**CHAPTER TWO**

**ACCOUNTING FOR PLANT ASSETS & INTANGIBLE ASSETS**

* 1. **Definition & Nature of Plant Assets:**

 Plant Assets are long-lived tangible assets that are relatively permanent or fixed in nature, used in the operation of the business in the normal/ordinary course of business.Examples: Land, Land Improvement, Building, Equipment, Furniture, Natural Resource etc. Plant assets are viewed as a collection of service potentials that are used up or consumed over a long period of time; purchase of plant assets consist advance payment or prepayment for expected service. Plant assets are generally characterized as:

* **They have a useful life of more than one year**. This distinguishes them from current assets, which a company expects to use up or convert to cash within one year or during its operating cycle, whichever is longer. Although there is no strict rule for defining the useful life of a long-term asset, the most common criterion is that the asset be capable of repeated use for at least a year. Included in this category is equipment used only in peak or emergency periods, such as electric generators.
* **They are used in the normal operation of a business.** Assets not used in the normal course of business, such as land held for speculative reasons or buildings no longer used in ordinary business operations, should not be considered as plant assets.
* **They are not intended for resale to customers.** An asset that a company intends to resell to customers should be classified as inventory, **not** as a plant asset no matter how durable it is. For example, a printing press that a manufacturer offers for sale is part of the manufacturer’s inventory, but it is a long-term plant asset for a printing company that buys it to use in its operations.
	1. **Initial Cost of Plant Assets**

 The cost of plant asset includes all expenditures reasonable & necessary in acquiring the asset & placing it in a condition ready for use. Only reasonable and necessary costs considered as part of plant asset cost, expenses incurred due to carelessness & vandalism are excluded from the cost of plant asset. Since they do not add value to the asset such costs are usually reported as a loss or expense. The initial cost accumulation of fixed/plat assets are described below.

* **Land:**

 It is an asset considered to have unlimited life & not subjected to depreciation. The cost of land includes purchase price, commission to brokers, legal fee for transferring the ownership title, delinquent tax paid by the purchaser of land (tax to be paid by the buyer to the government in relation to the purchase of land), surveying fee (cost incurred in determining the boundary of the land), cost of removing /razing/demolishing old building from the purchased land.

**Example:**

On April 1, 2012 XYZ Company purchased land at a cost of Birr 100,000.The Company received Birr 7,000 for scrap from the demolition of an old building that was razed/removed from the land at a cost of Birr 10,000. A broker’s fee of Birr 2,000 was paid in connection to the purchased land.

**The Cost of the Land is determined as follows:**

Cash price (Negotiated Price)………………………………………………..Birr 100,000

Brokerage Fees………………………………………………………………… 2,000

Cost of razing (demolition) unwanted building…..Birr 10,000

**Less:** Salvage received……………………………….. (7,000) 3,000

**Total Cost of Land…………………………………………………….……..Birr 105,000**

* **Land Improvement:**

 It is an asset with limited life & subjected to depreciation. It includes improvement to land such as Fences, Parking lot, Plantation of trees, drive ways etc. All reasonable costs incurred are accumulated under the separate account titled **“Land improvement”**,which is separate from land.

* **Building:**

A building may be **purchased** or it may be **constructed**.

**Cost accumulation for purchased building:** it includes purchase price, repair & remodeling costs incurred prior to placing the building in use (such as painting, replacing new parts) etc. Repair costs incurred after placing the building on use, if the amount is not large, is treated as **repair expense.** If land & building are purchased together & if both are to be used, the cost should be divided in to two & separate ledger should be maintained for land & building.

**Cost accumulation for self constructed building:** it includes building permit fee, design & supervision fee, material & labor cost of construction, insurance against fire during construction, interest expense on money borrowed to construct the building.

