2012 and 2013 respectively as compared to 2011. In the materials supply contract signed for the coming five years, 10% discount will be given on the excess amount over $1 500 000 purchased within the same year.

(iii) Natural Company will not hold any inventory of Product Y in 2012 and 2013.

(iv) Each direct worker needs 8 hours to product 25 units of product Y. In 2011, direct labour wage rate is $60 per hour. Taking into account the increasing cost of living, a 5% year-on-year increase in the hourly wage rate of direct labour is expected in 2012 and 2013.

(v) The existing excess production capacity is sufficient to support the production of Product Y. In 2012 and 2013, fixed production overheads will remain at $4 800 000 per year, while selling and administrative expenses will be fixed at $2 828 000 per year.

(vi) 8% commission on sales is required to sell Product Y. Estimated advertising expenses for launching Product Y and maintaining its market awareness in 2012 and 2013 are $1 036 000 and $352 240 respectively.

REQUIRED:

(c) For each of the following situations, calculate the respective net profit / loss of Natural Company for the two years ended 31 December 2012 and 2013:

(1) Product Y is not launched (3 marks)

(2) Product Y is launched (7 marks)

(d) Based on your answers in (c), briefly explain whether Natural Company should launch Product Y. (1 mark)

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11. 2012.Q3(a)(b) – CVP

Butterfly Company commenced business on 1 January 2011. It produces one product only and adopts the standard absorption costing system. For the purpose of calculating the breakeven sales and margin of safety, the following income statement for the year ended 31 December 2011 was prepared based on actual results:

	$	$
Sales (*1200 units*)		7 200 000
Less: Cost of goods sold		
Direct material	1 347 200	
Direct labour	755 200	
Direct manufacturing expenses	96 000	
Fixed production overheads	2 244 800	
	4 443 200	
Less: Closing inventory (*400 units*)	1 110 800	3 332 400
Gross Profit		3 867 600
Less: Selling and distribution expenses		
- Variable	360 000	
- Fixed	462 555	822 555
Net profit		3 045 045

REQUIRED:

(a) Calculate for Butterfly Company the breakeven sales (to the nearest dollar) and the margin of safety in percentage (up to two decimal places). (4 marks)

One of Butterfly Company's competitors, Honey Bee, which is more labour intensive in its operations, has the following annual figures:

	$
Sales	6 800 000
Breakeven sales	2 000 000
Fixed costs	600 000

(b) Based on the financial information of Honey Bee above and your answers in (a), explain with supporting calculations whether Butterfly Company or Honey Bee will perform better at each of the following annual sales levels (assuming no inventory is kept):

(1) $7 000 000

(2) $4 500 000 (6 marks)

12. 2013.Q1

Polly Ltd manufactures and sells two products: Product A and Product B. At 1 January 2013, budgeted information for the year of the two products is as follows:

	Product A	**Product B**
Production and sales volume (in units)	2 000	6 000
Unit selling price	$1 000	$500
Unit costs:		
Direct material	$280	$155
Direct labour (@ $40 per direct labour hour)	$160	$112
Production overheads	?	?

Additional information:

(i) Variable production overhead is $10 per direct labour hour.

(ii) Fixed production overhead is $30 per machine hour used by the product. Product A requires 5 machine hours while Product B requires 2 machine hours. Polly Ltd is currently operating at its full production capacity.

(iii) Sales and administrative expenses for the year 2013 amounted to $290 000, including sales commission for the two products. Sales commission is calculated at 2% of Product A's sales and $5 for each unit of Product B sold. The sales commission is the only variable cost in the sales and administrative expenses.

REQUIRED:

As at 1 January 2013, calculate for Polly Ltd

(a) the total budgeted annual fixed costs in 2013; and (2 marks)

(b) the breakeven sales revenue as a whole for 2013, assuming the sales volume (in units) of Product A and Product B is maintained at a ratio of 1:3. (6 marks)

In March 2013, Robot Club, a potential client, approaches Polly Ltd for a bulk purchase scheme on Product B. Under this scheme, each member of Robot Club will be allowed to purchase only one unit of Product B and enjoy one free computer class offered by Polly Ltd at Robot Club's premises in June 2013.

The management of Polly Ltd estimates that:

(iv) 75% of the 500 members of Robot Club will join the purchase scheme.

(v) A machine is to be hired to produce this special order as Polly Ltd is now operating at its full production capacity. The cost of hiring the machine is $25 000.

(vi) The free computer class will incur variable cost of $20 per participant. Joe Chan, the product manager of Polly Ltd who is currently paid at $15 000 per month, will be the class trainer. He will spend 10% of his working time in June 2013 on developing the training materials and conducting the class. This job will not affect his routine duties.

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(vii) Sales commission is not required under the purchase scheme.

(viii) The special order of Robot Club will not affect the existing sales of Polly Ltd.

REQUIRED:

(c) Calculate the price that Polly Ltd would charge for one unit of Product B to the participating customer of Robot Club, assuming that Polly Ltd would include a 20% mark-up on the relevant costs. (6 marks)

The estimated full production capacity of Polly Ltd in 2014 is 22 000 machine hours, which is the same as in 2013. As the market for Product A is growing while the market for Product B is declining, the company plans to expand the production of Product A. Its management is considering three alternatives for 2014.

For all the alternatives in 2014, assume:

- The maximum customer demand for Product A is estimated at 3800 units
- Total annual fixed costs remain unchanged as in 2013
- Unit variable production costs of Product A and B are the same as in 2013
- Two promotion activities will be adopted for Product A:
  - Reduce the unit price of Product A by 10%, sales commission remains at 2 % of its sales revenue
  - Spend $50 000 on advertising

Alternative 1

Abandon Product B and focus on the production and sales of Product A.

Alternative 2

Produce and sell 3000 units of Product B. Sales commission will be paid at $5 per unit. The company will then fully utilise the remaining production capacity to produce and sell Product A.

Alternative 3

Introduce a sales promotion for Product B: Any purchase of four units of Product B will be entitled to one bonus unit of Product B. Estimated production and sales volume of Product B would be increased to 4500 units, including the bonus units. No sales commission will be paid for Product B in this alternative. The company will then fully utilise the remaining production capacity to produce and sell Product A.

REQUIRED:

(d) Calculate the planned annual profit in 2014 under each of the three alternatives. Suppose Polly Ltd plans to take the alternative with the highest annual profit in 2014, advise which alternative Polly Ltd should choose. (14 marks)

(e) Identify two non-financial factors that Polly Ltd has to consider in deciding which alternative it should take. (2 marks)

13. 2013.Q3(c) (partial)

An existing machine, which had been laid idle due to the discontinued production of another product, was found to be suitable for producing Product H. The machine was bought in 2008 at the cost of $650 000. It has been the company's policy to provide depreciation at 10% per annum on cost, with a full year's depreciation charge in the year of purchase.

Amos Company is considering using this idle machine to produce Product H, instead of purchasing the new machine above. The following information is available:

(vi) If the idle machine is not used to produce Product H, it will be sold for $160 000 on 1 January 2014. If the machine is used to produce Product H in the coming 3 years, its estimated scrap value at the end of 2016 is $12 000.

REQUIRED:

(c) For each of the following items, explain the meaning and identify one example from the case above:

(1) Sunk cost (2 marks)

(2) Opportunity cost (2 marks)

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All questions below are from HKALE Principles of Accounts Paper 2.

1. 2004.Q4(B) – Cost classification

- Total fixed cost remains unchanged despite increase in output.
- With increase in volume, unit fixed cost will decrease, but not total fixed cost.
- Beyond the relevant range of output and time period, even total fixed cost may change.

2. 2004.Q5(A)

Sunk costs are costs that have been incurred by a decision made in the past and that cannot be changed by any decision that will be made in the future.

Opportunity cost is a cost that measures the best opportunity that is lost or sacrificed when the choice of one course of action requires an alternative course of action be given up.

3. 2004.Q5(B) – Decision: Manufacture or buy

(a)

- The book value of the special equipment is a sunk cost and is irrelevant for decision-making.
- Only the disposal value of the equipment should production be discontinued is a cost relevant to the decision.

(b)

	Make	Buy
	$	$
Direct materials	160 000	–
Direct labour	180 000	–
Electricity	100 000	–
Indirect labour	–	36 000
Miscellaneous fixed cost	50 000	–
Purchase cost (30 000 × $11.5)	–	345 000
Carriage inwards (30 000 × $1.00)	–	30 000
Disposal value of equipment	–	(1 000)
	490 000	410 000

Alternative answer:	Make	Buy
	$	$
Direct materials	160 000	–
Direct labour	180 000	–
Electricity	100 000	–
Indirect labour	200 000	236 000
Miscellaneous fixed cost	340 000	290 000
Purchase cost	–	345 000
Carriage inwards	–	30 000
Disposal value of equipment	–	(1 000)
	980 000	900 000

Cost saving of buying instead of making
($490 000 – $410 000) or ($980 000 – $900 000) = $80 000

Therefore, the company should buy the components from the supplier.

(c)

Other factors:

- Quality of the components purchased from the supplier
- Reliability of the delivery of the component
- Possible future increase in price
- Possible increase/decrease in future production costs
- Redundancy costs
- Effect on the staff morale if work is passed to the outside supplier
- To preserve the expertise in the production of the component / relevant products
- Whether there are alternative use of the released production capacity if the production of the component is outsourced
- Repair and maintenance cost of equipment if it is kept in production

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4. 2005.Q2(a) – Marginal costing vs. absorption costing

(a)(i)

Product X
Budgeted income statement for the year ended 31 December 2004

	$	$	
Sales ($30 × 90 000)		2 700 000	½
Cost of goods sold			
Raw materials	1 000 000		½
Direct labour	800 000		½
Factory overheads	200 000		½
	2 000 000		
Closing stock ($2 000 000 × 10 000/100 000)	(200 000)	(1 800 000)	1
		900 000	
Expenses			
Selling and distribution expenses ($150 000 + $90 000)	240 000		½
Administrative expenses	400 000	640 000	½
Budgeted net profit		260 000	1

(a)(ii)

Under marginal costing, the fixed factory overheads will not be absorbed into the closing stock but are written off as expenses. The value of closing stock will therefore be lower ($1 800 000 × 10 000/100 000), resulting in a corresponding reduction of budgeted net profit by $20 000. (max. 2)

5. 2005.Q2(d) – decision making: produce a new product or not

Product Y	$
Selling price per unit	44
Raw materials	(11)
Direct labour	(24)
Variable selling and distribution expenses	(2)
Contribution per unit	7

	$	
Total contribution ($7 × 50 000 bottles)	350 000	2
Additional overheads:		
Fixed selling and distribution	(70 000)	½
Administrative expenses	(80 000)	½
Additional profit	200 000	1

The $240 000 research and development is sunk cost and should be ignored for decision making. 1½

The engineer's salary of $150 000 is irrelevant to the decision as it does not represent incremental cost to the company. 1½

As Product Y will generate an additional profit of $200 000, the company should produce and sell Product Y even it has a product life of one year only. 1

(8)

6. 2005.Q5(a) – (c) = CVP, (d) = decision:

(a)(i)

	$
Contribution of Product D ($1000 – $600) × 1000 units	400 000
Contribution of Product S ($150 – $50) × 4 000 units	400 000
	800 000

Sales revenue of Product D ($1000 × 1000 units)	1 000 000
Sales revenue of Product S ($150 × 4000 units)	600 000
	1 600 000

$$\text{Contribution margin (business as a whole)} = \frac{\$800\,000}{\$1\,600\,000} = 50\%$$

$$\text{Break-even point (in sales revenue)} = \frac{\$550\,000}{50\%} = \$1\,100\,000$$

(4)

Alternative answer:

$$\text{Break-even point (percentage of sales revenue)} = \frac{\$550\,000}{\$800\,000} = 0.6875$$

∴ Product D = 1000 × 0.6875 = 687.5 units ≈ $688 000 (2)
Product S = 4000 × 0.6875 = 2750 units ≈ $412 500 (2)

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(a)(ii)

Margin of safety is the amount of sales that can be reduced before a loss occurs. It is the difference between sales revenue less the sales revenue at break-even point. 2

