## HILTON CHAPTER 3&4 P3-54 AND P4-27 PROBLEM SOLUTION

## Problem 3-54

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. |  | | | | |
| 2. | Calculation of applied manufacturing overhead: | | | | |
|  | Applied manufacturing overhead = machine hrs. used x predetermined overhead rate  $36,000 = 6,000 hrs. x $6 per hr. | | | | |
|  |  |  |  | | | |
| 3. | Underapplied overhead | = | actual overhead – applied overhead | | | |
|  | $2,000 | = | $38,000 – $36,000 | | | |
|  |  |  |  | | | |
| 4. | Cost of Goods Sold | | | 2,000 |  | |
|  | Manufacturing Overhead | | |  | 2,000 | |

## Problem 3-54 (continued)

|  |  |  |
| --- | --- | --- |
| 5. | (a) | Calculation of proration amounts: |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Account | Explanation | Amount\* | Percentage | Calculation of Percentage |
| Work in Process | Job B19 only | $10,800 | 30% | 10,800  36,000 |
| Finished Goods | Job T28 only | 18,000 | 50% | 18,000  36,000 |
| Cost of Goods |  |  |  |  |
| Sold | Job M07 only | 7,200 | 20% | 7,200  36,000 |
| Total |  | $36,000 | 100% |  |
|  | | | | |
| \*Machine hours used on jobpredetermined overhead rate. | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Account | | | Underapplied Overhead | × | Percentage | | Amount Added to Account | | |
| Work in Process | | | $2,000 | × | 30% | | $  600 | | |
| Finished Goods | | | 2,000 | × | 50% | | 1,000 | | |
| Cost of Goods Sold | | | 2,000 | × | 20% | | 400 | | |
| Total | | |  |  |  | | $2,000 | | |
|  |  | | | | | | | |
| (b) | Journal entry: | | | | | | | |
|  | |  | | | |  | |  | |
|  | | Work-in-Process Inventory | | | | 600 | |  | |
|  | | Finished-Goods Inventory | | | | 1,000 | |  | |
|  | | Cost of Goods Sold | | | | 400 | |  | |
|  | | Manufacturing Overhead | | | |  | | 2,000 | |

## Problem 4-27

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. | | Physical flow of units: | | | |  | | |
|  | |  | | | | Physical Units | | |
|  | | Work in process, 1/1/x4 | | | | 210,000 | | |
|  | | Units started during 20x4 | | | | 1,100,000 | | |
|  | | Total units to account for | | | | 1,310,000 | | |
|  | |  | | | |  | | |
|  | | Units completed and transferred out during 20x4 | | | | 1,000,000 | | |
|  | | Work in process, 12/31/x4 | | | | 310,000 | | |
|  | | Total units accounted for | | | | 1,310,000 | | |
|  |  | |  |  |  | |  | | |
| 2. | Equivalent units: | |  |  |  | |  | | |
|  |  | | Physical Units | Percentage of Completion with Respect to Conversion | Equivalent Units | | | | | |
| Direct   Material | | | Conversion | | |
|  | Work in process, 1/1/x4 | | 210,000 | 83% |  | | |  | | |
|  | Units started during 20x4 | | 1,100,000 |  |  | | |  | | |
|  | Total units to account for | | 1,310,000 |  |  | | |  | | |
|  | Units completed and transferred  out during 20x4 | | 1,000,000 | 100% | 1,000,000 | | | 1,000,000 | | |
|  | Work in process, 12/31/x4 | | 310,000 | 48% | 310,000 | | | 148,800 | | |
|  | Total units accounted for | | 1,310,000 |  | \_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_ | | |
|  | Total equivalent units | |  |  | 1,310,000 | | | 1,148,800 | | |

## Problem 4-27 (Continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 3. | Costs per equivalent unit: | | |  |  |  | |
|  |  | | | Direct Material | Conversion | Total | |
|  | Work in process, 1/1/x4 | | | $  300,000 | $ 620,800a | $  920,800 | |
|  | Costs incurred during 20x4 | | | 1,403,000 | 3,400,000b | 4,803,000 | |
|  | Total costs to account for | | | $1,703,000 | $4,020,800 | $5,723,800 | |
|  | Equivalent units | | | 1,310,000 | 1,148,800 |  | |
|  | Costs per equivalent unit | | | $1.30c | $3.50d | $4.80e | |
|  |  |  |  | | | |  |
|  | aConversion cost | = | direct labor + overhead | | | |  |
|  |  | = | direct labor + (100%direct labor) | | | |  |
|  |  | = | 200%direct labor | | | |  |
|  |  | = | 200%$310,400 | | | |  |
|  |  | = | $620,800 | | | |  |
|  | bConversion cost | = | 200%direct labor | | | |  |
|  |  | = | 200%$1,700,000 | | | |  |
|  |  | = | $3,400,000 | | | |  |
|  | c$1.30 = $1,703,000 ÷ 1,310,000 | | | | | |  |
|  | d$3.50 = $4,020,800 ÷ 1,148,800 | | | | | |  |
|  | e$4.80 = $1.30 + $3.50 | | | | | |  |

## Problem 4-27 (Continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4. | Cost of ending inventories: |  | |  | |  |
|  |  |  | |  | |  |
|  | Cost of goods completed and transferred out: |  | |  | |  |
|  |  |  | | | |  |
|  |  | 1,000,000$4.80 | | | $4,800,000 | |
|  |  | | | |  |  |
|  | Cost remaining in 12/31/x4 work-in-process inventory: | | | |  |  |
|  |  |  | | |  |  |
|  | Direct material: |  | | |  |  |
|  |  |  | | |  |  |
|  |  | 310,000$1.30 | | |  | $403,000 |
|  |  |  | | |  |  |
|  | Conversion: |  | | |  |  |
|  |  |  | | |  |  |
|  |  | 148,800$3.50 | | |  | 520,800 |
|  |  | | | |  |  |
|  | Total cost of 12/31/x4 work in process | | | |  | $923,800 |
|  |  | |  | |  |  |
|  | Check: Cost of goods completed and transferred out | | | | $4,800,000 | |
|  | Cost of 12/31/x4 work-in-process inventory | | | | 923,800 | |
|  | Total costs accounted for | | | | $5,723,800 | |
|  |  | | | |  |  |
|  | The cost of the ending work-in-process inventory is $923,800. | | | |  |  |
|  |  | | | | | |
|  | Ending finished-goods inventory: Of the 1,000,000 units completed during 20x4, 250,000 units remain in finished-goods inventory on December 31, 20x4. Therefore: | | | | | |
|  |  | | | | | |
|  | $4,800,000(250,000 ÷ 1,000,000) = $1,200,000\* | | | | | |
|  |  | | | | | |
|  | The cost of the ending finished-goods inventory is $1,200,000. | | | | | |
|  |  | | | | | |
|  | \*Also, $1,200,000 = 250,000$4.80 per unit | | | | | |