* **Cost of Equipment:**

The term **“Equipment”** in accounting includes office equipment, store equipment, factory equipment, delivery equipment, machinery, furniture’s and fixtures, and similar fixed assets. The cost of such assets includes the invoice (purchase) price, transportation and handling charges, insurance on the equipment while in transit, assembling and installation costs, and costs of conducting trail runs. As indicated earlier, all costs of getting an asset ready for its intended use are costs of that asset.

* **Natural Resource:**

It includes resources such as mineral deposit, timber forests, oil wells etc. All reasonable costs incurred to get ready to extract the resources such as the cost of building access road to the natural resource deposit are part of the initial cost of natural resource.

* 1. **Depreciation of Plant Assets**

 As time passes all plant assets with exception of land lose their capacity to yield service, thus the cost incurred on such plant assets is gradually converted in to expense. This gradual conversion of the cost of plant assets in to expense is known as **Depreciation**. It is the process of allocating the cost of plant asset over its useful life. Depreciation is a cost allocation process, it is not a valuation process that is, depreciation has no connection with **market value**, and it is recorded regardless of the increase and decrease in market value of the asset. The periodic transfer of plant asset cost in to expense is recorded by debiting Depreciation Expense account & crediting Accumulated Depreciation. Depreciation expense is a non cash outlay expense; the credit is not to cash account. Accumulated Depreciation is a contra asset account, the balance in this account represent the expired portion of a plant asset cost. The unexpired portion of the cost of plant asset is its **book value**.

**Causes of Depreciation:**

There are two major factors that contribute to the decline in usefulness of plant asset. These are:

1. **Physical deterioration:** it refers to the wear & tears of asset due to passage of time or due to the action of elements such as sun, winds etc.
2. **Functional depreciation:** it refers to the process of becoming inadequate & out of date/ obsolete due to new invention. A plant asset is inadequate if its capacity is not sufficient to meet the demands of increased production; it is obsolete if the products it produce is no longer in demand or if newly invented type can produce better quality or at a great reduction in cost.

**Factors that affect the Computation of Depreciation:**

There are four major factors that affect the computation of depreciation. They are:

1. The original cost of plant asset.
2. Residual value/Salvage value/Trade in value /Scrap value: It is the estimated recoverable cost at time of retirement (the estimated selling price at the time of retirement).
3. The estimated useful life of the asset.
4. Depreciation methods.

A calendar month is the smallest unit of time to compute depreciation. All assets placed in service or retired from service before the 15th day of the month (before the first half of the month) are treated as if the event had occurred on the first day of the month. All plant asset addition /reductions after the 15th day of the month (after the first half of the month) are treated as if the event occurred on the first day of the next month.

Assume the company closes its account on December 31 of each year.

|  |  |  |
| --- | --- | --- |
|  | Date of Purchase /Placementof the Asset on Service | Depreciation for the Year Ended December 31, 2012 is Computed for: |
| Asset –X  | April 14, 2012 (1st half of the month) | April 1- Dec 31 (9 months) \*April included  |
| Asset –Y | April 16, 2012 (2nd half of the month) | May 1- Dec 31 (8 months) \*April excluded |

**Depreciation Methods:**

There are four most common methods of computing depreciation for plant assets. Those are:

1. Straight Line Method –**SLM**
2. Unit of Production/ **Output Method**
3. Double Declining Balance Method-**DDBM**
4. Sum of Years Digit Method-**SOYD**
5. **Straight Line Method (SLM)**

 It is the simplest & widely used method. Under this method depreciation expense is equally distributed over the life of the asset (uniform amount of depreciation each year). The use of this method is appropriate when:

* The usage of the asset is uniform from year to year (the asset provides uniform service from year to year).
* Time rather than obsolescence is the major factor limiting the asset life.

Annual Straight Line Depreciation = Original Cost - Salvage Value

 Estimated Useful Life

**Example:** Suppose a business enterprise acquired a new machine at a cost of Birr 27,000. It is estimated that the machine has a residual value of Birr 2,000 at the end of its estimated life of 5 years. The company closes its book on December 31 of each year.