Margin of safety = $1 600 000 - $1 100 000 = $500 000 1

(3)

(b)

Revised contribution of Product S	$
Selling price ($150 × 90%)	135.0
Variable cost (excluding commission) ($50 – 9)	(41.0)
Commission ($135 × 10%)	(13.5)
Contribution per unit	80.5

$$\text{Break-even point in number of units} = \frac{\$550\,000 + \$166\,000}{\$80.5}$$

$$= 8895 \text{ units}$$

(3)

(c)

	$
Original fixed cost	550 000
Promotion expenses	166 000
Expected profit ($800 000 – 550 000)	250 000
	966 000
Contribution of Product D ($1000 – $600) × 500 units	(200 000)
	766 000

$$\text{Number of units of Product S to be sold} = \frac{\$766\,000}{\$80.5}$$

$$= 9516 \text{ units}$$

(4)

(d)

	Alternative 1	Alternative 2
Machine hours of Product D (60 hours × 500 units)	–	30 000 hrs
Machine hours of Product S	100 000 hrs	70 000 hrs
	100 000 hrs	100 000 hrs
Number of units of Product D	–	500 units
Number of units of Product S (100 000 / 8 ; 70 000 / 8)	12 500 units	8 750 units
	$	$
Contribution of Product D ($400 × 500 units)	–	200 000
Contribution of Product S ($80.5 × 12 500 units ; $80.5 × 8 750 units)	1 006 250	704 375
	1 006 250	904 375

5

Alternative 1 should be adopted. 1

(6)

Alternative Approach:

Contribution per machine hour: D: $400 / 60 = $6.67 S: $80.5 / 8 = $10.0625

∴ Alternative 1 should be taken (1)

Alternative 1: $80.5 × 12 500 = $1 006 250 (1)

Alternative 2: $400 × 500 + $80.5 × 8750 = $904 375 (4)

7. 2006.Q1 – comprehensive decision making, only part (e) out syl

(a)

	Product X	Product Y	
	$	$	
Selling price	800	400	1
Less: Variable costs			
Cost of goods sold	250	90	1
Sales incentive (5%)	40	20	1
Cost of after-sales service	70	–	½
Royalties	–	40	½
Contribution per unit	440	250	1

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(5)

(b)

The decision should be based on total profit, not total contribution.

Alternative A	$	$	
Contribution (700 × $440)		308 000	½
Less: Fixed costs			
Salesmen's salaries (3 × $20 000)	60 000		½
Rental cost	150 000	210 000	½
Total profit		98 000	

Alternative B	$	$	
Contribution (900 × $440)		396 000	½
Less: Fixed costs			
Advertising	100 000		1
Salesmen's salaries (3 × $20 000)	60 000		½
Rental cost	150 000	310 000	½
Total profit		86 000	

Alternative C	$	$	
Contribution of Product X (600 × $440)		264 000	½
Contribution of Product Y (300 × $250)		75 000	½
		339 000	
Less: Fixed costs			
Salesmen's salaries (3 × $20 000)	60 000		½
Rental cost (150 000 + 16 000)	166 000	226 000	1½
Total profit		113 000	

Healthy 99 should adopt Alternative C as it yields the highest total profit. 1

(8)

Alternative calculations for (b):

	Alternative A	**Alternative B**	**Alternative C**
	$	$	$
Sales	560 000	720 000	600 000
Cost of goods sold	(175 000)	(225 000)	(177 000)
Royalties	–	–	(12 000)
Sales incentive	(28 000)	(36 000)	(30 000)
Cost of after-sales service	(49 000)	(63 000)	(42 000)
Salesmen's salaries	(60 000)	(60 000)	(60 000)
Rental cost	(150 000)	(150 000)	(166 000)
Advertising	–	(100 000)	–
Total profit	98 000	86 000	113 000

(c)

$$\text{Break-even point} = \frac{\$226\,000}{440\times 2+250} = 200$$ 2

To break even, Healthy 99 has to sell
400 units of Product X and 1
200 units of Product Y. 1

(4)

(d)

	$	$	
Sales (400× 80% × $800 ×70%)		179 200	1
Cost of goods sold (400×80%×$250)	80 000		1
Cost of after-sales service	25 000		1
Lump sum payment	20 000		1
Contribution of Product X forgone (50×$440)	22 000	147 000	1
Incremental profit		32 200	1

Healthy 99 should take the order as there is an increase in profit. 1

(7)

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(e)

Other factors to consider: (max. 6)

- The accuracy/reliability of the estimates should be ascertained. For example, if only 50% of the members of Sunshine Club take the bulk discount, there will no longer be incremental profit.
- Healthy 99 should ensure service support is available, e.g. at least one salesman has to be assigned to work at the Club's premises for the after-sales service. This may affect staff morale as there could be an increase in work pressure and having to serve Sunshine Club without the incentive pay.
- The order would help Healthy 99 explore the possibility of improving Product X's profitability, e.g. making similar deals with other corporate clients.
- The bulk order has to be a one-off order or clearly differentiated from the general retail sales so that it will not arouse expectation of price reduction by individual customers.
- The order may serve as a start-up of a long-term business relationship with Sunshine Club.

8. 2007.Q2(a) – (c), cost behaviour, budgeted contribution and profit

(a)

(i)	$180 000	1
(ii)	$300 000	1
(iii)	$490 000 *	2
		(4)

*Variable cost per unit ($580 000 – 355 000) / (30 000 – 15 000) = $15
Fixed cost element (15 000 level): $355 000 – 15 000 × $15 = $130 000
Total cost = 24 000 × $15 + $130 000 = $490 000

(b)

Type 1 is fixed cost which does not change regardless of the level of production 1
Type 2 is stepped (semi-fixed) cost which does not change within a range of activity 1
Type 3 is semi-variable cost. It consists of fixed and variable elements. The variable cost changes in direct proportion with the level of production. 1

(c)

	$	$	
Selling price		160	½
Variable costs			
Direct material ($48/kg × 0,5 kg)	24		½
Direct labour ($15/hour × 5 hours)	75		½
Factory overheads ($15/unit = $3/hour × 5 hours)	15	114	½
Contribution per unit		46	

		$	
Total contribution ($46 × 30 000)		1 380 000	½
Fixed factory overhead (180 000 + 300 000 + 130 000)		610 000	1
Budgeted gross profit		770 000	½
			(4)

Alternative answer:		$	
Sales		4 800 000	} ½
Direct material ($24 × 30 000)	720 000		}
Direct labour ($75 × 30 000)	2 250 000		}
Factory overheads	1 060 000	4 030 000	1
Budgeted gross profit		770 000	½

9. 2007.Q5(a)(b), CVP analysis

(a)

	$	
Direct material	89	½
Variable direct labour [($750 000 – $500 000) / 10000]	25	½
Sales commission	10	½
Total variable cost per unit	124	(2)

(b)(i)

	$	
Fixed direct labour	$500 000	½
Fixed production overhead	200 000	½
Fixed administrative overhead	250 000	½
Total monthly fixed costs	$950 000	

Contribution from Product X:[$200 – $124] × 10 000 = $760 000 1
Uncovered fixed cost: $950 000 – $760 000 = $190 000 ½

Additional monthly fixed cost in newly rented space:
– Additional rental: $10 000 ½
– Additional monthly depreciation : $120 000 / (5 × 12) = $2000 ½

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The quantity of Product Y required to break-even

$$\frac{\$190000 + \$10000 + \$2000}{(\$200 - 100)}$$

= 2020 units 1

(6)

(b)(ii)

	$	
Uncovered fixed cost at 10 000 units	$190 000	½
Loss of contribution from Product X [($200 – 124) × 1000]	76 000	½
Additional monthly fixed cost in newly rented space ($10 000 + 2000)	12 000	½
Monthly target profit	9 200	½
	287 200	
Contribution per unit of Product Y ($200 – 100)	100	½
Units of Product Y required	2 872 units	(3)

10. 2011.Q3(a)(b)(c)(d) – Marginal vs. Absorption, CVP, Decision (New product launch)

(a)

Natural Company

Marginal costing income statement for the year ended 31 December 2010

	$	$	
Sales		25 300 000	
Variable cost of sales: (W1)		(15 180 000)	3
Variable expenses:			
– Sales commission (8% × $25 300 000)		(2 024 000)	½
Contribution		8 096 000	½
Fixed expenses:			
– Production overheads	4 800 000		½
– Selling expenses	1 146 000		½
– Administrative expenses	1 682 000	(7 628 000)	½
Net profit		468 000	½

Workings:

(W1):

	$
Fixed production overheads per year	4 800 000
Under-absorbed fixed production overheads	(525 000)
Absorbed production overheads (c)	4 275 000
Fixed production overheads absorbed per unit (d)	$15
Number of products produced (actual) (c/d)	285 000
Cost of closing inventory (e)	$2 400 000
Number of units (f)	32 000
Cost of production per unit (e/f)	$75
Less: fixed production overheads absorbed per unit	$15
Variable production cost per unit	$60

	$
Variable cost of production (285 000 × $60)	17 100 000
Closing inventory (32 000 × $60)	(1 920 000)
Variable cost of sales	15 180 000

(b)

Total number of products produced	285 000	
Closing inventory (units)	(32 000)	
Number of units sold	253 000	1
Total contribution (a)	$8 096 000	
Number of units sold (b)	253 000	
Contribution per unit (a/b)	$32	1
Fixed expenses (c)	$7 628 000	½
Contribution per unit (d)	$32	
Breakeven sales in units (c/d)	238 375	½

(3)

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(c)(1) (format for reference)

If Product Y is not launched	2012 $	2013 $	Total $	
Contribution from Product X:				
Sales [(177 100 × $28) ; × $25]	4 958 800	4 427 500	9 386 600	1
Rental income	500 000	500 000	1 000 000	1
	5 458 800	4 927 500	10 386 300	
Less: Fixed expenses				
Production overheads	(4 800 000)	(4 800 000)	(9 600 000)	½
Selling and administrative expenses	(2 828 000)	(2 828 000)	(5 656 000)	½
Net loss if Product Y is not launched	(2 169 200)	(2 700 500)	(4 869 700)	

(c)(2) (format for reference)

If Product Y is launched	2012 $	2013 $	Total $	
Contribution from Product X: (253 000 × $28 ; × $25)	7 084 000	6 325 000	13 409 000	1
Contribution from Product Y:				
Sales ($102 × 40 000) ; ($72 × 30 000)	4 080 000	2 160 000	6 240 000	1
Direct material cost: Product Y	(1 680 000)	(1 320 000)	(3 000 000)	1
(0.8 × 40 000 × $52.5) ; (0.8 × 30 000 × $55) (W2)				
Discount on direct material ($180 000 × 0.1)	18 000	0	18 000	1
Direct labour cost: Product Y				
[(40 000/25 × [8 × $60]) × 1.05] ;	(806 400)	(635 040)	(1 441 440)	1
[(30 000/25 × [8 × $60]) × 1.05 × 1.05]				
8% sales commission	(326 400)	(172 800)	(499 200)	1
	8 369 200	6 357 160	1 606 800	
Less: Fixed expenses				
Original fixed expenses	(7 628 000)	(7 628 000)	(15 256 000)	½
Advertising expenses	(1 036 000)	(352 240)	(1 388 240)	½
Net loss if Product Y is launched	(294 800)	(1 623 080)	(1 917 880)	

(7)

Workings:

(W2) Material price:

2012: ($50 × 1.05) = $52.5

2013: ($50 × 1.1) = $55

(d) The company should launch Product Y as the total net loss is smaller. 1

11. 2012.Q3(a)(b) – CVP

(a)

Contribution margin: ($7 200 000 – ($1 347 200 + $755 200 + $96 000) / 1600 × 1200 – $360 000)
= $5 191 200

Contribution margin ratio : $5 191 200 / $7 200 000 = 72.10%

Breakeven sales: ($2 244 800 + $462 555) / 72.1% = $3 755 000 2

Margin of safety in percentage: [($7 200 000 – $3 755 000) / ($7 200 000)] × 100% = 47.85% 2

(4)

(b)(1)

