## HILTON CHAPTER P5-54 & P 7-34 PROBLEM SOLUTIONS

## Problem 5-54

|  |  |  |  |  |  |  |
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| 1. | Activity Cost Pool | | | | | Type of Activity |
|  | I: | | Machine-related costs | | | Unit-level |
|  | II: | | Setup and inspection | | | Batch-level |
|  | III: | | Engineering | | | Product-sustaining-level |
|  | IV: | | Plant-related costs | | | Facility-level |
|  | | | | | | | | |
| 2. | Calculation of pool rates: | | | | | | |
|  |  |  | |  |  | | |
|  | I: | Machine-related costs: | |  |  | | |
|  |  |  | | = | $100 per machine hr. | | |
|  |  |  | |  |  | | |
|  | II. | Setup and inspection: | |  |  | | |
|  |  |  | | = | $9,000 per run | | |
|  |  |  | |  |  | | |
|  | III. | Engineering: | |  |  | | |
|  |  |  | | = | $1,800 per change order | | |
|  |  |  | |  |  | | |
|  | IV. | Plant-related costs: | |  |  | | |
|  |  |  | | = | $100 per sq. ft. | | |

## Problem 5-54 (Continued)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. | Unit costs for odds and ends: | | | | | |  | | | | | | | | |
|  |  |  | | | | | | | | |  | |  | | |
|  | I: | Machine-related costs: | | | | | | | | |  | |  | | |
|  |  |  | Odds: $100 per machine hr.8 machine hr. per unit | | | | | | | | | | | = | $800 per unit |
|  |  |  | Ends: $100 per machine hr.2 machine hr. per unit | | | | | | | | | | | = | $200 per unit |
|  |  |  |  | | | | | | | | | | |  |  |
|  |  |  | | | | | | | | | | | |  |  |
|  | II: | Setup and inspection: | | | | | | | | | | | |  |  |
|  |  |  | Odds: $9,000 per run ÷ 25 units per run | | | | | | | = | | $360 per unit | | | |
|  |  |  | Ends: $9,000 per run ÷ 125 units per run | | | | | | | = | | $72 per unit | | | |
|  |  |  | | | | | | | | | | | |  |  |
|  | III: | Engineering: | | | | | | | | | | | |  |  |
|  |  |  | | Odds: |  | | | | | | | | | | |
|  |  |  | | |  |  | |  |  | | | | | | |
|  |  |  | | | = |  | | = | $270 per unit | | | | | | |
|  |  |  | | Ends: |  | | | | | | | | | | |
|  |  |  | | | = |  | | = | $18 per unit | | | | | | |
|  |  |  | | | | | | | | | | | | | |
|  | IV. | Plant-related costs: | | | | | | | | | | | | | |
|  |  |  | | Odds: |  | | | | | | | | | | |
|  |  |  | | | = |  | | = | $307.20 per unit | | | | | | |
|  |  |  | | Ends: |  | | | | | | | | | | |
|  |  |  | | | = |  | | = | $15.36 per unit | | | | | | |

## Problem 5-54 (Continued)

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| 4. | | New product cost per unit using the ABC system: | | |
|  |  | | Odds | Ends |
|  | | Direct material | $ 160.00 | $240.00 |
|  | | Direct labor | 120.00 | 180.00 |
|  | | Manufacturing overhead: |  |  |
|  | | Machine-related | 800.00 | 200.00 |
|  | | Setup and inspection | 360.00 | 72.00 |
|  | | Engineering | 270.00 | 18.00 |
|  | | Plant-related | 307.20 | 15.36 |
|  | | Total cost per unit | $2,017.20 | $725.36 |
|  | | | | |
| 5. | | New target prices: | | |
|  | |  | Odds | Ends |
|  | | New product cost (ABC) | $2,017.20 | $725.36 |
|  | | Pricing policy | ×  120% | ×  120% |
|  | | New target price | $2,420.64 | $870.43 | (rounded) |
|  | |  | | |
| 6. | | Full assignment of overhead costs: |  |  |
|  | |  | Odds | Ends |
|  | | Manufacturing overhead costs: |  |  |
|  | | Machine-related | $ 800.00 | $ 200.00 |
|  | | Setup and inspection | 360.00 | 72.00 |
|  | | Engineering | 270.00 | 18.00 |
|  | | Plant-related | 307.20 | 15.36 |
|  | | Total overhead cost per unit | $1,737.20 | $ 305.36 |
|  | | × Production volume | ×  1,000 | ×   5,000 |
|  | | Total overhead assigned | $1,737,200 | $1,526,800 |
|  | |  | Total = $3,264,000 | |

## Problem 5-54 (Continued)

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| 7. | | Cost distortion: | | |  | | |  | | |
|  | |  | | | Odds | | | Ends | | |
|  | | Traditional volume-based costing system: |  | | |  | |  |
|  | | reported product cost | $ 664.00 | | |  | | $996.00 |
|  | | Activity-based costing system: |  | | |  | |  |
|  | | reported product cost | 2,017.20 | | |  | | 725.36 |
|  | | Amount of cost distortion per unit | $(1,353.20 | | | ) | | $270.64 |
|  | |  | |  | | | |  | | |
|  | |  | | Traditional system undercosts odds by $1,353.20 per unit | |  | | Traditional system overcosts ends by $270.64 per unit | | |
|  | |  | |
|  | |  | |
|  | |  | |
|  | |  | |
|  | |  | |
|  | |  | |  | | | |  | | |
|  | | Production volume | | ×   1,000 | |  | | ×  5,000 | | |
|  | | Total amount of cost distortion for entire | |  | |  | |  | | |
|  | | product line | | $(1,353,200) | |  | | $1,353,200 | | |
|  | |  | |  | | | | | | |
|  | |  | | Sum of these two  amounts is zero. | | | | | | |
|  | |  | | |  | | | | | |

## Problem 7-34

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| 1. | Break-even point in sales dollars, using the contribution-margin ratio: | |
|  |  | |
|  |  | |
| 2. | Target net income, using contribution-margin approach: | |
|  |  | |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| 3. | New unit variable manufacturing cost | = $12 × 110% |
|  |  | = $13.20 |
|  | Break-even point in sales dollars: |  |
|  |  | |

## Problem 7-34 (continued)

|  |  |
| --- | --- |
| 4. | Let *P* denote the selling price that will yield the same contribution-margin ratio: |
|  |  |
|  |  |
|  | Check: New contribution-margin ratio is: |
|  |  |