**Required:** Compute the straight line depreciation for the year ending 2012 & record the journal entry. Assume further:

1. The Machine is acquired on January 1,2012
2. The Machine is acquired on September 15,2012
3. The Machine is acquired on September 18,2012
4. Prepare a depreciation table assume the Machine is purchased at the beginning of the year (January 1, 2012).

**Solutions:**

|  |  |  |
| --- | --- | --- |
| 1. **Acquired on January 1,2012**

\*\* Full year depreciation as of Dec.31,2012:27,000 - 2000 = **Birr 5,000** 5 \*\* Adjusting entry on Dec.31, 2012:Dr. Deprn. Exp.….Br 5,000 Cr. Acc. deprn ….Br 5,000 | 1. **Acquired on Sept. 15,2012**

\*\* 4 months depreciation as of Dec.31,2012(Including Sept)If full year depreciation is Birr 5,000, 4 months depreciation is: 4/12 \* 5,000 = **Birr** **1,667**\*\* Adjusting entry on Dec.31, 2012:Dr. Deprn. Exp.….Br1,667Cr. Acc. deprn ….Br 1,667 | 1. **Acquired on Sept.18,2012**

\*\* 3 months depreciation as of Dec.31,2012(Excluding Sept)If full year depreciation is Birr 5,000, 3 months depreciation is: 3/12 \* 5,000 = **Birr** **1,250**\*\* Adjusting entry on Dec.31, 2012:Dr. Deprn. Exp.….Br 1,250 Cr. Acc. deprn ….Br 1,250 |

1. **A SLM Depreciation Table, assume the Machine is purchased on January 1,2012:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years** | **Cost** | **Yearly Depreciation** | **Accumulated Depreciation** | **Book Value** |
| Dec 31, 2012: **End of 1st year** | Birr 27,000 | Birr 5,000 | Birr 5,000 | Birr 22,000 |
| Dec 31, 2013: **End of 2ndyear** |  | 5,000 | 10,000 | 17,000 |
| Dec 31, 2014: **End of 3rd year** |  | 5,000 | 15,000 | 12,000 |
| Dec 31, 2015: **End of 4th year** |  | 5,000 | 20,000 | 7,000 |
| Dec 31, 2016: **End of 5th year** |  | 5,000 | 25,000 | 2,000 |

**Note:** There are three important points to note from the depreciation table for the straight-line depreciation method. First, the depreciation is the same each year. Second, the accumulated depreciation increases uniformly. Third, the Book value decreases uniformly until it reaches the estimated residual value i.e. Birr 2,000.

**Computation of SLM Depreciation Rate**:

SLM rate = 100%/Estimated life of the asset

* For an asset with estimated life of 4 years, SLM rate is 100%/4 = 25% per year; this means yearly SLM depreciation is 25 % of the depreciable amount\*.

**\* Depreciable amount** = Cost – Salvage Value

**Example:** Consider the above example

 Depreciable amount = 27,000 - 2,000 = Birr 25,000

* SLM rate = 100%/5 =20%
* Yearly SLM depreciation =20/100 \* 25,000 = **Birr 5,000**
1. **Units of Production Method / Output Method**

 It provides depreciation expense that varies with the usage of the assets. Under this method the estimated life of the asset is expressed in terms of productive capacities such as number of units to be produced, number of hours worked, miles or kilometers driven etc. The use of this method is appropriate when usage of the asset differs from year to year on the bases of output.

Depreciation rate per unit = Original Cost - Salvage Value

 Total units of production

**Example:** Suppose a business enterprise acquired a new Machine at a cost of Birr 27,000. It is estimated that the Machine has a residual value of Birr 2,000 and estimated useful life of 10,000 hours. The company closes its book on December 31 of each year.

