**Leeming Senior High School**

**Accounting and Finance ATAR (Year 12)**

**Unit 3**

**Task 3**

**Marking Key**

**Assessment Type:**

Test

**Total Marks:**

65 marks

**Conditions:**

**Period Allowed for Completion of the Task:**

50 minutes under invigilated conditions.

**Task Weighting**

7% of the school mark for this pair of units

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**Section 1 (5 marks)**

**Answer the first 5 questions by circling the most appropriate answer.**

Questions 1 and 2 relate to the following diagram of the costs & revenues of a firm.

 $

100 000 ***Sales***

 90 000

 80 000 ***Total costs***

 70 000

 60 000

 50 000

 40 000 ***Fixed costs***

 30 000

 20 000

 10 000

 0

 0 10 20 30 40 50 60 70 80 90

Output units x 1000

1. The breakeven point for this firm is

(a) Production of about 50,000 units

(b) Production of about 25,000 units

(c) Revenue of about $35,000

(d) Both b and c are correct

2 If the firm were to produce 40,000 units

(a) It would make a profit of about $60,000

(b) Total costs would be about $50,000

(c) It would make a loss of about $15,000

(d) Variable costs would be greater than fixed costs

1. Variable costs of production are

(a) costs which never change

(b) costs per unit remain the same regardless of production levels

(c) costs that change per unit depending on the time spent manufacturing

(d) costs that are likely to change in line with the number of products manufactured

1. Opportunity costs are

(a) The costs of manufacturing a new product

(b) Future potential benefits not gained as a result of selecting a particular option

(c) The costs of transferring production to another factory

(d) Costs which remain the same irrespective of output

5 Breakeven occurs when

(a) sales price less variable costs equals zero

(b) sales price less fixed costs equals zero

(c) contribution margin less total costs equals zero

(d) contribution margin less fixed costs equals zero

**Section 2 (60 marks)**

**Question 6 (26 marks)**

Simpson Ltd is a manufacturer of refrigerators in Australia, making a top of the range model called the Opal. The Opal range of refrigerators has a break-even point of 5,200 units, a contribution margin of $350 per unit and provides $1 500 000 in annual profit.

It has been suggested that a new low budget range called the Diamond be made and the following are the estimated costs associated with this new product:

Raw Materials $300 per unit

Direct Labour $150 per unit

Overheads $100 per machine hour

Machine Time 30 minutes per refrigerator

Depreciation on Machinery $200 000 per year

Other Fixed Overheads $400 000 per year

Administration Costs $500 000 per year

Selling Costs $200 000 per year

It was determined that the selling price for the Diamond refrigerator would be $800 per unit and it is anticipated that sales will be 8 500 during the year.

**Required**

1. Calculate the breakeven point in units for the new Diamond refrigerator. (10 marks)

**Workings:**

|  |  |
| --- | --- |
| **Breakeven Point =** | **TFC** |
| **Contribution Margin** |

|  |  |
| --- | --- |
| **Breakeven Point =** | 1 300 000 |
| 300 |

|  |  |
| --- | --- |
| **Breakeven Point =** | **4334 Refrigerators** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Calculate the expected profit from the new Diamond refrigerator. (2 marks) **Workings:**

|  |  |
| --- | --- |
| **Profit =** | **TR (Total Revenue) – TC (Total Costs)** |

|  |  |
| --- | --- |
| **Profit =** | **$6 800 000 – $5 550 000** |

|  |  |
| --- | --- |
| **Profit =** | **$1 250 000** |

1. If the target profit for the new Diamond refrigerator is $900 000 per year, what dollar value of sales would need to be achieved per year? (7 marks)

**Workings:**

|  |  |
| --- | --- |
| **Forecast Revenue =** | **TVC (Total Variable Costs) + TFC (Total Fixed Costs) + Target Profit** |

|  |  |
| --- | --- |
| **Forecast Revenue =** | **$4 250 000 + $1 300 000 + $900 000** |

|  |  |
| --- | --- |
| **Forecast Revenue =** | **$6 450 000** |

|  |
| --- |
|  |

1. Explain the concept of margin of safety. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Explains the concept of margin of safety in detail. | 2 |
| Explains the concept of margin of safety. | 1 |
| **Answer could include, but is not limited to:** |
| * The margin of safety of a product or service is the amount by which expected sales are greater than the break-even point.
* We can then calculate the percentage by which sales might decrease before the product begins to incur a loss.
* The higher the margin of safety, the better when comparing alternative products.
 |

