**Question 1**

|  |  |  |
| --- | --- | --- |
|  | **Product A** | **Product B** |
| No of Units Produced | 400,000.00 | 75,000.00 |
| Production rate (Units per Machine Hour) | 10.00 | 5.00 |
| Machine Hours | 40,000.00 | 15,000.00 |
|  |  |  |
| Production Overhead | 440,000.00 |  |
| Total Machine Hours | 55,000.00 |  |
| **Production Overhead Per Hour** | **8.00** |  |
|  |  |  |
|  | **Product A** | **Product B** |
| Production Overhead Per Unit | 0.80 | 1.60 |
| Variable Manufacturing Cost | 3.00 | 5.00 |
| Inventoriable cost per unit | 3.80 | 6.60 |

|  |  |  |
| --- | --- | --- |
| **Income Statement - Absorption Costing** | |  |
| Total Sales | 2,535,000 |  |
| Less COGS | 1,821,000 |  |
| **Gross Profit** | **714,000** |  |
| Less Selling expenses | 635,000 |  |
| **Income Before Tax** | **79,000** |  |
|  |  |  |
| **Closing Stock Value** |  |  |
|  | **Product A** | **Product B** |
| Finished Goods (units) | 25,000 | 15,000 |
| Total Cost | 95,000 | 99,000 |

|  |  |  |
| --- | --- | --- |
|  | **Product A** | **Product B** |
| Sale Price | 5.00 | 11.00 |
| Total Variable Cost | 4.00 | 7.00 |
| Contribution Margin | 1.00 | 4.00 |
|  |  |  |
| **Income Statement - Variable Costing** | |  |
| Sales | 2,535,000 |  |
| Less Variable Costs | 1,920,000 |  |
| **Contribution Margin** | **615,000** |  |
|  |  |  |
| Less Fixed Cost |  |  |
| Manufacturing OH | 440,000 |  |
| Selling OH | 140,000 |  |
| Total Fixed Cost | 580,000 |  |
| **Net Income** | **35,000** |  |

|  |  |  |
| --- | --- | --- |
| **Closing Stock Value** |  |  |
|  | **Product A** | **Product B** |
| Finished Goods (units) | 25,000 | 15,000 |
| Product Cost | 3 | 5 |
| **Closing Stock Value** | **75000** | **75000** |

1. The profit under the two models is different because of fixed manufacturing overhead that becomes the part of ending inventory under absorption costing system. Specifically, ending inventory absorbs a portion of fixed manufacturing overhead which reduces the burden of the current period leading to a higher profit.

**Question 2 – Part A**

|  |  |
| --- | --- |
| Target Profit after Tax | 500,000.00 |
| Target Profit before Tax | 769,230.77 |
|  |  |
| Contribution margin Per Unit | 1,625.00 |
| Target Profit + Fixed Cost | 1,049,650.77 |
|  |  |
| **No of Units to be sold** | **645.94** |

|  |  |
| --- | --- |
| **No of Units** | **707** |
|  |  |
| Sales | 2,828,000.00 |
| **Less VC** | **1,679,125.00** |
| Gross Profit | 1,148,875.00 |
| Less Fixed Cost | 280,420.00 |
| **PBT** | **868,455.00** |
| **PAT** | **564,495.75** |
|  |  |
| PAT margin | 20% |
|  |  |
| **Revenue Required** | **2,828,000.00** |

**Question 2 – Part B**

|  |  |  |
| --- | --- | --- |
|  | **Bat** | **Glove** |
| Sale Price | 10.00 | 15.00 |
| Contribution | 4.00 | 5.00 |
| VC | 6.00 | 10.00 |
| Sales Mix | 6.00 | 2 |
|  |  |  |
| **Weighted Avg Contributions Margin** | **4.25** |  |
|  |  |  |
| Fixed Cost | 170,000.00 |  |
| Target Profit | 127,500.00 |  |
| Target Profit + Fixed Cost | 297,500.00 |  |
| Overall BE unit | 70,000.00 |  |
|  |  |  |
| **NO of Gloves that should be sold** | **17,500.00** |  |
| **No of Bats that should be sold** | **52,500.00** |  |

|  |  |  |
| --- | --- | --- |
| Actual Revenue | 800,000 |  |
|  |  |  |
|  | **Bat** | **Glove** |
| Sales Mix | 5 | 2 |
| Sales Breakup | 571,429 | 228,571 |
| No of Units | 57,143 | 15,238 |
|  |  |  |
| Contribution margin | 228,571 | 76,190 |
|  |  |  |
| Total Contribution Margin | 304,762 |  |
| Less Fixed Cost | (170,000) |  |
| **Profit** | **134,762** |  |

1. Operating leverage is the proportion of fixed costs within the total cost structure. Manager should take operating leverage into consideration when making decisions as it reflects the risk associated with the cost structure. Similarly, the higher the operating leverage more sensitive profits will be to changes in volume.