**Required:**

1. Compute depreciation & record journal entry for the year ended 2012 & 2013 assume the Machine is operated for 1,000 hours in 2012 & 500 hours in 2013.
2. Determine the balance of Accumulated Depreciation & Book Value at the end of 2013

**Solution:**

**Step 1:** Compute hourly depreciation rate

 Birr 27,000 - 2,000 = **Birr 2.5 per hour**

 10,000 hrs

|  |  |
| --- | --- |
| 1. **Year 2012, the Machine operated for 1,000 hours**

\*\* Depreciation as of Dec.31,2012: 1,000 hrs \* 2.5 per hr = **Birr 2,500**\*\* Adjusting Entry on Dec.31,2012:Dr. Deprn. Exp.….Br 2,500 Cr. Acc. deprn ….Br 2,500 | 1. **Year 2013, the Machine operated for 500 hours**

\*\* Depreciation as of Dec.31,2013: 500 hrs \* 2.5 per hr = **Birr 1,250**\*\* Adjusting Entry on Dec.31,2013:Dr. Deprn. Exp.….Br 1,250 Cr. Acc. deprn ….Br 1,250 |

 Machine Acc. deprn

 Birr 27,000 Birr 2,500

 1,250

 **Birr 3,750**

Accumulated Depreciation balance at the end of the 2nd year, Dec.31, 2013 = **Birr 3,750**

Book value at the end of the 2nd year, Dec.31, 2013 =Birr 27,000 – Birr 3,750 = **Birr 23,250**

1. **Double Declining Balance Method (DDBM)**

 It is an accelerated depreciation method in which depreciation is high in early years of the asset life & lower in later years. The double declining balance rate is double of the straight line rate and is applied to the undepreciated cost (book value of the asset).

**Example:**

* Acquisition cost: Birr 27,000; Acquisition date: January 1, 2012
* Estimated Residual Value: Birr 2,000; Estimated Useful life: 5 years
* The Company closes its book on December 31 of each year.

**Required:**

1. Compute the annual depreciation
2. Indicate the Balance of Accumulated Depreciation & Book Value at the end of each year.

**Solution:**

**Step 1:** Compute SLM rate: 100%/5 = **20%**

**Step 2:** Compute Double rate = 2 \* 20% = **40%**

**Step 3:** Compute the **1st** year depreciation by applying the double rate on original cost; ignore salvage value.

 1st year depreciation = 0.4 \* 27, 000 = **Birr 10,800**

**Step 4:** Compute subsequent year’s depreciation by applying double rate on book value.

 2nd year depreciation = 0.4 (27,000 - 10,800) = **Birr 6,480**

 3rd year depreciation = 0.4 (27,000 - 10,800 - 6,480) = **Birr 3,888**

 4th year depreciation = 0.4 (27,000 - 10,800 - 6,480 - 3,888) = **Birr 2,333**

 5th year depreciation = 0.4 (27,000 - 10,800 - 6,480 - 3,888 - 2,333) = **Birr 1,400**

 **Depreciation Table - Double Declining Balance Method**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years** | **Cost** | **Yearly Depreciation** | **Accumulated Depreciation** | **Book Value** |
| Dec 31, 2012: **End of 1st year** | Birr 27,000 | Birr 10,800 | Birr 10,800 | Birr 16,200 |
| Dec 31, 2013: **End of 2ndyear** |  | 6,480 | 17,280 | 9,720 |
| Dec 31, 2014: **End of 3rd year** |  | 3,888 | 21,168 | 5,832 |
| Dec 31, 2015: **End of 4th year** |  | 2,333 | 23,501 | 3,499 |
| Dec 31, 2016: **End of 5th year** |  | 1,400 | 24,901 | 2,099 |

**Note:** **DDBM** provides a declining periodic depreciation expense. The 5th year depreciation could be adjusted to Birr 1,499 i.e. Birr 1,400 + 99 excess of book value over salvage value, but the asset should no go below its salvage value of Birr 2,000. If the asset continues in use Birr 99 can be recorded with depreciation expense of the 6th year- 2017.

1. **Sum of Years Digit Method (SOYD)**

 It is another accelerated depreciation method in which depreciation is high in earliest years of the asset life & lower in latter years.

