Accounting for Materials

Chapter Three

Accounting for Materials

نتناول في هذا الفصل:

1. مفهوم كمية الطلب الاقتصادية.
2. تقييم المخزون والمحاسبة عن المواد.
3. مفهوم الإنتاج بالوقت المحدد.
4. الفرق بين القيود المحاسبية في النظام التقليدي ونظام الإنتاج بالوقت المحدد.

Economic Order Quantity (EOQ):

EOQ = $\sqrt{ 2CN/K}$

where
EOQ = Economic order quantity

C = cost of placing an order تكلفة اعداد امر الشراء

N = number of units required annuallyعدد الوحدات المطلوبة سنوياً

K = annual carrying cost per unit of inventory التكلفة الدفترية السنوية لكل وحدة من المخزون

To illustrate this formula, assume that the following data have been determined by analyzing the factors relevant to materials inventory for Pacific Paint Company:

Number of gallons of material required annually . . . . . . . . . . . . . . . . . . . . . . . 10000
Cost of placing an order . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $ 10
Annual carrying cost per gallon of inventory . . . . . . . . . . . . . . . . . . . . . . . . . . $ 0.80

EOQ = $\sqrt{ 2×10×10000/0.80}$

 = $\sqrt{ 250000}$

 = 500 gallons

 **Q**: Brooklyn Bat Company, manufacturer of top-of-the-line baseball bats from Northern white ash, predicts that 8000 billets of lumber will be used during the year. (A billet is the quantity of rough lumber needed to make one bat.) The expected daily usage is 32 billets. It anticipates that it will cost $40 to place each order. The annual carrying cost is $0.25 per billet.

Required:

Calculate the economic order quantity (EOQ).

Q2: Patriot Company predicts that it will use 360,000 gallons of material during the year. The material is expected to cost $5 per gallon. Patriot anticipates that it will cost $72 to place each order. The annual carrying cost is $4 per gallon.

**Required:** Calculate the most economical order quantity (EOQ).

Inventory Evaluation Methods: FIFO, LIFO & Average costing

* First In First Out (FIFO)
* Last In First Out (LIFO)
* Average Cost Method (AVCO)

Cost of purchase materials = unit price × number of units purchased

Purchases of materials (direct and indirect) **on credit**.

|  |  |  |
| --- | --- | --- |
|  | Materials Control | ××× |
|  |  | Accounts Payable Control | ××× |

Purchases of materials (direct and indirect) **cash**:

|  |  |  |
| --- | --- | --- |
|   | Materials Control | ××× |
|  |  | Cash Control | ××× |

Purchases of materials (direct and indirect) cash & credit:

|  |  |  |
| --- | --- | --- |
|  | Materials Control | ××× |
|  |  | cash Control | ××× |
|  |  | Accounts Payable Control | ××× |

To record the flow of Requested direct materials from the Materials Inventory account into the Work in Process Inventory account, the entry in journal form is:

Or When spend Requested direct materials to the production:

|  |  |  |
| --- | --- | --- |
|  | Work-in-Process Control | ××× |
|  |  | Materials Control | ××× |

To record the flow of requested indirect materials from the Materials Inventory account into the Overhead account, the entry in journal form is:

|  |  |  |
| --- | --- | --- |
|  | Manufacturing Overhead Control | ××× |
|  |  | Materials Control | ××× |

When spend direct and indirect requested materials to the production:

|  |  |  |
| --- | --- | --- |
|  | Work-in-Process Control | ××× |
|  | Manufacturing Overhead Control | ××× |
|  |  | Materials Control | ××× |

Transfer from job order to other job order

|  |  |  |
| --- | --- | --- |
|  | Work-in-Process Control | ××× |
|  |  | Work-in-Process Control | ××× |

Q1: Use the following information to calculate the value of inventory during March 2014:

|  |  |  |
| --- | --- | --- |
| Mar 1 | Beginning Inventory | 68 units @ $15.00 per unit |
| 5 | Purchase | 140 units @ $15.50 per unit |
| 9 | Issue  | 94 units  |
| 11 | Purchase | 40 units @ $16.00 per unit |
| 16 | Purchase | 78 units @ $16.50 per unit |
| 20 | Issue  | 116 units  |
| 29 | Issue  | 62 units  |

Instructions:

* Determine ending inventory under: (1)FIFO, (2) LIFO, and (3) average cost.
* Prepare a summary journal entry for the materials requisitions.