Sales level at $7 000 000 max. 3

– The total profit for Butterfly Company is $2 339 645 [($7 000 000 – $3 755 000) × 72.10%] whereas the total profit for Honey Bee is $1 500 000 [($7 000 000 – $2 000 000) × 30%]. {$600 000 / $2 000 000 = 30%} (2)

– *The margin of safety of both Butterfly Company and Honey Bee are fine as their sales levels are well above their breakeven points.* (1)

– In other words, at the sales level of $7 000 000, Butterfly Company will perform better as it will achieve a greater profit. (1)

(b)(2)

Sales level at $4 500 000 max. 3

– The total profit for Butterfly Company is $537 145 [($4 500 000 – $3 755 000) × 72.1%] whereas the total profit for Honey Bee is $750 000 [($4 500 000 – $2 000 000) × 30%]. (2)

– *The margin of safety of Butterfly Company will fall to a low level of 16.56% [($4 500 000 – $3 755 000) / ($4 500 000)] whereas Honey Bee attains a higher level of 55.56% [($4 500 000 – $2 000 000) / ($4 500 000)].* (1)

– In other words, at the sales level of $4 500 000, Honey Bee will perform better as it will achieve a greater and more stable profit. (1)

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– **The contribution margin ratio for Butterfly Company is 72.10% whereas the contribution margin ratio of Honey Bee is 30%. In other words, for sales in excess of its breakeven point ($3 755 000) Butterfly Company would generate a contribution of $0.721 per sales dollar. Honey Bee would generate a contribution of $0.3 per sales dollar for sales in excess of its breakeven point ($2 000 000).** (2)

12. 2013.Q1

(a)

Sales commission (2000 × $1000 × 2% + 6000 × $5) = $70 000

	$
Fixed production overhead (2000 × $30 × 5 + 6000 × $30 × 2)	660 000
Fixed sales and administrative expenses ($290 000 – $70 000)	220 000
Total annual fixed costs for Polly Ltd	880 000

(2)

(b)

	Product A $	Product B $	
Selling price	1 000	500	
Direct material	280	155	
Direct labour	160	112	
Variable production overhead (160/40 × $10); (112/40 × $10)	40	28	
Sales commission (2% × $1000); ($5)	20	5	
Contribution	500	200	2
Total contribution (2000 × $500); (6000 × $200)	1 000 000	1 200 000	
Total sales (2000 × $1000); (6000 × $500)	2 000 000	3 000 000	

Contribution margin for the business as a whole:
[($1 000 000 + $1 200 000) / ($2 000 000 + $3 000 000)] = 44% 2

Breakeven sales revenue:
$880 000 / 0.44 = $2 000 000 2

Alternative answer:
Breakeven point (in % of sales revenue):
$880 000 / ($1 000 000 + $1 200 000) = 0.4

Product A = 2000 × 0.4 = 800 units (sales revenue = 800 units × $1000 = $800 000)

Product B = 6000 × 0.4 = 2400 units (sales revenue = 2400 units × $500 = $1 200 000)

(6)

(c)

Number of Product B in the special order = 75% × 500 = 375 units

	$
Total variable product costs [($155 + $112 + $28) × 375]	110 625
Hiring cost of machine	25 000
Variable cost of computer class (375 × $20)	7 500
Total relevant cost	143 125
Mark-up 20%	28 625
Proposed selling price	171 750

The minimum price Polly Ltd would charge Robot Club is $458 per unit. ($171 750 / 375 units)

(6)

(d)

Unit contribution of Product A = ($1000 × 0.9 × 0.98 – $280 – $160 – $40) = $402 2
Total annual fixed costs = $880 000 + $50 000 = $930 000 1

Alternative 1
The maximum number of Product A Polly Ltd could produce = 22 000 / 5 = 4400 units
The maximum demand of Product A in 2014 that Polly Ltd could secure is 3800 units

Total contribution from 3800 units of Product A = $402 × 3800 = $1 527 600 2
Total annual profit = $1 527 600 – $930 000 = $597 600 1

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Alternative 2

Total contribution from Product B: 3000 × $200 = $600 000 1

Number of machine hours left for Product A = 22 000 - 3000 × 2 = 16 000 hours

Number of Product A that could be produced and sold = 16 000 / 5 = 3200 units 1

Total contribution from 3200 units of Product A = $402 × 3200 = $1 286 400

Total annual profit = $1 286 400 + $600 000 - $930 000 = $956 400 1

Alternative 3

Number of machine hours left for Product A = 22 000 - 2 × 4500 = 13 000 hours

Number of Product A that could be produced and sold = 13 000 / 5 = 2 600 units

Total contribution from 2600 units of Product A = $402 × 2600 units = $1 045 200 1

Total contribution from Product B:	$
Sales revenue (4500 / 5 × 4 × $500)	1 800 000
Variable production costs [4500 × ($155 + 112 + 28)]	1 327 500
	472 500 2

Total annual profit = $1 045 200 + $472 500 - $930 000 = $587 700 1

Polly Ltd should take Alternative 2 because it has the highest annual profit. 1

(14)

(e)

Non-financial factors:

- possibility of shifting production resources between Product A and Product B
- business risks associated with lesser product diversification
- business strategy of Polly Ltd as a whole
- product life cycle and market analysis of Product A and Product B
- customers' expectations of Product B

(1 mark for each factor, max. 2 marks)

Total: 30 marks

13. 2013.Q3(c)

(c)(1) Sunk cost

- Sunk costs are costs that have been incurred by a decision made in the past and that cannot be changed by any decision that will be made in the future 1

Example: 1

- Original cost of the existing machine (2)

(2) Opportunity cost

- Opportunity cost is a cost that measures the best opportunity that is lost or sacrificed when the choice of one course of action requires an alternative course of action to be given up. 1

Example: 1

- The scrap value forgone when the existing machine is used to produce Product H (2)

[For instructors' reference only – original answer from marking]

(c) (1) Sunk cost

– Sunk costs are costs that have been incurred by a decision made in the past and that cannot be changed by any decision that will be made in the future. 1

Example: 1

– Original cost of the existing machine (2)

(2) Opportunity cost

– Opportunity cost is a cost that measures the best opportunity that is lost or sacrificed when the choice of one course of action requires an alternative course of action be given up. 1

Examples: (any one of the following) 1

– Savings in direct material cost forgone when the existing machine is used

– Savings in variable production overhead forgone when the existing machine is used

– The scrap value forgone when the existing machine is used to produce H (2)

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1. SP.Q3 <out of syllabus>
2. SP.Q9 <Part (c) and (d) out of syllabus>

Mary is a fresh university graduate who has majored in marketing. She is enthusiastic about conducting a business of her own alongside her full-time employment. She borrowed a sum of $90 000 from a bank at an interest rate of 5% per annum on 1 January 20X7 to run a shop which sells free-sized T-shirts of her own design.

Information relating to the shop is as follows:

(i) The shop's rental is $5000 per month. The annual rates and insurance expenses are $3600 and $4500 respectively.

(ii) A shop attendant is hired at a basic salary of $7000 per month plus a commission of 5% of the sales value.

(iii) All T-shirts are imported from factories based on the Mainland and are sold at 100% mark-up on cost.

(iv) The budgeted sales volume is 500 shirts per month. Mary has made arrangements with the Mainland suppliers for the supply of 500 shirts each month. Then a logo sticker will be fixed on each shirt by a sewing service provider nearby at the cost of $2 each. The purchase costs for the first quarter of 20X7 are as follows:

	Number of Shirts
January 20X7	22 500
February 20X7	24 000
March 20X7	25 000

(v) In order to publicise her new brand, Mary will print some promotional leaflets to be distributed once a week in the neighbourhood. The printing cost of the leaflets amounts to $500 per month and a part-time worker is hired at $1000 per month for the distribution work.

(vi) A point-of-sale system costing $30 000 was purchased to help keep inventory record and cash transactions. In addition, Mary furnished the shop with necessary furniture and fixtures by spending a further $60 000. Depreciation is to be calculated at 12% per annum on a reducing balance basis for the point-of-sale system and 10% on cost for the furniture and fixtures.

(vii) The actual sales figures for the first quarter ended 31 March 20X7 are as follows:

	Number of Shirts
January 20X7	350
February 20X7	420
March 20X7	400

REQUIRED:

(a) Define direct costs and indirect costs and identify one example for each from the case above. (3 marks)

(b) Compare marginal costing with absorption costing with respect to inventory valuation and income determination. (4 marks)

(c) Prepare an income statement for the first quarter ended 31 March 20X7 using the marginal costing method, assuming the FIFO method is adopted in the valuation of unsold goods. (6 marks)

(d) With the figures you have compiled in (c) above, calculate the breakeven point (in sales dollars) of the first quarter ended 31 March 20X7. (3 marks)

3. PP.Q2

Perry Ltd started producing Product A on 1 January 2012. The unit selling price and cost of Product A for the month of January 2012 were as follows:

	($/unit)
Selling price	5.90
Direct material	1.20
Direct labour	1.40
Variable production overheads	0.70
Variable selling and administrative expenses	0.15

(i) Fixed production overheads were budgeted at $308 000 per month and were absorbed based on the number of units produced. Actual fixed production overheads of Product A were the same as the absorbed fixed production overheads for the month.

(i) Budgeted production and budgeted sales were the same at 280 000 units per month.

(ii) Actual production and actual sales of Product A for the month were 250 000 units and 220 000 units respectively.

(iii) Actual fixed selling and administrative expenses were $110 000.

(iv) There were no closing direct materials and work-in-progress inventories of Product A as at 31 January 2012.

REQUIRED:

(a) Prepare the income statement for the month ended 31 January 2012 using absorption costing. (7 marks)

(b) As compared with the absorption costing system, advise Perry Ltd two advantages of using the marginal costing system. (2 marks)

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4. PP.Q8

Hilary Ltd manufactures and sells one single product, FS2. The budgeted production level and sales level for December 2012 are the same at 80 000 units. The budgeted income statement of Hilary Ltd for the month ended 31 December 2012 is as follows:

	$	$
Sales		2 400 000
Direct material	784 000	
Direct labour	280 000	
Designer fees	120 000	
Fixed production overheads	280 000	(1 464 000)
Gross profit		936 000
Fixed administrative expense	158 840	
Sales commission	112 000	(270 840)
Net profit		665 160

The following information was supplied by the accountant of the company:

(i) Designer fees and sales commission are based on the budgeted number of units produced and the budgeted number of units sold respectively.

(ii) Fixed costs remain the same regardless of any changes in the production or sales levels.

REQUIRED:

(a) Calculate the following items for the month of December 2012:

(1) the breakeven volume (in units) (3 marks)

(2) the margin of safety (in sales dollars) (2 marks)

On 1 May 2012, the management of the company spent $120 000 to hire a consultancy firm to investigate the possibility of extending the business to produce and sell a new product, FS4, starting from 1 January 2013. Additional information relating to FS4 from 2013 to 2016:

(iii) The consultancy firm estimates that the monthly demand for FS4 will be 15 000 units if its selling price is $60 per unit.

(iv) Part of the existing office area of Hilary Ltd will be put aside for a new sales team of FS4. If the office area is not used by the team, it will be sublet to outsiders at $20 000 per month.

(v) The variable production cost of FS4 will be $15 per unit while the sales commission will be $5 per unit.

(vi) To produce FS4, a new factory with a monthly rental of $100 000 will be rented and a new machine costing $893 960 with a useful life of four years will be acquired. It is expected that the scrap value of the new machine at the end of its useful life is $5000. The company adopts the straight line method of depreciation.

(vii) There will be no change in the cost structure of the company from 2012 to 2016.

REQUIRED:

(b) What are 'opportunity cost' and 'sunk cost' respectively? Illustrate the meaning of each cost with an example from the information provided above. (4 marks)

(c) If Hilary Ltd spends an additional $12 000 per annum on advertising and at the same time reduces the selling price of FS2 and FS4 by 10%, the expected monthly sales volume for FS2 will be increased from 80 000 to 100 000 units, while FS4 will be increased from 15 000 to 18 750 units. (6 marks)

Assuming the company does not keep any opening and closing inventories for budgeted purposes, explain to the management whether the additional spending on advertising, together with the selling price reduction, should be introduced starting from 1 January 2013. (Ignore the time value of money.)