**Example:**

* Acquisition cost: Birr 27,000; Acquisition date: January 1, 2012
* Estimated Residual Value: Birr 2,000; Estimated Useful life: 5 years
* The Company closes its book on December 31 of each year.

**Required:**

1. Compute the annual depreciation
2. Indicate the Balance of Accumulated Depreciation & Book Value at the end of each year.

**Solution:**

**Step 1:** Determine theSum of the years digit (SOYD)

 SOYD = n (n+1)

 2

 = 5(5+1)

 2

 SOYD = 15

**Step 2:** Determine the depreciable amount: Birr 27, 000 - 2,000 = **Birr 25,000**

**Step 3:** Determine the periodic depreciation using the formula:

 Remaining life of the asset \* Depreciable amount

 SOYD

**Depreciation Table - Sum of Years Digit Method**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years** | **Cost** | **Yearly Depreciation** | **Accumulated Depreciation** | **Book Value** |
| Dec 31, 2012: **1st year** | Birr 27,000 | 5/15 \* 25,000 = Birr 8,333 | Birr 8,333 | Birr 18,667 |
| Dec 31, 2013: **2nd year**  |  |  4/15 \* 25,000 = 6,667 |  15,000 |  12,000 |
| Dec 31, 2014: **3rd year** |  |  3/15 \* 25,000 = 5,000 |  20,000 |  7,000 |
| Dec 31, 2015: **4th year** |  |  2/15 \* 25,000 = 3,333 |  23,333 |  3,667 |
| Dec 31, 2016: **5th year** |  |  1/15 \* 25,000 = 1,667 |  25,000 |  2,000 |

**Note:** SOYD provides a declining periodic depreciation expense. The book value at the end of the asset’s life is equal to salvage value of Birr 2,000.

If the asset is not purchased and placed on service at the beginning of the year, subsequent years depreciation are computed by combining different rates.

**Example:** Assume the asset is purchased on October 1, 2012.

**Depreciation Table - Sum of Years Digit Method**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years** | **Cost** | **Yearly Depreciation** | **Acc. deprn** | **Book Value** |
| Dec 31, 2012:  | Br 27,000 |  5/15 \* 25,000 \* 3/12= **Birr 2,083** | Birr 2,083  | Birr24,917  |
| Dec 31, 2013: |  | 5/15 \* 25,000 \* 9/12 = 6,2504/15 \* 25,000 \* 3/12 = 1,667 **7,917**  | 10,000 | 17,000 |
| Dec 31, 2014: |  | 4/15 \* 25,000 \* 9/12 = 5,0003/15 \* 25,000 \* 3/12 = 1,250 **6,250**  | 16,250 | 10,750 |
| Dec 31, 2015:  |  | 3/15 \* 25,000 \* 9/12 = 3,750 2/15 \* 25,000 \* 3/12 = 833 **4,583**  | 20,833 | 6,167 |
| Dec 31, 2016:  |  | 2/15 \* 25,000 \* 9/12 = 2,500 1/15 \* 25,000 \* 3/12 = 417 **2,917** | 23,750 | 3,250 |
| Dec 31, 2017: |  | 1/15 \* 25,000 \* 9/12 = **Birr** **1,250**  | 25,000 | **2,000** |

* 1. **Recording of Depreciation**

 Depreciation may be recorded by an entry at the end of each month, or the adjustment may be delayed until the end of the year. To record the periodic cost expiration (allocation) of plant asset, the expense account, depreciation expense is debited and the part of the entry that records the decrease in the plant asset is credited to a contra asset account entitled Accumulated Depreciation or Allowance for Depreciation. The use of this contra asset account permits the original cost to remain unchanged in the plant asset account. This facilitates the computation of periodic depreciation, the listing of both cost and accumulated depreciation on the balance sheet, and reporting required for property tax and income tax purposes.