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Purchases** | **Issue**  | **Balance** |
| Units | Unit Cost | Total | Units | Unit Cost | Total | Units | Unit Cost | Total |
| Mar 1 |   |   |   |   |   |   | 68 | $15.00 | $1,020 |
| 5 | 140 | $15.50 | $2,170 |   |   |   | 68 | $15.00 | $1,020 |
|   |   |   |   |   |   |   | 140 | $15.50 | $2,170 |
| 9 |   |   |   | 68 | $15.00 | $1,020 | 114 | $15.50 | $1,767 |
|   |   |   |   | 26 | $15.50 | $403 |   |   |   |
| 11 | 40 | $16.00 | $640 |   |   |   | 114 | $15.50 | $1,767 |
|   |   |   |   |   |   |   | 40 | $16.00 | $640 |
| 16 | 78 | $16.50 | $1,287 |   |   |   | 114 | $15.50 | $1,767 |
|   |   |   |   |   |   |   | 40 | $16.00 | $640 |
|   |   |   |   |   |   |   | 78 | $16.50 | $1,287 |
| 20 |   |   |   | 114 | $15.50 | $1,767 | 38 | $16.00 | $608 |
|   |   |   |   | 2 | $16.00 | $32 | 78 | $16.50 | $1,287 |
| 29 |   |   |   | 38 | $16.00 | $608 | 54 | $16.50 | $891 |
|   |   |   |   | 24 | $16.50 | $396 |   |   |   |

The following is a record T account of Materials Control for Baghdad Co. for the month of May 2014.

|  |  |  |  |
| --- | --- | --- | --- |
| Data | Details | Data | Details |
| May 1 | Balance400 units at 8000 | May 10 | Work-in process 300 units  |
| 12 | Cash 600 units at 15000 | 20 | Work-in process 590 units |
| 25 | Account payable 400 units at 12000 | 28 | Work-in process 38 units |
| 30 | Balance  |

Instructions:

Determine ending inventory under:

(1)FIFO, (2) LIFO, and (3) average cost.

Q:Use the following information to calculate the value of inventory on hand on Mar 31 during March 2014

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  | Value |
| April 1 | Beginning Inventory | 110 units @ $15 per unit | 1650 |
| 3 | Purchase | 140 units @ $16 per unit | 2240 |
| 9 | Issue  | 100 units  |  |
| 12 | Purchase | 60 units @ $17 per unit |  |
| 15 | Purchase | 100 units @ $16.50 per unit |  |
| 19 | Issue  | 120 units  |  |
| 28 | Issue  | 50 units  |  |

Instructions:

Determine ending inventory under FIFO

**Q**: The purchases and issues of rubber gaskets as shown in the records of HD Corporation for the month of November follow:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit Price |
| Nov. 1 Beginning balance | 30,000 | $4 |
|  4 Purchases | 10,000 | 5 |
|  5 Issued | 40,000 |  |
|  8 Purchases  | 50,000 | 5.5 |
|  15 Issued  | 20,000 |  |

**Required**: determine ending inventory under lifo .

**Q3**: The HD Corporation using first -in, first-out to evaluation inventory, The following The purchases and issues information for the month of November:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit cost |
| Nov. 1 Beginning balance | 30,000 |  $2 |
|  4 Purchases | 10,000 | 4 |
|  5 Issued | 30,000 |  |
|  8 Purchases  | 50,000 | ? |
|  15 Issued  | 5,000 |  |

If The total units ending inventory was 55000 at cost $320000.

**Required**: find unit cost for transaction on November 8.

**Q**: The purchases and issues of rubber gaskets as shown in the records of HD Corporation for the month of November follow:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit Price |
| Nov. 1 Beginning balance | 30,000 |  $3 |
|  4 Received | 10,000 | 3.1 |
|  5 Issued | 30,000 |  |
|  8 Received  | 50,000 | 3.3 |
|  15 Issued  | 20,000 |  |
|  22 Received  | 25,000 | 3.5 |
|  28 Issued | 30,000 |  |

**Required**: determine ending inventory under Last-in, first-out.

**Q**: Catskill Manufacturing, Inc., records the following use of materials during the month of June:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  | Materials Requisitions |
| Date | Req. No. | Use | Direct Materials | Indirect Materials |
| 1 | 110 | Material A, Job 10 | $20,000 |  |
| 5 | 111 | Material B, Job 11 | 18,000 |  |
| 9 | 112 | Material B, Job 12 | 16,000 |  |
| 12 | 113 | Factory supplies |  | $ 1,800 |
| 18 | 114 | Material C, Job 10 | 3,000 |  |
| 21 | 115 | Material D, Job 10 | 9,000 |  |
| 23 | 116 | Material D, Job 11 | 2,000 |  |
| 28 | 117 | Factory supplies |  | 1,300 |
| 30 | 118 | Factory supplies |  | 1,700 |

**Required**: Prepare a summary journal entry for the materials requisitions.

**فهوم وأهمية نظام الإنتاج في الوقت المحدد**

بات نظام الإنتاج في الوقت المحدد Just In Time من النظم التي تعتمد على مرتكزات نظرية وتعتبر أساساً للتطبيقات العملية في العديد من الشركات الصناعية. ويمكن تعريف نظام الإنتاج في الوقت المحدد بأنه" مجموعة من مفاهيم وأساليب الإنتاج أو هو فلسفة للمنظمة تسعي من خلالها إلى خفض مستويات المخزون مع الاستفادة بالمنافع الأخرى التي تتحقق من تطبيق هذا النظام". وبصفة عامة، فإن الإنتاج في ظل Jit موجه أساساً لتحقيق الفعالية، بينما يركز الإنتاج في ظل النظم التقليدية على الكفاية.