(d) If Hilary Ltd decides to spare more resources to explore new market potential and therefore will sell only 10 000 units of FS2 per month after the introduction of FS4, calculate the monthly sales revenue of FS4 which Hilary Ltd needs to break even. (5 marks)

5. 2012.Q4

Magic Company manufactures and sells a single product, Product X. For the purpose of preparing the budget for Product X for the month of November 2012, the following information is provided:

(i) The budgeted production and budgeted sales for the month are 5000 and 4400 units respectively.

(ii) The expected selling price is $300 per unit.

(iii) The direct material cost of the product is $40 per unit. An additional transportation cost of $2 per unit is to be incurred for the purchase of the direct materials.

(iv) Each unit of production requires 2 hours of direct labour. The hourly rate of direct labour is $60.5.

(v) The production overheads of the product comprise a fixed and variable element. It is the company's policy to apportion variable production overheads in relation to the number of units produced.

Assuming the monthly fixed production overheads of the company remain the same in 2012, the annual budgeted production overheads will be $1 159 000 if 58 000 units are produced each year, and $1 203 000 if 66 000 units are produced each year.

(vi) Selling and distribution expenses consists of a sales commission of $8 per unit sold and a fixed monthly distribution expense of $50 000.

REQUIRED:

Magic Company adopts the marginal costing system. Assume it does not keep any inventories as at 31 October 2012, calculate the following for Product X for the month ended 30 November 2012:

(a) The budgeted total value of closing inventories (4 marks)

(b) The budgeted total amount of contribution (3 marks)

(c) The budgeted total amount of net profit (2 marks)

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6. 2012.Q8

Lucky Company is a local manufacturer selling a single product, DC. The company plans to produce and sell at its maximum capacity of 80 000 units in 2013. The following estimates relating to DC have been made for 2013:

	$
Manufacturing costs:	
Direct materials	480 000
Direct labour	320 000
Production overheads	1 000 000
Non-manufacturing costs	
Selling expenses	900 000
Administrative expenses	528 500

Additional information:

(i) 20% of the production overheads are variable costs.

(ii) Two-thirds of the selling expenses are fixed while the remaining balance is the sales commission, which varies with the number of units sold.

(iii) Administrative expenses are all fixed.

REQUIRED:

(a) Calculate

(1) The total fixed costs of 80 000 units of DC; and (2 marks)

(2) The total variable costs of 80 000 units of DC (2 marks)

At a regular meeting of the company, the sales manager reports that one of its competitors is going to launch a product similar to DC. As a result, he expects that the sales volume of DC will drop to 48 000 units in 2013 if its selling price is maintained at $49.5 per unit. The management prefers not to have any price deduction in the local market, and is considering adopting one of the following alternatives in 2013 to solve the problem:

Alternative A

The company pays an additional sales commission of 10% on the selling price, and increases advertising expenses by $52 500 per annum. By doing so, the expected sales volume of DC is 76 000 units.

Alternative B

The company produces and sells 48 000 units in the local market, and uses its excess capacity to accept an offer from a mail-order house to sell at most 40 000 units of DC to overseas market at a unit selling price of $37.5. Under the agreement, no sales commission is to be paid to the mail-order house but a total of $25 000 per month is to be paid by Lucky Company to cover the cost of producing the mail-order catalogue.

(b) Calculate the respective breakeven point (in units) of DC under Alternative A and Alternative B. (5 marks)

(c) Suppose Lucky Company has to choose one of the alternatives. Explain which alternative you would recommend to the management based on the respective total profits calculated under each alternative. (6 marks)

(d) Other than total profit, explain one financial factors that Lucky Company should consider if it decides to adopt Alternative B. (2 marks)

Suppose the Company adopts Alternative A and considers reducing the cost of production through production process automation. If a piece of equipment with a rental cost of $125 000 per annum is hired, the direct labour cost is expected to be reduced by 40%.

(e) Should Lucky Company hire the equipment? Support your answer with calculations. (3 marks)

7. 2013.Q6

Eva Company manufactures stainless steel mailboxes. The budgeted income statement for the year 2014 is as follows:

	$
Sales	960 000
Direct materials cost	(120 000)
Direct labour cost	(150 000)
Fixed production overheads	(190 000)
Variable production overheads	(66 000)
Fixed administrative overheads	(57 000)
Net profit	377 000

REQUIRED:

(a) Compute for the mailboxes

(i) The contribution margin ratio (as a percentage) (2 marks)

(ii) The breakeven sales for 2014. (2 marks)

(iii) The margin of safety (as a percentage up to two decimal places) for 2014. (2 marks)

(b) Assume that the management of Eva Company is considering offering a 5% commission on all sales.

(i) Recompute the contribution margin ratio (as a percentage) (2 marks)

(ii) Recompute the breakeven sales for 2014 (to the nearest dollar) and state the effect of the sales commission on breakeven sales. (2 marks)

(iii) If the management expects sales revenues to be increased by $100 000 because of this, would you recommend Eva Company to offer the sales commission? Show your calculations. (3 marks)

(c) Why is a decline in the margin of safety an issue of concern to the management of a company? (2 marks)

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8. 2013.Q8

Helen Ltd sells sunglasses in three shops (A, B and C) in Hong Kong. Its budgeted income statement for the year ended 31 December 2014 is given below:

Helen Ltd
Budgeted income statement for the year ended 31 December 2014

	$	$
Sales		6 000 000
Cost of goods sold		(3 300 000)
Gross profit		2 700 000
Selling expenses – fixed rental expenses	(270 000)	
Selling expenses – sales commission	(630 000)	(900 000)
Administrative expenses – salaries	(560 000)	
Administrative expenses – office expenses	(350 000)	(910 000)
Net profit		890 000

Additional budgeted information:

(i) Sales of shop C accounted for 20% of the total company's sales.
(ii) Gross profit ratio of shop C for 2014 is half of that for the company as a whole.
(iii) One-third of the fixed rental expenses are from Shop C. Sales commission is calculated on the basis of sales dollars.
(iv) Administrative expenses are to be allocated to Shop A, B and C in a ratio of 2:2:3 respectively.

REQUIRED:

(a) Prepare a budgeted income statement for the year ended 31 December 2014 for Shop C only. (6 marks)

Losses were incurred in Shop C over the past two years. The management of Helen Ltd is considering closing the shop on 1 January 2014. Relevant information is as follows:

(v) Some customers of Shop C will purchase sunglasses from Shop A and Shop B instead. It is estimated that sales of the two shops will be increased by 10%.
(vi) The gross profit ratio of Helen Ltd will change to 48%.
(vii) Landlord of shop C allows Helen Ltd to terminate the lease contract but rental deposit of $15 000 paid will be forfeited.
(viii) An employee currently earning $10 000 per month in Shop C will have to made redundant and receive $20 000 as compensation. Other employees in the shop will be transferred to the remaining shops.
(ix) Four-fifth of the office expenses originally allocated to shop C will still have to be paid.

REQUIRED:

(b) Assume that shop C is closed, prepare an overall budgeted income statement for Helen Ltd for the year ended 31 December 2014. (8 marks)
(c) Based on your answer in (b), briefly explain whether Helen Ltd should close shop C. (2 marks)
(d) State two non-financial factors that may influence Helen Ltd's decision in (c). (4 marks)

9. 2014.Q3

A company uses a machine for production. For each of the descriptions in (a) to (d) below, indicate which of the following cost classification is most suitable:

- Fixed cost
- Variable cost
- Semi-variable cost
- Step cost
- Sunk cost
- Incremental cost
- Opportunity cost

(a) A worker is employed to operate the machine for a monthly wage of $6000 plus $0.3 per unit produced. The total cost of hiring the worker is a / an _____.
(b) The machine has a net book value of $52 000. In evaluating whether to sell the machine, the net book value is a / an _____.
(c) The machine can now be sold for $5000. If the company decides to retain and use it, the saleable value is a / an _____.
(d) If the machine is sold, the company will rent a new machine for $20 000 per annum. Under marginal costing, the annual rental charge for the new machine is a / an _____ .

(4 marks)

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10. 2014.Q4

Beauty Sports Company produces and sells two types of aerobic-training products: instructional DVDs and dancer kits. Information on the two products in 2014 is as follows:

	DVD	Dancer Kit
Units selling price	$150	$600
Unit variable cost	$30	$125

The annual total fixed cost is $860 000.

REQUIRED:

(a) In 2013, Beauty Sports Company sold 25 000 DVDs and 5000 Dancer Kits. Assuming that the ratio of the sales quantity of the two products will be maintained, calculate the sales quantity for each product in 2014 at the breakeven point. (3 marks)

From 2015 onwards, Beauty Sports Company will produce and sell dance kits only. Improvements will be made to the dancer kits and it is estimated that the unit variable cost will increase by $75 while the projected sales quantity is 6250 with no change in the selling price. The annual total fixed cost will be reduced by $160 000.

REQUIRED:

(b) Calculate the margin of safety in sales dollars for Beauty Sports Company in 2015. (3 marks)

11. 2015.Q3<out of syllabus>

12. 2015.Q4

Peter Company plans to sell 3000 pairs of shoes at $350 per pair. Relevant financial information is given below:

	$
Fixed production overheads	150 000
Fixed selling and administrative expenses	228 000
Direct materials per pair of shoes	45
Direct labour per pair of shoes	55
Variable production overheads per pair of shoes	18
Sales commission per pair of shoes	22

REQUIRED

(a) Calculate the contribution margin for each pair of shoes. (2 marks)

(b) How much sales revenue does Peter Company have to earn in order to achieve a target profit of $168 000? (2 marks)

(c) If the price is set at $365 per pair, it is estimated that the sales quantity will drop from 3000 pairs to 2700 pairs. Should Peter Company raise the price? Support your answer with calculations. (3 marks)

(Total: 7 marks)

13. 2016.Q3

Thomson Company computes its annual predetermined manufacturing overhead absorption rate on the basis of machine hours. In December 2014, it estimated that 50 000 machine hours would be required for the planned level of production in 2015. The company also estimated that fixed manufacturing overhead would amount to $450 000 and variable manufacturing overhead would be $6 per machine hour for 2015.

The actual manufacturing overheads for 2015 were $717 000 and the actual number of machine hours was 48 000 hours.

REQUIRED:

(a) Calculate the predetermined manufacturing overhead absorption rate for 2015. (2 marks)

(b) Calculate the under-absorption or over-absorption of manufacturing overheads for 2015. (2 marks)

(c) For the under-absorbed or over-absorbed manufacturing overheads calculated in (b), state the accounting treatment and its impact on the net profit for 2015. (2 marks)

(d) State one variable manufacturing overhead cost which increases with the usage of machine hour. (1 mark)

(Total: 7 marks)

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BAFS – Cost Accounting (Sample Paper – 2021)
14. 2016.Q7

Anson Company started to manufacture a toy plane 'Hippo' as its only product line in 2015. It uses the absorption costing system. The cost information for 'Hippo' is given below:

	$ / unit
Direct materials	18
Direct labour	12
Total manufacturing overheads	6

(i) The total manufacturing overheads include both variable and fixed manufacturing overheads, based on the production of 10 000 units of 'Hippo' each year.
(ii) Fixed manufacturing overheads for 2015 was estimated to be $40 000, which was the same as the actual amount.
(iii) The company hired two salesmen for a total annual salary of $128 000 to sell 'Hippo'. On top of the salary, there was an incentive payment to the salesmen of 5% of sales.
(iv) 'Hippo' was sold at a selling price of $60 per unit.
(v) The actual production and sales of 'Hippo' for 2015 were 10 000 units and 9 000 units respectively.

The company is considering using the marginal costing system.

REQUIRED:

(a) Prepare for Anson Company the income statement for the year ended 31 December 2015 using the marginal costing system. Show separately the contribution and the net profit. (5 marks)
(b)(i) Calculate the amounts of inventory as at 31 December 2015 under the marginal and absorption costing systems respectively. (2 marks)
(ii) Explain the reason for the difference in the amounts of inventory in (b)(i) above. (2 marks)
(c) Compare the net profits of 2015 under the marginal and absorption costing systems. (2 marks)

Anson Company receives an offer from a local supplier to supply a component for 'Hippo' at a price of $5.7 per unit. The company estimates that if the supplier's offer is accepted, variable manufacturing overheads will be reduced by $0.2 per unit, direct labour cost will be reduced by 10% and direct martial cost will be reduced by $4.5 per unit.