1. Calculate the margin of safety, as a percentage. (2 marks)

**Workings:**

|  |  |
| --- | --- |
| **Margin of Safety =** | **Actual/Budgeted Sales – Breakeven Sales** |

|  |  |
| --- | --- |
| **Margin of Safety =** | **$6 800 000 - $3 467 200** |

|  |  |
| --- | --- |
| **Margin of Safety =** | **$3 332 800** |

|  |  |
| --- | --- |
| **Margin Of Safety % =** | **Margin Of Safety In Dollars** |
| **Total Actual/Budgeted Sales** |

|  |  |
| --- | --- |
| **Margin Of Safety % =** | **$3 332 800** |
| **$6 800 000** |

|  |  |
| --- | --- |
| **Margin of Safety % =** | **49%** |

(e) Based on your calculations, give three reasons why the manufacture of the new Diamond refrigerator should go ahead or not. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Discusses three (3) reasons why the manufacture of the new Diamond refrigerator should go ahead or not in detail | 3 |
| Discusses two (2) reasons why the manufacture of the new Diamond refrigerator should go ahead or not in detail | 2 |
| Discusses one (1) reason why the manufacture of the new Diamond refrigerator should go ahead or not in detail | 1 |
| **Answer could include, but is not limited to:** |
| * The manufacture of the new Diamond refrigerator should go ahead for the following reasons:
	+ the breakeven point is not too high;
	+ the manufacture of the refrigerator will make the business a very good profit;
	+ the margin of safety percentage is also quite healthy.
 |

**Question 7 (14 marks)**Brumbies Pty Ltd has a small factory in the northern suburbs of Perth manufacturing electric golf buggies. The factory has a productive capacity of 2 000 buggies per year. However, with the financial downturn and the rise in the desire to keep fit by actually walking round the golf course, rather than riding in a buggy, sales have dropped off and the firm is currently expecting to sell only 1800 units at a budgeted price of $3 800 each.The production costs of the buggies are as follows:

|  |  |
| --- | --- |
| **Nature of Cost** | **$ per unit** |
| Direct Materials | 1 120 |
| Direct Labour | 680 |
| Factory Overhead | 240 |

The company has received an order from a large international hotel chain to build a batch of 500 buggies at the special price of $3 500 each. The costs would be the same as for the normal production except for an additional $50 per unit for painting the hotel chain’s logo on each buggy. It is expected that this order would be a ‘one-off’ job.**Required**(a) Calculate whether or not the company should accept the order from a profit point of view. (10 marks)**Workings:**To accept the special order would mean reducing current production by 300 units.

|  |  |  |
| --- | --- | --- |
|  | **Current Production Lost** | **Special Order** |
|  | **300 Units** | **500 Units** |
| **Direct Materials** | $336 000 | $560 000 |
| **Direct Labour** | $204 000 | $340 000 |
| **Factory Overhead** | $72 000 | $120 000 |
| **Painting of Logo** |  | $25 000 |
| **Total Variable Costs** | $612 000 | $1 045 000 |
| **Sales** | $ 1 140 000 | $1 750 000 |
| **Contribution Margin** | $528 000 | $705 000 |
| **Profit Earned (Lost)** | ($528 000) | $705 000 |

The company should accept the special order as they will make an additional profit of $177 000.(b) Apart from the immediate effect on profit, what other considerations might the company have in deciding whether or not to accept the order? (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Discusses two (2) other considerations in detail. | 2 |
| Discusses one (1) other consideration in detail. | 1 |
| **Answer could include, but is not limited to:** |
| * The effect the special order might have on existing customers not being able to purchase the buggies due to the current production being reduced.
* The effect the special order might have on employees and a change in their work procedures.
* The effect the special order might have on competitors with them retaliating by lowering their prices in order to compete.
 |

(c) What might the company do to enable it to accept the order without reducing normal production? (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Discusses two (2) other considerations in detail. | 2 |
| Discusses one (1) other consideration in detail. | 1 |
| **Answer could include, but is not limited to:** |
| * They might purchase additional equipment in order to be able to increase their level of maximum production.
* They might employ additional staff in order to be able to increase their level of maximum production.
 |