ويتعين عند تطبيق هذا النظام تقويم ودراسة الأوضاع الداخلية في الشركة خاصة موقف المخزون، وسير العمليات الإنتاجية والصيانة، وكذلك تقويم الظروف الخارجية المؤثرة على المنظمة، فضلاً عن تقويم علاقات الشركة مع الموردين والزبائن والعاملين.

إن أهم الفروق الأساسية للإنتاج في ظل النظم التقليدية وفي ظل الإنتاج في الوقت المحدد وأثرها على الرقابة فيما يلي:

1. أن الرقابة في ظل الإنتاج في الوقت المحدد ترتكز على العمليات الإنتاجية ومن ثم التأكيد على الجودة، كما أن الرقابة تتسم بالطابع الوقائي بدلاً من تخصيص قسم مستقل للجودة.
2. أن هناك جدولة للإنتاج في ضوء طلب الزبائن، وأن العمل يتم في شكل فريق، كما أن تقويم العناصر البشرية يتم في ضوء مدي إرضائهم للعملاء.
3. إن التعامل مع الموردين يتم في ضوء مواصفات محدودة ومع أقل عدد ممكن.

الفرق بين القيود المحاسبية في النظام التقليدي ونظام الومضات المرتدة

|  |  |  |  |
| --- | --- | --- | --- |
| Backflush System |  | Traditional System | transaction |
|  | ××× | Raw and In-Process |  | ××× | Materials | Purchasematerials |
| ××× | Accounts Payable |  | ××× | Accounts Payable |  |
|  |  | No Entry |  | ××× | Work in Process | Transfer Direct Materials  |
|  |  |  | ××× | Materials |  |
|  | ××× | Conversion Costs |  | ××× | Work in Process | Transfer indirect Materials |
| ××× | Materials |  | ××× | Materials |  |

**Q1**: The purchases and issues of rubber gaskets as shown in the records of HD Corporation for the month of November follow:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit Price |
|  4 Purchased | 15,000 | $3.1 |
|  5 Issued | 20,000 |  |
|  8 Purchased  | 30,000 | 3.3 |
|  15 Issued  | 20,000 |  |
|  22 Purchased  | 25,000 | 3.5 |
|  28 Issued | 30,000 |  |

If the beginning inventory on November. 1 balance (Value) was 120000$ the cost per unit was $30.

**Required**: determine ending inventory under first-in, first-out. (5 Marks)

**Q2**: The purchases and issues of rubber gaskets as shown in the records of HD Corporation for the month of November follow:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit Price |
| Nov. 1 Beginning balance | 30,000 |  $4 |
|  4 Purchases | 10,000 | 5 |
|  5 Issued | 40,000 |  |
|  8 Purchases  | 50,000 | 5.5 |
|  15 Issued  | 20,000 |  |

**Required**: determine ending inventory under lifo . (5 Marks)

**Q3**: The HD Corporation using first -in, first-out to evaluation inventory, The following The purchases and issues information for the month of November:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit cost |
| Nov. 1 Beginning balance | 30,000 |  $2 |
|  4 Purchases | 10,000 | 4 |
|  5 Issued | 30,000 |  |
|  8 Purchases  | 50,000 | ? |
|  15 Issued  | 5,000 |  |

If The total units ending inventory was 55000 at cost $320000.

**Required**: find unit cost for transaction on November 8. (5 Marks)

**Q4**: The beginning inventory of rubber gaskets for Emerald Corporation on June 1 was 12000 unit, the cost per unit was $3. The purchases and issues as shown in the following:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Value |
|  4 Purchased | 15000 | $60000 |
|  5 Issued | 20000 |  |
|  8 Purchased  | 30000 | 150000 |
|  15 Issued  | 20000 |  |

**Required**: determine ending inventory under first-in, first-out. (10 Marks)

**Q5**: The purchases and issues of rubber gaskets as shown in the records of HD Corporation for the month of November follow:

|  |  |  |
| --- | --- | --- |
| The purchases and issues | Units | Unit Price |
| Nov. 1 Beginning balance | 30,000 | $3 |
|  4 Received | 10,000 | 3.1 |
|  5 Issued | 30,000 |  |
|  8 Received  | 50,000 | 3.3 |
|  15 Issued  | 20,000 |  |

**Required**: determine ending inventory under Average cost . (5 Marks)