REQUIRED:

(d) Explain, with supporting calculations, whether Anson Company should continue to manufacture the component or purchase it from the local supplier. (3 marks)

(Total: 14 marks)

BAFS – Cost Accounting (Sample Paper – 2021)
15. 2017.Q3(b)(c)(d)

KM Company is a manufacturer producing a single product, Y. The following information for its three types of manufacturing overheads is available. Each overhead type demonstrates different cost behaviour. The maximum annual production capacity of KM Company is 600 000 units.

Production level (units)	360 000	420 000	480 000	540 000	600 000
Manufacturing overheads:	$	$	$	$	$
- Type P	400 000	400 000	400 000	(i)	400 000
- Type Q	180 000	210 000	(ii)	270 000	300 000
- Type R*	77 000	(iii)	101 000	113 000	125 000

*Type R includes fixed manufacturing overheads and variable manufacturing overheads.

(b) Compute the amounts for items (i) to (iii) in the above table. (3 marks)
(c) With reference to cost behaviour, identify the type of manufacturing overheads that Type R belongs to. (1 mark)

KM Company is considering a one-off special order from a customer. It has sufficient production capacity to cope with this order.

REQUIRED:

(d) With reference to the cost behaviour, when KM Company decides whether to accept the order, which of the above three types of manufacturing overheads (P, Q or R) is irrelevant? Briefly explain your answer. (2 marks)

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16. 2017.Q6

Nice Company commenced business on 1 January 2016. It produces a single product, M1. The income statement for the year ended 31 December 2016 was as follows:

	$	$
Sales (9600 units)		2 400 000
Less: Cost of goods sold		
Direct materials	300 000	
Direct labour	600 000	
Fixed production overheads	930 000	
	1 830 000	
Less: Closing inventory (2400 units)	366 000	
	1 464 000	
Add: Under-absorbed fixed production overheads	15 000	1 479 000
Gross profit		921 000
Less: Selling and administrative overheads		
- fixed	360 000	
- variable (include sales commission only)	240 000	600 000
Net profit		321 000

REQUIRED:

(a) Calculate the contribution margin per unit of M1. (4 marks)

(b) Calculate the breakeven sales amount for 2016. (4 marks)

Nice Company is considering producing an advanced model 'Super-M' in 2018. If Nice Company produces both M1 and 'Super-M', the production information is estimated as follows:

	M1	Super-M
Annual Production	5 000 units	7 000 units
Direct labour hour required per unit	$\frac{1}{10}$ hour	$\frac{1}{6}$ hour
Machine hour required per unit	$\frac{4}{5}$ hour	$\frac{2}{3}$ hour

Fixed production overheads of 2018 are budgeted at $988 000, which mainly covers factory rent, machine maintenance and depreciation for machinery.

REQUIRED:

(c) Calculate the predetermined fixed production overhead absorption rate (to 2 decimal places) for each unit of M1 and 'Super-M' respectively, using the following cost absorption bases:

(i) direct labour hours

(ii) machine hours (3 marks)

(d) Briefly explain which cost absorption basis, direct labour hours or machine hours, would you recommend to Nice Company. (2 marks)

(Total: 13 marks)

17. 2015.Q7

Susan Café operates its own bakery and produces cookies and cupcakes. Information on the two products is as follows:

	Cookies	Cupcakes
Selling price per box	$290	$390
Direct material cost per box	$20	$120
Direct labour hour per box	$\frac{1}{3}$ hour	$\frac{1}{2}$ hour
Labour wage rate per hour	$90	$90
Variable production overheads per box	$15	$15

The bakery produces and sells 2400 boxes of cookies and 1800 boxes of cupcakes per year. Production overheads are allocated on the basis of direct labour hours. Details of annual fixed production overheads for the bakery are as follows:

	$
Supervisor's salary	286 000
Depreciation on equipment	80 000
Rent	144 000

REQUIRED:

(a) Calculate the following for the bakery:

(i) the predetermined fixed production overhead absorption rate (2 marks)

(ii) the total production cost per box of cupcakes (2 marks)

A local supplier offered to supply Susan Café with all the cookies and cupcakes it needed. The prices were $170 per box for cookies and $270 per box for cupcakes. The offer was conditional that Susan Café must buy both products. In other words, the supplier would not supply just one type of product for the price indicated. If the offer was accepted, all the equipment would be scraped and the bakery would be closed.

REQUIRED:

(b) Explain, with supporting calculations, whether Susan Café should continue to produce its own cookies and cupcakes, or purchase them from the local supplier. (4 marks)

Provided by dse.life

Finally, Susan Café decided to produce its own products, for better quality control. The bakery is operating at only 85% of its full capacity of 2000 direct labour hours per year. It is therefore decided that one more products, shortbread, will be produced to fully utilize the capacity of the bakery.

The estimated annual demand for shortbread is 3900 boxes and the selling price is $370 per box. Additional information on the production of shortbread is provided below:

Direct material cost per box	$180
Direct labour hour per box	$\frac{1}{6}$ hour
Labour wage rate per hour	$90
Variable production overheads per box	$15

REQUIRED:

(c)(i) Calculate the contribution per direct labour hour for each of the three products. (2 marks)

(ii) To maximize the total contributions of the bakery at its full capacity, calculate the annual production quantity for each of the three products. (3 marks)

(Total: 13 marks)

18. 2018.Q3

Sang Manufacturing Company commenced its business in 2017. It uses the absorption costing system. All finished goods were sold in 2017. The information for the year ended 31 December 2017 is given below:

Sales	$150 000
Net profit	$48 000
Prime cost	$49 920
Direct materials	$180 per metre, 100 metres are required
Direct expenses	$7 000
Direct labour cost	?
Manufacturing overheads absorbed	?
Administrative and selling expenses	20% of total manufacturing cost

REQUIRED:

(a) Prepare for Sang Manufacturing Company the income statement for the year ended 31 December 2017 using the absorption costing system. Show separately the components of the prime cost and the manufacturing overheads absorbed. (6 marks)

(b) Calculate the total amount of conversion cost of year 2017. (1 mark)

(c) Give one example of a direct expense. (1 mark)

(Total: 8 marks)

19. 2018.Q6

Yummy Limited is a dim sum restaurant. Its monthly operation details for 2018 are as follows:

Average number of customers per month	35 000
Average sales revenue per customer	$100
Variable production cost	45% per revenue dollar

Monthly fixed costs:	$
Rent	350 000
Salary	741 000
Depreciation	81 970
Other operating expenses	316 000

The following changes in costs are expected for 2019:

- Increase in variable production cost to 48% per revenue dollar
- Increase in monthly rent by 15% when the lease contract is renewed at the beginning of 2019
- Increase in salary and other operating expenses by 5%

REQUIRED:

(a) Calculate the monthly margin of safety for Yummy Limited in 2019 (in sales dollars). (4 marks)

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The Hong Kong Government has invited investors to join the Food Truck Pilot Scheme. The trial period is two years. Yummy Limited has idle capacity and is considering joining this project in 2019. It has estimated the costs and revenues related to the project as follows:

(i) The cost of a new truck is $1 000 000, with an estimated residual value of $300 000 at the end of 2020.
(ii) Equip the truck with refrigerators, air-conditioning and new cooking facilities at a cost of $604 000.
(iii) Annual fixed costs include salary of $600 000 and other costs (excluding depreciation) of $528 000. A set of idled cooking stoves of the restaurant with a net book value of $20 000 as at 1 January 2019 will be installed in the food truck.
(iv) The variable production cost of the dim sum sold by both the restaurant and the food truck will be 48% per revenue dollar during the two-year trial period.
(v) It is estimated that the project would bring in monthly revenues as follows:
- Sales revenue of the food truck: average sales revenue per customer $80, with a total of 3 000 customers
- Sales revenue of the restaurant: attract additional 1 500 customers, average sales revenue of $100 per customer

REQUIRED:

(b)(i) Prepare for Yummy Limited a statement to calculate the incremental revenues and incremental costs for the whole project. (5 marks)
(ii) Based on the calculation in (b)(i), briefly explain whether Yummy Limited should join the Food Truck Pilot Scheme. (1 mark)

(continued next page)

(c) Define 'sunk cost'. Identify one example of a sunk cost for Yummy Limited in respect of the food truck project. (2 marks)

(Total: 12 marks)

20. 2018.Q8(B)

Fancy Limited will start manufacturing three products, Product A, Product B and Product C in June 2018. The monthly full capacity is estimated at 20 000 direct labour hours. In April 2018, Fancy Limited signed a non-cancellable sales contract with a customer to deliver 1 000 units of Product A in June 2018. This sales contract has been included in the sales forecasts of June 2018.

The sales forecasts and cost information for June 2018 are as follows:

	Product A	Product B	Product C
Sales forecasts	1 400 units	1 200 units	1 600 units
Unit price	$220	$660	$480
Raw material price per kg	$60	$80	$70
Raw material usage per unit	0.5 kg	0.5 kg	0.5 kg
Direct labour hours per unit	3 hours	8 hours	5 hours
Wage rate per hour	$40	$40	$40
Variable overheads per unit	$10	$10	$10

REQUIRED:

To maximise the total contributions of Fancy Limited at its full capacity, calculate the production quantity for each of the three products in June 2018. (4 marks)

Provided by dse.life

21. 2019.Q3

Dragon Limited manufactures three products: A, B and C. The products' financial information is as follows:

	Product		
	A	**B**	**C**
	$/unit	**$/unit**	**$/unit**
Selling price	365	390	225
Production costs			
Direct materials	80.5	95.0	45.5
Direct labour	60.5	61.0	40.0
Variable manufacturing overheads	24.0	24.5	20.5
Fixed manufacturing overheads	55.0	88.0	33.0
Variable selling and administrative expenses	21.5	21.5	21.5

Dragon Limited has a maximum of 20 000 machine hours available each year. The total fixed manufacturing overheads are $440 000 per year, which are absorbed on the basis of machine hours.

REQUIRED:

(a) Calculate the contribution margin per unit for products A, B and C respectively. (2 marks)

(b) Calculate the number of machine hours required to produce each unit of Products A, B and C respectively. (2 marks)

(c) Suppose the projected demand for products A, B and C in the following year is 4 500 units, 2 500 units and 4 300 units respectively. State the production quantity of each product in the following year which will maximize the total contribution of Dragon Limited at its full capacity. Support your answer with calculations. (4 marks)

(Total: 8 marks)

22. 2019.Q6

Owen Limited produces electrical appliances. Total production overheads are absorbed based on production quantity.

Sales and cost information for the quarter ended 31 December is given below:

	$	$
Sales		1 800 000
Less: Direct materials	800 000	
Direct labour	250 000	
Production overheads - fixed	190 000	
- variable	156 000	
Administrative expenses - fixed	139 400	
Selling and distribution expenses - fixed	90 000	1 625 400
Net profit		174 600

The company did not keep any inventory as at 31 December 2018.

REQUIRED:

(a) Calculate the following for the quarter ended 31 December 2018:

(i) contribution margin ratio (2 marks)

(ii) the sales amount at which the company will achieve a quarterly profit of $300 000 (3 marks)

During the quarter ended 31 March 2019, the following changes took place:

(i) The selling price was reduced by 5%

(ii) Sales volume increased by 20%

(iii) Production volume increased by 30%

(iv) Fixed production overheads increased to $210 000

(v) Fixed selling and distribution expenses increased by $10 000

(vi) Through bulk purchase, the direct materials unit price decreased by 8%

REQUIRED:

(b) Prepare the income statement for the quarter ended 31 March 2019 using the marginal costing system. (5 marks)

(c) Give one advantage of adopting marginal costing system. (2 marks)

(Total: 12 marks)

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23. 2020.Q4

Sunny Company launched a new product in 2019. Cost information for the past four quarters is as follows:

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Activity level	3 000 units	6 000 units	12 000 units	11 000 units
Cost item	$	$	$	$
Direct materials	3 600	7 200	14 400	13 200
Direct labour	6 000	12 000	24 000	22 000
Machinery depreciation	3 000	3 000	3 000	3 000
Rental expenses	7 000	7 000	10 000	10 000
Electricity expenses	2 600	4 700	9 800	10 000

The product was sold at $9 per unit.