**Question 8 (20 marks)**Beginners Pty Ltd is a small manufacturing business making aprons, tea-towels and oven gloves for the tourist market at its factory in Mundaring. Cost information for the three products is as follows:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Aprons** | **Tea-Towels** | **Oven Gloves** |
| Variable Costs Per Unit | $7 | $5 | $9 |
| Selling Price Per Unit | $12 | $8 | $20 |
| Maximum Estimated Sales Volume | 10 000 units | 15 000 units | 6 000 units |
| Current Volume of Production | 8 000 units | 12 000 units | 4 000 units |
| Labour Hours Per Unit | 0.3 hours | 0.2 hours | 0.4 hours |

Manufacturing overheads are expected to total $80 000 and other fixed costs are estimated at $20 000 per annum. The limiting factor for production is labour, and the company estimates it will have 6 400 labour hours available each year.**Required:**(a) Calculate the sales mix at the current levels of production. (3 marks) **Workings:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Aprons** | **Tea-Towels** | **Oven Gloves** |
| **Anticipated Sales Volume Per Unit** | 8 000 Units | 12 000 Units | 4 000 Units |
| **Sales Mix as a Percentage** | 8 000 | = 33.3% | 12 000 | = 50.0% | 4 000 | = 16.7% |
| 24 000 | 24 000 | 24 000 |

 (b) Calculate the weighted average contribution margin per unit. (6 marks) **Workings:**

|  |
| --- |
| **Contribution Margin** |
|  | **Aprons** | **Tea-Towels** | **Oven Gloves** |
| **Sales Price Per Unit** | $12 | $8 | $20 |
| **Variable Cost Per Unit** | $7 | $5 | $9 |
| **Contribution Margin** | **$5** | **$3** | **$11** |

|  |
| --- |
| **Weighted Average Contribution Margin Per Unit** |
| **Contribution Margin Aprons Per Unit** | $5 x 0.333 | $1.67 |
| **Contribution Margin Tea-Towels Per Unit** | $3 x 0.50 | $1.50 |
| **Contribution Margin Oven Gloves Per Unit** | $11 x 0.167 | $1.84 |
| **Weighted Contribution Margin** | **$5.01** |

(c) Calculate the breakeven point, in units, at current levels of production. (2 marks) **Workings:**

|  |
| --- |
| **Breakeven Point In Units** |
| **Breakeven Sales In Units** | Fixed Costs | 100 000 | **= 19 961 Units** |
| Weighted Average Contribution Margin | 5.01 |

(d) Calculate the contribution margin per labour hour for each of the three products. (3 marks) **Workings:**

|  |
| --- |
| **Contribution Margin Per Labour Hour** |
|  | **Aprons** | **Tea-Towels** | **Oven Gloves** |
| **Contribution Margin Per Unit** | $5 | $3 | $11 |
| **Hours To Produce One Unit** | 0.3 | 0.2 | 0.4 |
| **Contribution Margin Per Labour Hour** | **$16.70** | **$15.00** | **$27.50** |

1. Based on the information you have calculated and been provided with, including maximum estimated sales volumes, what should the company produce of each product in order to maximise its profit? (6 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Discusses the production levels of each item to maximize profit in detail and justifies decision based on logical reasoning. | 6 |
| Discusses the production levels of each item to maximize profit in some detail and justifies decision based on logical reasoning. | 5 |
| Discusses the production levels of each item to maximize profit and justifies decision. | 4 |
| Discusses the production levels of each item to increase profit and justifies decision. | 3 |
| Discusses the production levels of some items to increase profit and justifies decision with limited detail. | 2 |
| Discusses the production levels of some items to increase profit and justifies decision with very limited detail. | 1 |
| **Answer could include, but is not limited to:** |
| **Explanation:*** Produce oven gloves at maximum estimated sales volume based on the contribution margin per labour hour being the highest.
* Produce aprons at maximum estimated sales volume based on the contribution margin per labour hour being the second highest.
* Produce tea towels at a production level of 5 000 units, which is 10 000 units below maximum estimated sales volume however, the tea towels have the lowest contribution margin per labour hour.
 |

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|  |