**Question 3**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Make** | **Buy** | **Difference** |
| DM | 12.00 |  | 12.00 |
| DL | 1.60 |  | 1.60 |
| Variable Manufacturing OH | 1.00 |  | 1.00 |
| Purchase Cost |  | 16.00 | (16.00) |
| **Total Relevant Cost** | **14.60** | **16.00** | **(1.40)** |
| Total Units |  |  | **120,000** |
| Decrease in Income |  |  | **(168,000)** |
|  |  |  |  |
| **Profit Impact** |  |  | **(168,000)** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | **Make** | | | **Buy** | **Difference** |
| DM | | | 12.00 | | |  | 12.00 |
| DL | | | 1.60 | | |  | 1.60 |
| Variable Manufacturing OH | | | 1.00 | | |  | 1.00 |
| Purchase Cost | | |  | | | 16.00 | (16.00) |
| **Total Relevant Cost** | | | **14.60** | | | **16.00** | **(1.40)** |
| Total Units | | |  | | |  | **155,000** |
| Decrease in Income | | |  | | |  | **(217,000)** |
|  | | |  | | |  |  |
|  | | |  | | |  |  |
|  | | | **Make** | | | **Buy** | **Difference** |
| Decrease in Income | | |  | | |  | (217,000.00) |
| Opportunity Cost | | | 834,750.00 | | |  | 834,750.00 |
| **Total Impact** | | |  | | |  | **617,750.00** |
|  | | |  | | |  |  |
| **Profit Impact** | | |  | | |  | **617,750** |
| **Opportunity Cost Working** |  | |  |
| Sale Price |  | | 90.00 |
| Variable Cost |  | |  |
| DM | 30.00 | |  |
| DL | 12.40 | |  |
| Purchase of Mounting HW | 16.00 | |  |
| OG | 7.75 | |  |
| Total VC |  | | 66.15 |
| **Contribution margin** |  | | **23.85** |
|  |  | |  |
| Incremental Units |  | | 35000 |
| Total Incremental Margin |  | | 834,750.00 |

1. Solutions to each part are as below
2. When excess capacity is utilized fixed costs are not relevant. The cost basis will only be the variable cost of order.

ii. The cost will include the cost for purchased capacity.

iii. I will not use the method to cost the special job but would rather use the appropriate cost driver driving cost for the special order.

**Question 4**

|  |  |  |
| --- | --- | --- |
| Total Direct Labor Hours | 55,000.00 |  |
| Total OH | 1,410,000.00 |  |
| **Overhead absorption rate** | **25.64** |  |
|  |  |  |
|  |  |  |
|  | **Part A** | **Part B** |
| DM & DL Per Unit | $17.06 | $12.52 |
| Labor Hours Per Unit | $0.50 | $0.24 |
| Overhead Per Unit | 12.82 | 6.10 |
| **Per Unit Cost** | **$30.38** | **$18.86** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Cost** | **Driver** | **Total Cost Driver** | **Cost / Driver** |
| Setup costs | 60,000.00 | Machine Hours | 37,500.00 | 1.60 |
| Machine costs | 350,000.00 | Machine Hours | 37,500.00 | 9.33 |
| Other | 1,000,000.00 | Labor Hours | 55,000.00 | 18.18 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **Part A** | **Part B** |  |  |
|  |  |  |  |  |
| Per Unit Machine Hours | 0.26 | 0.57 |  |  |
| Per Unit Labor Hours | $0.50 | $0.24 |  |  |
|  |  |  |  |  |
|  | **Part A** | **Part B** |  |  |
| DM & DL Per Unit | 17.06 | 12.52 |  |  |
| Per Unit Setup Cost | 0.41 | 0.91 |  |  |
| Per Unit Machine Cost | 2.38 | 5.33 |  |  |
| Other Overheads Per unit | 9.09 | 4.33 |  |  |
| **Per Unit Cost** | **28.94** | **23.10** |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Driver** | **Total Cost Driver** | **Cost / Driver** |
| Setup costs | 60,000.00 | Number of production runs | 60 | 1,000 |
| Machine costs | 350,000.00 | Number of machine hours | 37,500 | 9 |
| Purchasing and Receiving costs | 420,000.00 | Number of purchasing and receiving orders processed | 280 | 1,500 |
| Engineering Costs | 400,000.00 | Number of engineering hours | 20,000 | 20 |
| Materials handling cost. | 180,000.00 | Number of material moves | 180 | 1,000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **Part A** | **Part B** |  |  |
| Per Unit Production Run | 0.0002 | 0.0019 |  |  |
| Per Unit Machine Hours | 0.2550 | 0.5714 |  |  |
| Per Unit purchasing and receiving orders processed | 0.0008 | 0.0095 |  |  |
| Per Unit engineering hours | 0.1000 | 0.4762 |  |  |
| Per Unit material moves | 0.0010 | 0.0038 |  |  |
|  |  |  |  |  |
|  | **Part A** | **Part B** |  |  |
| Setup costs | 0.20 | 1.90 |  |  |
| Machine costs | 2.38 | 5.33 |  |  |
| Purchasing and Receiving costs | 1.20 | 14.29 |  |  |
| Engineering Costs | 2.00 | 9.52 |  |  |
| Materials handling cost. | 1.00 | 3.81 |  |  |
| **Per Unit Overhead Cost** | **6.78** | **34.86** |  |  |

1. Activity based costing is not applied by companies primarily because collection of required data is often difficult or the required data is not recorded in company accounting / information systems.
2. In order to improve the overall profitability the company must change its product mix in a way that greater quantity of sales is made for product producing higher margin using overhead costs under ABC.