REQUIRED:

(a) Use the high-low method to calculate the variable component and the fixed component of the electricity expenses respectively. (2 marks)

(b) Calculate the contribution margin per unit of product for Quarter 1. (2 marks)

(c) Calculate the breakeven point in quantity for Quarter 1. (2 marks)

(Total: 6 marks)

24. 2020.Q7

Lucky Company produces a single product, Product Y. It uses the absorption costing system and its full production capacity is 10 000 direct labour hours per quarter. The information for the quarter ended 31 March 2020 is given below:

(i) There was no opening inventory for this quarter. During the quarter, 1 000 units and 700 units of Product Y were produced and sold respectively.

(ii) Fixed manufacturing overheads were budgeted at $150 000.

(iii) Estimated total cost per unit of product amounted to $474. It comprised variable costs and predetermined fixed manufacturing overheads absorbed based on 10 direct labour hours per unit. Variable costs consisted of production cost and non-production cost in the ratio of 9:1, whereas the non-production cost contained selling expenses only.

(iv) Total costs were incurred as expected, except for an overspending on fixed manufacturing overheads of $8000.

(v) The contribution margin ratio is 40%.

REQUIRED:

(a) For Product Y, calculate

(i) The predetermined fixed manufacturing overheads absorbed per unit.

(ii) The selling price per unit.

(iii) The selling expenses per unit. (3 marks)

(b) Prepare the income statement for the quarter ended 31 March 2020 using the absorption costing system. (5 marks)

(c) Explain, with supporting calculations, the effect on net profit for the first quarter of 2020 if the company uses the marginal costing system instead. (3 marks)

(d) Define 'matching concept' and explain how the concept is applied to the absorption costing system. (2 marks)

(Total: 13 marks)

25. 2020.Q9(B)(c)(d)

(B) ABC Company uses material M to manufacture a product. Each unit of product requires 1 kg of M. The purchase price of M is $50 per kg and the supplier offers a discount of 10% for the quantity purchased in excess of 400 kg. There are 100 kg of M in inventory, which is idle, with an average cost of $44 per kg. The inventory could be used for production or sold at a scrap value of $20 per unit.

Recently, the company has received a special order for 500 units of the product.

REQUIRED:

(c) If ABC Company purchases the 500 kg of M from the supplier, calculate the total cost of purchase. (1 mark)

(d) For the special order for 500 units of the product, if ABC Company purchases 400 kg of M from the supplier and uses the inventory of 100 kg of M for the production, calculate

(i) the total relevant cost. (1 mark)

(ii) the total material cost. (1 mark)

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BAFS – Cost Accounting (Sample Paper – 2021)
26. 2021.Q3

Megan Company produces and sells three kinds of water sport gears: paddles, kayaks and surfboards. The proportion of sales quantity of paddles and kayaks is maintained at a sales mix ratio of 2:1. Budgeted figures for the products for next year are as follows:

	Paddle	Kayak	Surftborad
Unit of production and sales	5 000 units	2 500 units	4 000 units
Selling price per unit	$80	$500	$400
Direct material cost per kg	$50	$75	$60
Direct materials per unit	0.5 kg	4 kg	2 kg
Direct labour cost per unit	$4	$12	$70
Selling expenses per unit	$1	$18	$10
Fixed manufacturing overheads	$120 000	$120 000	$960 000

REQUIRED:

(a) Calculate

(1) The production cost per unit of surfboards.

(2) The contribution per sales mix of paddles and kayaks. (3 marks)

(b) Assuming 3 000 units of kayaks will be sold next year, and the sales mix ratio of paddles and kayaks will be maintained, calculate the sales quantity of surfboards at which Megan Company will break even. (2 marks)

(c) Assuming 4 920 units of surfboards will be sold next year, and the sales mix ratio of paddles and kayaks will be maintained, calculate the sales quantity of paddles at which Megan Company will achieve a target profit of $270 000. (2 marks)

BAFS – Cost Accounting (Sample Paper – 2021)
27. 2021.Q6

Macy Limited manufactures three products: X, Y and Z. The company keeps no inventory of materials and completed goods. The budgeted figures for the coming quarter are as follows:

Product	Note	X	Y	Z
Sales quantity (units)		240 000	120 000	20 000
Direct labour hours required per unit		0.2 hour	0.15 hour	0.1 hour
Unit contribution margin		$2.7	$2.45	$4.2
		$	$	$
Sales		2 400 000	1 320 000	340 000
Costs:				
Direct materials		600 000	420 000	160 000
Direct and indirect labour	(i)	1 060 000	460 000	140 000
Fixed and variable fixed manufacturing overheads	(ii)	480 000	390 000	80 000
		2 140 000	1 270 000	380 000
Profit / (Loss)		260 000	50 000	(40 000)

Notes:
(i) Direct labour cost is budgeted at $20 per direct labour hour, whereas indirect labour cost is fixed.
(ii) Budgeted total fixed manufacturing overheads for the coming quarter was $456 000, which would be allocated to products X, Y and Z on the basis of units sold.

REQUIRED:

(a) Calculate the following for Macy Limited for the coming quarter: (5 marks)

(1) The total indirect labour cost, showing the amounts to be shared by products X, Y and Z respectively.

(2) The fixed manufacturing overheads to be allocated to products X, Y and Z respectively, basing on the budgeted total amount in note (ii) above.

(3) The unit variable manufacturing overheads for products X, Y and Z respectively.

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The marketing manager proposed discontinuing the production of Product Z and switching the capacity to produce an additional 10 000 units of Product X.

(iii) Increaseing the production of Product X would decrease its selling price by 2%.

(iv) A worker earning $12 000 per month would be laid off after the discontinuation of Product Z. Direct labour cost per unit of Product X would increase by 1%.

(v) Based on the budgeted total amount in note (ii) above, 38% of the fixed manufacturing overheads allocated to Product Z would be saved.

REQUIRED:

(b) If the above proposal is accepted,

(1) Calculate the unit contribution margin of Product X. (2 marks)

(2) Prepare a statement to calculate the total profit or loss for the coming quarter. Start with the total contribution margins of Product X and Product Y. (4 marks)

(c) Briefly explain whether Macy Limited should accept the above proposal. (1 mark)

(Total: 12 marks)

Cost Accounting DSE Questions

1. SP.Q3 [Out of syllabus]

(a) Cost of raw materials consumed: $83 800 2
(b) Prime cost: $233 600 2
(c) Production cost of finished goods: $438 800 2
(d) Transfer price of finished goods: $482 680 1
(7)

Workings

Lan Yan Manufacturing Company
Manufacturing account for the year ended 31 December 20X6

	$	$
Direct materials		
Beginning inventory	40 800	
Add: Purchases	170 000	
	210 800	
Less: Fire Loss	50 000	
	160 800	
Less: Closing inventory	77 000	83 800
Direct labour		60 800
Royalties		89 000
Prime cost		233 600
Factory overheads		
Rent and electricity	75 000	
Depreciation of plant and machinery	90 200	
Factory manager's salary	57 000	222 200
		455 800
Add: Beginning inventory of work in progress		35 000
		490 800
Less: Closing inventory of work in progress		52 000
Production cost of finished goods		438 800
Mark up (10%)		43 880
Transfer price of manufactured goods		482 680

Provided by dse.life

3. HTV produces televisions. Its various kinds of costs are shown in the table below:

Cost item		fixed cost or variable cost	direct cost or indirect cost
When the cost object is television:			
Example	*Cost of speakers for televisions*	*variable*	*direct*
(i)	Annual insurance premium for the factory building	(1)	(2)
(ii)	Testing costs for each television	(3)	(4)
When the cost object is the production department:			
(iii)	Wages of workers calculated based on units produced	(5)	(6)
(iv)	Salary of production line supervisors	(7)	(8)

REQUIRED:

(a) With reference to the example above, classify each cost item into fixed cost or variable cost, and direct cost or indirect cost. Write your answer for items (1) to (8) in the answer book. (4 marks)

(b) Under absorption costing, which two cost items in (i) to (iv) above should be classified as production overheads? (1 mark)

The following cost information for 2022 is extracted from HTV's records:

	January	February	March	April
Activity level (units)	1 500	3 000	5 500	6 000
Cost item				
Repair and maintenance expenses	$5 200	$9 400	$20 000	$19 600

REQUIRED:

(c) Assume that the activity level in May 2022 is 6 500 units and the fixed cost will increase by 10%. Use the high-low method to calculate the repair and maintenance expenses for May. (3 marks)

(Total: 8 marks)

2022

6. Ali Company produces a single product, Product Y. It does not keep inventory of finished goods. The production overheads and selling costs are mixed costs. Annual total fixed cost amounted to $2 800 000. The ratio of fixed production cost to fixed non-production cost is 7:3.

The income statement for the year ended 31 March 2022 is drafted as below:

	$
Sales	6 000 000
Less: Costs	
Direct material costs	1 700 000
Direct labour costs	300 000
Production overheads	2 500 000
Selling costs	1 000 000
	5 500 000
Net profit	500 000

Peter, the Sales Manager, estimated that sales will decline by 25% next year. As such, he predicted that the net profit will decrease by 25% from $500 000 to $375 000 next year.

REQUIRED:

(a) Based on Peter's estimation on the sales next year, prepare an income statement for the next year using the marginal costing system. (5 marks)

(b) Explain why the prediction made by Peter regarding the net profit next year is wrong. (1 mark)

The Production Manager added that some production facilities would be left idle as sales decline. The following options are then proposed:

Option (i): Sublet the idle facilities to earn an annual rental income of $90 000. A part-time supervisor with annual salary of $72 000 will be laid off.

Option (ii): Use the idle facilities to produce 1 500 units of Product K per year. The selling price and variable cost per unit of Product K will be $800 and $300 respectively. A machine modification charge of $70 000 is required to produce Product K. It is expected that some existing customers of Product Y will switch to buy Product K, leading to a loss in annual contribution margin of $150 480 for Product Y.

REQUIRED:

(c) For Option (i) and Option (ii), prepare separate statements to calculate their incremental profits. Briefly explain which option should Ali Company take. (6 marks)

(Total: 12 marks)

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2. SP.Q9

(a) Direct costs – costs that would be economical to trace their cost object 1
e.g. purchase cost, cost of stickers, sales commission 0.5
Indirect costs – costs that would not be economical to trace their cost object 1
e.g. printing cost, salaries, rent and rates, insurance, depreciation 0.5
(3)

(b)

	Marginal costing	Absorption costing	
Inventory valuation	- Only variable costs are charged to units.	- Fixed costs are treated as product costs and can be carried forward to the next period in the value of each unit.	2
Income determination	- Fixed costs incurred will not be carried forward and the profit of the current accounting period will be lower.	- A proportion of the fixed costs of the current period will be carried forward to the next accounting period and therefore the profit of the current accounting period will be higher.	2

(4)

(c)

Income Statement for the first quarter ended 31 March 20X6

	$	$	
Sales [($22500 + $24000 + $25 000 x 170/500) x 200%]		110 000	0.5
Beginning inventories	-		
Purchases ($22500 + $24000 + $25000)	71 500		0.5
Logo Stickers ($1500 x $2)	3 000		0.5
	74 500		
Ending inventories (330 x $52)	(17 160)		0.5
	57 340		
Variable costs: Commission ($110 000 x 5%)	5 500		0.5
		62 840	
Contribution		47 160	0.5
Less: Fixed costs			
Printing costs ($500 x 3)	1 500		0.5
Salaries [($7000+$1000) x 3]	24 000		0.5
Rent and rates ($5000 x 3 + $3600/4)	15 900		0.5
Insurance ($4500 / 4)	1 125		0.5
Depreciation [($30 000 x 12% + $60 000 x 10%) x 1/4]	2 400	44 925	0.5
Net profit		2 235	0.5

(6)

(d) Breakeven sales dollars: Fixed cost / Contribution-to-sales ratio 3
= $44 925 / ($47 160/$110 000)
=$104 787

3. PP.Q2

Perry Ltd
Income Statement for the month ended 31 January 2012 using absorption costing

	$	$	
Sales		1 298 000	0.5
Less: Cost of goods sold			
Direct materials	300 000		0.5
Direct labour	350 000		0.5
Variable production overheads	175 000		0.5
Fixed production overhead absorbed	275 000		1
	1 100 000		
Less: Closing inventory ($4.4 x 30 000)	132 000	968 000	2
Gross profit		330 000	0.5
Less: Variable selling and administrative expenses	33 000		0.5
Fixed selling and administrative expenses	110 000	143 000	0.5
Net profit		187 000	0.5

(7)

(b)
Advantages:
- inventory valuations will not be distorted by the changes in current year's fixed costs
- enables the company to concentrate on its controllable aspects by separating its fixed and variable costs
- helps management to make production and sales decisions with the calculated marginal costs information

(1 mark for each relevant advantage, max. 2 marks)

Total: 9 marks
(Presentation +0.5 mark)

4. PP.Q8

(a)(1) the breakeven volume (in units) = ($280 000 + $158 840)/$13.8 (W1) 3
= 31 800 units
(2) the margin of safety (in sales dollars) = $2 400 000 – $954 000
= $1 446 000 2
(5)

(W1)	$
Direct material	9.8
Direct labour	3.5
Designer's fee	1.5
Variable production cost	14.8
Sales commission	1.4
Total variable cost per unit	16.2

Contribution margin per unit = $30 - $16.2 = $13.8

(b) Opportunity cost: 1
- This is the cost that one forgoes by choosing a particular course of action. 1
- Example: the opportunity cost of having the existing office area for the new sales team is the income forgone from subletting it to an outsider, i.e. $20 000.

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Sunk cost:

- This is the cost that has already been spent on the acquisition of the resource, and is not affected by any subsequent events. 1
- Example: the cost paid for the consultancy fees, i.e. $120 000, has already been incurred and that cost will not be changed by any decision made in the future. 1

(4)

(c) *(See next page for an alternative answer if you cannot understand the below.)*

Proposed scenario:	$	
Increase / (decrease) in contribution		
FS2 [($30 x 0.9 - $16.2) x 100 000] – ($13.8 x 80 000)	(24 000)	2
FS4 [($60 x 0.9 - $20 (W2)) x 18 750] – [$40 (W3) x 15 000]	37 500	2
	13 500	
Advertising ($12 000 / 12)	(1 000)	0.5
Increase in monthly profit	12 500	0.5

As the proposed scenario leads to an increase in monthly profit of $12 500, it should be considered. 1

(6)

(W2)	$
Variable production cost	15
Sales commission	5
Total variable cost per unit	20

(W3) Contribution per unit = $60 – $20 = $40

(d)

Contribution from FS2 = $13.8 x 10 000 = $138 000	0.5
Required contribution from FS4 = $557 360 (W4) – $138 000 = $419 360	2.5
Monthly sales quantity that FS4 required to break even = $419 360/$40 = 10 484 units	1
Monthly sales revenue that FS4 required to break even = 10 484 units x $60 = $629 040	1
	(5)

(W4)	$
Fixed production overheads	280 000
Fixed administrative overheads	158 840
Factory rent	100 000
Depreciation of machine	18 520
Total fixed costs	557 360

Total: 20 marks

Alternative answer to part (c) - not in marking scheme, for reference only.

Status quo: Before additional spending on advertising and price reduction

	FS2 $	FS4 $	Total $
Selling price	30	60	
Less: Variable costs			
Variable production costs	14.8 (W1)	15	
Sales commission	1.4 (W1)	5	
Total variable costs	16	20	
Contribution margin per unit	13.8	40	
Units sold	80,000 units	15,000 units	
Total contribution	1,104,000	600,000	1,704,000
Less: Fixed costs			
Fixed production overheads			280,000
Fixed administrative expenses			158,840
Monthly rental			100,000
Machine depreciation ($893,960 - $5,000)/4/12			18,520
Total fixed costs			557,360
Budgeted net profit			1,146,640

Proposed scenario - additional spending on advertising and price reduction *[Changes in red]*

	FS2 $	FS4 $	Total $
Selling price	27 ($30 x 0.9)	54 ($60 x 0.9)	
Less: Variable costs			
Variable production costs	14.8 (W1)	15	
Sales commission	1.4 (W1)	5	
Total variable costs	16	20	
Contribution margin per unit	10.8	34	
Units sold	100,000 units	18,750 units	
Total contribution	1,080,000	637,500	1,717,500
Less: Fixed costs			
Advertising expenses ($12,000 / 12)			1,000
Fixed production overheads			280,000
Fixed administrative expenses			158,840
Monthly rental			100,000
Machine depreciation ($893,960 - $5,000)/4/12			18,520
Total fixed costs			558,360
Budgeted net profit			1,159,140

As the proposed scenario leads to an increase in monthly profit of $12 500 (=$1,159,140 - $1,146,640), it should be considered.

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5. 2012.Q4

(a)	Budgeted total value of closing inventories:	$	
	Direct material cost	40.0	0.5
	Transporation cost on direct materials	2.0	0.5
	Direct labour cost ($60.5 x 2)	121.0	1
	Variable production overheads ($1 203 000 - $1 159 000) / ($66 000 - $58 000)	5.5	1
	Total variable cost per unit	168.5	
	Unit of closing inventories (5 000 – 4 400)	X 600	1
		101 100	
			(4)
(b)	Budgeted total amount of contribution	$	
	Selling price per unit	300.0	0.5
	Less: Total variable cost per unit	168.5	0.5
	Sales commissions	8.0	1
	Contribution per unit	123.5	
	Number of unit sold	X 4 400	
		543 400	1
			(3)
(c)	Budgeted total amount of net profit:	$	
	Total contribution	543 400	
	Less: Distribution expenses	50 000	0.5
	Fixed production overheads ($840 000 / 12)	70 000	1
		423 400	0.5
			(2)

Total: 9 marks

6. 2012.Q8

(a)(1)

	$	
Fixed production overheads ($1 000 000 x 80%)	800 000	0.5
Fixed selling expenses ($900 000 x 2/3)	600 000	0.5
Fixed administrative expenses	528 500	0.5
	1 928 500	0.5
		(2)

(2)

Direct materials	480 000	
Direct labour	320 000	0.5
Variable production overheads ($1 000 000 x 20%)	200 000	0.5
Sales commission ($900 000 x 1/3)	300 000	0.5
	1 300 000	0.5
		(2)

(b)

Alternative A	$	
Contribution per unit		
Selling price	49.5	
Direct materials	(6)	
Direct labour	(4)	
Variable production overheads	(2.5)	
Sales commission	(3.75)	
	33.25	1
Additional sales commission: $49.5 x 10% = $4.95		0.5
∴Breakeven point (in units) = $\frac{\$1\,928\,500+\$52\,500}{\$33.25-\$4.95}$		
=70 000 units		0.5
Alternative B		
Existing contribution: $33.25 x 48 000 = $1 596 000		
Required contribution: ($1 928 500 - $1 596 000) + ($25 000 x 12)		1
= $332 500 + $300 000 = $632 500		
Contribution per unit sold overseas: ($37.5 - $6 - $4 - $2.5) = $25		1
Additional units to breakeven: $632 500/$25 = 25 300 units		0.5
∴Breakeven point (in units) = 48 000 + 25 300		0.5
= 73 000 units		(5)

(c)

Alternative A	$	
Contribution per unit	33.25	
Additional sales commission	(4.95)	
	28.3	
Expected sales units	x 76 000	0.5
	2 150 800	
Total fixed cost	(1 928 500)	0.5
Increase in advertising expenses	(52 500)	0.5
	169 800	0.5

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Alternative B	$	
Existing contribution ($33.25 x 48 000)	1 596 000	0.5
Contribution from selling overseas ($25 x 32 000)	800 000	1
	2 396 000	
Total fixed cost	(1 928 500)	0.5
Cost of producing catalogue	(300 000)	0.5
	167 500	0.5

As profit is higher under alternative A, alternative A should be recommended. 1

(6)

(d) Financial factors: (max) 2
- Risk in collecting debt from overseas
- Unavoidable / avoidable cost elements in calculating profits

(2 marks for each relevant financial factor)

(e)

	$	
Cost of hire the equipment	125 000	0.5
Total direct labour cost saved ($4 x 40%) x 76 000	121 600	1
Extra cost	3 400	0.5

Therefore, Lucky Company should not hire the equipment. 1

(3)

Total: 20 marks

7. 2013.Q6

(a)(i) Contribution margin ratio = $624 000/$960 000 x 100% = 65% 2

(ii) Breakeven sales = ($190 000 + $57 000)/0.65 = $380 000 2

(iii) Margin of safety = ($960 000 - $380 000)/$960 000 x 100% = 60.42% 2

(6)

(b)(i) Additional varable expense = $960 000 x 0.05 = $48 000 2
New contribution margin = $624 000 - $48 000 = $576 000
New contribution margin ratio = $576 000 / $960 000 x 100% = 60%
Or 65% - 5% - 60%

(ii) New breakeven sales = $411 667 2
The amount of breakeven sales is increased by $31 667.

(iii)

	$	
Projected contribution margin [($960 000 + $100 000) x 0.6]	636 000	
Budgeted contribution margin	624 000	
Increase in contribution margin / profit	12 000	2

Yes, it is because the contribution margin / profit will increase by $12 000. 1

(7)

(c) Reasons: (2)
- Sales are moving closer to the breakeven point
- Profit is going down and the possibility of making a loss is greater

(1 marks for each relevant reasons, max. 2 marks)

8. 2013.Q8

(a)

Helen Ltd – Shop C
Budgeted Income Statement for the year ended 31 December 2014

	$	
Sales ($6 000 000 x 0.2)	1 200 000	1
Cost of goods sold	(930 000)	0.5
Gross profit [$1 200 000 x 0.225 (W1)]	270 000	1
Selling expenses		
- Fixed rental expenses ($270 000 / 3)	(90 000)	1
- Sales commission ($630 000 x 0.2)	(126 000)	1
Administrative expenses		
- Salaries ($560 000 x 3/7)	(240 000)	0.5
- Office expenses ($350 000 x 3/7)	(150 000)	0.5
Net loss	(336 000)	0.5

(6)

(b)

Helen Ltd
Budgeted Income Statement for the year ended 31 December 2014

	$	
Sales ($6 000 000 x 0.8 x 1.1)	5 280 000	1
Cost of goods sold	(2 745 600)	0.5
Gross profit ($5 280 000 x 0.48)	2 534 400	0.5
Selling expenses		
- Rental expenses of Shop A and Shop B ($270 000 x 2/3)	(180 000)	0.5
- Rental deposit forfeited	(15 000)	0.5
- Sales commission ($630 000 x 0.8 x 1.1)	(554 400)	1
Administrative expenses		
- Salaries ($560 000 - $120 000)	(440 000)	1.5
- Redundancy compensation	(20 000)	0.5
- Office expenses ($350 000 x 4/7 + $350 000 x 3/7 x 4/5)	(320 000)	1.5
Net profit	1 005 000	0.5

(8)

(c) As net profit will be increased by $115 000 ($1 005 000 - $890 000), Helen Ltd should close Shop C. 2

(2)

(d) Non-financial factors:
- The need to focus on a longer-time horizon: A decision based on two years is too short 4
- The impact on the morale of staff working in other shops: potential threat of redundancies lead to lower morale and productivity
- Negative image of the company as a whole from the closure

(2 marks for each relevant factor, max. 4 marks) (4)

Total: 20 marks

Workings: (W1)

Gross profit percentage as a whole = $2 700 000 / $6 000 000 x 100% = 45%

Gross profit percentage of Shop C = 45% x 1/2 = 22.5%

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9. 2014.Q3

(a) Semi-variable cost 1
(b) Sunk cost 1
(c) Opportunity cost 1
(d) Fixed cost 1

4 marks

10. 2014.Q4

(a) Contribution per DVD = \$150 - \$30 = \$120
Contribution per dancer kit = \$600 - \$125 = \$475
Total contribution (25 000:5000) = \$120 x 5 + \$475 = \$1075

Sales quantity for DVDs at breakeven point = (\$860 000 / \$1075) x 5 = 4000 1.5
Sales quantity for dancer kits at breakeven point = (\$860 000 / \$1075) x 1 = 800 1.5

(b) Contribution per dancer kit = \$600 – (\$125 + \$75) = \$400
Breakeven sales = (\$860 000 - \$160 000) / \$400 x \$600 = \$1 050 000
Projected sales amount = 6250 x \$600 = \$3 750 000

Margin of safety in sales dollars = \$3 750 000 - \$1 050 000 = \$2 700 000 3

6 marks

11. 2015.Q3 [Out of syllabus]

(a) Cost of direct materials consumed:
\$30 000 + \$140 000 + \$20 000 - \$55 000 = \$135 000 1
(b) Prime cost:
\$135 000 + \$380 000 = \$515 000 1
(c) Cost of goods manufactured:
\$515 00 + \$330 000 + \$18 000 - \$33 000 = \$830 000 1
(d) Cost of goods sold:
\$48 000 + \$830 000 - \$38 000 = \$840 000 1

4 marks

12. 2015.Q4

(a)

Contribution margin per pair of shoes: 2

	\$	\$	
Selling price		350	(0.5)
Direct materials	45		
Direct labour	55		
Variable production overheads	18		
Sales commission	22	140	(1)
		210	(0.5)

(b) Sales revenue = (\$150 000 + \$228 000 + \$168 000) / \$210 x \$350 = \$910 000 2
(c) Total contribution: original selling price of \$350 per pair of shoes = \$210 x 3000 = \$630 000 1
Total contribution: new selling price of \$365 per pair of shoes = \$225 x 2700 = \$607 500 1
Peter Company should not raise the price because total contribution will decrease by \$22 500 1

7 marks

13. 2016.Q3

(a) Predetermined manufacturing overhead absorption rate: (\$450 000 / 50 000) / \$6
= \$15 per machine hour 2

(b)

	\$
Manufacturing overheads absorbed (\$15 x 48 000)	720 000
Actual manufacturing overheads	717 000
Over-absorbed manufacturing overheads	3 000

2

(c) - Over-absorbed manufacturing overheads should be credited to the profit and loss account to reduce cost of goods sold. 1
- This would increase the net profit of 2015. 1
(d) - electricity / fuel and power / lubricants / depreciation of factory machinery 1

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Acceptable	接受
Patent	專利
Copyright	版權
Copyright of a logo	商標版權
Patent of a logo	商標專利
	特許權

- 不接受以下答案

Not Acceptable	不接受
Lubricants	潤滑劑
Electricity	電費
Direct machine cost	直接機器成本
Depreciation	折舊
Depreciation based on production amount	基於生產量的折舊
Sales commission	銷售佣金

19. 2018.Q6

(a) Fixed cost:

	$	
- Rent ($350 000 x 1.15)	402 500	
- Salary and other operating expenses ($741 000 ÷ $316 000) x 1.05	1 109 850	
- Depreciation	81 970	
	1 594 320	2
Breakeven point (sales dollars) = $1 594 320 / (1 - 48%) = $3 066 000		0.5
Monthly margin of safety = $3 500 000 - $3 066 000 = $434 000		1.5
		(4)

(b)(i) Statement to calculate the incremental revenues and incremental costs

Incremental revenues	$	
- Food truck ($80 x 3 000 x 24)	5 760 000	0.5
- Restaurant ($100 x 1 500 x 24)	3 600 000	0.5
	9 360 000	
Incremental costs		
- Variable production cost ($9 360 000 x 48%)	4 492 800	1
- Fixed cost:		
Cost of new truck ($1 000 000 - $300 000)	700 000	1
Cost of equipment	604 000	0.5
Salary ($600 000 x 2)	1 200 000	0.5
Other costs ($528 000 x 2)	1 056 000	0.5
	8 052 800	0.5

(ii) As there are incremental profits of $1 307 200 brought in by the food truck project, Yummy Limited should join the Food Truck Pilot Scheme. 1

(c) Sunk cost:
cost incurred by a **decision made in the past**. It cannot be changed and **will not affect future decisions** 1
Example: net book value of the idled **cooking stove** 1
(2)
12 marks

Marking notes for 2018Q6

Part (a)

1. Marking the fixed costs elements **ONLY** when the fixed costs (in total or individual items shown) are using as the **numerator** in the equation of calculating the breakeven point.
2. If **ANNUAL** margin of safety had been calculated as the answer, **ONLY** mark the workings and ignore the number of months in the equations used in calculation of answers.

Part (b)(i)

1. Presentation in any kind of statement forms is a must. If presented in equation form, **ONLY** mark the total of the incremental revenues and incremental costs.
2. Sales NOT accepted to replace incremental revenues, when answers prepared in Income Statement format.
3. NOT accepting answers which splitting the costs and revenues for comparison of the Restaurant business and the Food Truck business.

Part (c):

- Other acceptable wordings for the **definition** of sunk costs:

Irrelevant cost	非相關成本
Existed and not recoverable	已產生及不可逆轉
Not be considered in making current/ future decision	在作當前/將來的決定時不用考慮

- **Not acceptable:**

× Historical cost 歷史成本

- Other acceptable answers for the example:

Example: net book value/ **Depreciation** of the idled cooking stove	閒置煮食爐的帳面淨值 / 折舊

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20. 2018.Q8(B)

B)	Product A	Product B	Product C	
	$	$	$	
Price	220	660	480	
Direct material	30	40	35	
Direct labour	120	320	200	
Variable overheads	10	10	10	
Contribution per unit	60	290	235	1
Direct labour hours per unit	3 hours	8 hours	5 hours	0.5
Contribution per direct labour hour	**$20**	**$36.25**	**$47**	2
Production priority	**3rd**	**2nd**	**1st**	

	Direct labour hours required	Production quantity	
Product A (with contract signed)	3 000	**1 000**	**0.5**
Direct labour hours left (20 000 – 3 000) = 17 000			
Product C	8 000	**1 600**	**0.5**
Product B	9 000	**1 125**	**1**
	20 000		(4)

Marking notes for 2018Q8B: If contribution per direct labour hour is correct, no need to consider marks highlighted in yellow

21. 2019.Q3

(a)

	Product A	Product B	Product C	
	$/unit	$/unit	$/unit	
Selling price	365	390	225	
Less: Variable costs				
Direct material	(80.5)	(95.0)	(45.5)	
Direct labour	(60.5)	(61.0)	(40.0)	
Variable manufacturing overheads	(24.0)	(24.5)	(20.5)	
Variable selling and administrative expenses	(21.5)	(21.5)	(21.5)	
Contribution per unit	178.5	188.0	97.5	(2)

(b)

Fixed manufacturing overhead absorption rate = $\frac{\$440\,000}{20\,000 \text{ hours}}$ = $22 per machine hour

(c)

	Product A	Product B	Product C	
Contribution per machine hour (a/b)	$71.4	$47	$65	1.5
Ranking by contribution / machine hour	1	3	2	
Total machine hours required	11 250 (2.5 x 4 500)	2 300 (20 000 - 11 250 - 6 450)	6 450 (1.5 x 4 300)	1.5
Units to be produced	4 500	575	4 300	1
Direct material		(2 300/4)		(4)
				8 marks

Marking notes:

Part (a): All correct 2 marks. Deduct 0.5 mark for each incorrect answer.
All wrong but showing selling price less any variable cost 0.5 mark

(b) All correct 2 marks. Deduct 0.5 mark for each incorrect answer.
All wrong but showing fixed manufacturing overhead absorption rate (OAR) calculation ($440,000 / 20,000) 1 mark.

(c) (i) Total 1.5 marks for contribution margin per machine hour. Each carries 0.5 mark.
(ii) Total 2.5 marks for determining units of products.
A (0.5 mark), C (0.5 mark) and B (1.5 marks)

22. 2019.Q6

(a)(i) Contribution margin ratio = $\frac{\$1\,800\,000 - \$800\,000 - \$250\,000 - \$156\,000}{\$1\,800\,0000}$ x 100% = = 33% (2)

(ii) Total fixed costs: $190 000 + $139 400 + $90 000 = $419 400

Sales required: $\frac{(\$419\,400 + \$300\,000)}{33\%}$ = $2 180 000 (3)

(b)

Owen Limited
Income statement for the quarter ended 31 March 2019

	$	$	
Sales ($1,800,000 x 120% x 95%)		2 052 000	0.5
Less: Variable costs			
-Direct materials ($800,000 x 120% x 92%)	883 200		0.5
-Direct labour ($250,000 x 120%)	300 000		0.5
-Production overheads ($156,000 x 120%)	187 200	1 370 400	0.5
Contribution margin		681 600	1
Less: Fixed costs			
-Production overheads	210 000		0.5
-Administrative expenses	139 400		0.5
-Selling and distribution expenses ($90,000 + $10,000)	100 000	449,400	0.5
Net profit		232 200	0.5
			(5)

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(c) Advantages:
-facilitates decision-making as fixed costs are sunk costs, which are irrelevant
- facilitates prediction on the changes in profits when there are changes in selling price, sales volume or variable costs
(2 marks for each advantage, maximum 2 marks) (2)

12 marks

Marking notes for Q6

(c) quarterly Income statement in marginal costing system
***Remarks: format (contribution margin, not gross profit)**

(d) advantage of adopting marginal costing system
***Remarks: impacts of changes in sales, variable costs and fixed costs**

23. 2020.Q4

(a) Variable component of electricity expenses = $\frac{\$9\,800 - \$2\,600}{(12\,000 - 3\,000)\text{ units}} = \$0.8$ per unit 1

Fixed component of electricity expenses = \$9 800 - (\$0.8 x 12 000 units) or \$2 600 - (\$0.8 x 3 000 units)
= **\$200** 1
(2)

(b) Contribution margin per unit (Quarter 1): \$9 - (\$3 600 / 3 000) - (\$6 000 / \$3 000) - \$0.8 = **\$5**/unit (2)

(c) Breakeven point in quantity (Quarter 1): $\frac{(\$3\,000 + \$7\,000 + \mathbf{\$200})}{\mathbf{\$5}} = 2\,040$ units (2)

6 marks

24. 2020.Q7

(a)(i) Predetermined fixed manufacturing overheads absorbed per unit: $\frac{\$150\,000}{10\,000\text{ hours}}$ x 10 hours 1
= **\$150**/unit

(ii) The selling price per unit: $\frac{(\$474 - \mathbf{\$150})}{(1 - 0.4)} = \$540$ 1

(iii) The selling expenses per unit: (\$474 - **\$150**) x 10% = \$32.4 1

(b)

Lucy Company
Income statement for the quarter ended 31 March 2020

	$	$	
Sales (700 units x \$540)		378 000	0.5
Less: Cost of goods sold			
Cost of finished goods (\$474 - \$32.4) x 1,000	441 600		1
Less: Closing inventory (\$473 - \$32.4) x 300	132 480		1
Add: Under-absorbed fixed manufacturing costs	8 000	317 120	1
Gross profit		60 880	0.5
Less: Expenses			
-Selling expenses		22 680	0.5
Net profit		38 200	0.5
			(5)

(c) - under marginal costing system, fixed manufacturing overheads are expensed in full as a period cost 1
- net profit will be lowered 1
- by \$45 000 [(1 000 - 700) units x \$150] 1
(3)

(d) Matching concept: links revenue with its related expenses and costs 1
- under absorption costing system, both fixed and variable production costs are included in the cost of goods sold, which allows the matching of revenues with the total production costs when the goods are sold. 1
(2)

13 marks

25. 2020.Q9(B)

(B) (c) Total cost of purchase:
(400 kg x \$50) + (100 kg x \$45) = \$24 500 1

(d)(i) Total relevant cost:
(400 kg x \$50) + (100 kg x \$20) = \$22 000 1

(d)(ii) Total material cost:
(400 kg x \$50) + (100 kg x \$44) = \$24 400 1
(3)

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