**Note:** An exception to the general procedure of recording depreciation monthly or annually is often made when a plant asset is sold, traded-in, or discarded.

**Example:** What would be the journal entry to record the depreciation expense of a Machine that costs Birr 3000, with no salvage value and has an estimated economic life of 10 years if the straight-line method is applied? Assuming that the Machine was placed in service after two months had been elapsed in 2012 and depreciation expense is recorded on December 31 of each year.

**Solution:**

Annual SLM deprecation = Original Cost - Salvage Value

 Estimated Life

Annual SLM deprecation = Birr 3,000 - 0

 10

 Annual SLM deprecation = **Birr 300**

Since the Machine had been placed in service after two months had been elapsed in 2012; only depreciation for 10 months will be recognized.

Therefore, 10/12 \* Birr 300 = **Birr 250**

 **Dr.** Depreciation Expense……….. Birr 250

 **Cr.** Accumulated Depreciation…… Birr 250

* 1. **Revision of Periodic Depreciation**

 When a plant asset is acquired, depreciation estimates are carefully determined based on past experience with similar assets and other relevant information. The provisions for depreciation are only estimates, however, and it may be necessary to revise the estimated economic life and that of salvage value during the life of the asset. Unexpected physical deterioration or unforeseen obsolescence may make the useful life of the asset less than originally estimated. Good maintenance procedures, revision of operating procedures, or similar improvements may prolong the life of the asset beyond the original estimate.

**Example:** Assume that a delivery truck originally acquired for Birr 75,000 is estimated to have a 16 year life & a residual value of Birr 3000 has been deprecated by a straight line method. However, after 10 years of intensive use, it is determined that the delivery truck will last only 4 more years, (instead of 6 years) but its estimated residual value at the end of the four years will be Birr 6000, (instead of Birr 3000). Determine the depreciation expense for each of the remaining four (4) years.

**Solution:**

Annual SLM Depreciation = Birr 75,000 – 3,000

 16

 = **Birr 4,500**

 Original Cost of the Truck……………………………………………………Birr 75,000

**Less**: Accumulated depreciation already taken…………………………………. 45,000

 *(Birr 4,500 per year \* 10 years)*

 Book Value (Undepreciated Cost), end of tenth year……………………..Birr 30,000

**Less**: Revised Estimated Salvage Value………………………………………….. (6,000)

 Revised Remaining depreciable cost……………………………………….Birr 24,000

 **Revised annual depreciation Expense……………………………………...Birr 6,000**

*(Birr 24,000* ***÷*** *4 years)*

The new annual periodic depreciation expense is computed by dividing the revised depreciable cost of Birr 24,000 by the remaining revised useful life of 4 years. Therefore, the new periodic depreciation charge is Birr 6,000.

* 1. **Capital and Revenue Expenditures**
* **Capital Expenditures**

 The costs of acquiring fixed assets, adding to a fixed asset, improving a fixed asset, or extending a fixed assets useful life are called **Capital Expenditures.** Such expenditures are recorded by either debiting the asset account or its related accumulated depreciation account. They affect the depreciation expense of more than one period.

Common Capital Expenditures Related to Plant Assets are:

1. **Addition to Plant Assets:** An addition is an enlargement to the physical layout of a plant asset. Suppose for example, if a new wing is added to a building, the benefits from the expenditure will be received over several years, and the amount paid for it should be debited to the asset account.
2. **Betterment/Improvement:** Betterment, on the other hand, is an improvement that does not add to the physical layout of the asset. Installation of an air conditioning system is an example of betterment, Replacement of a concrete floor for a wooden floor is also betterment that will provide benefits over a number of years, so its cost should be charged (debited) to an asset account.
3. **Extraordinary Repairs:** Extraordinary repairs are repairs of a more significant nature. They affect the estimated residual value or estimated useful life of an asset. For example, a boiler for heating a building may be given a complete overhaul, at a cost of Birr 3000 that will prolong its economic life by 5 years. Extraordinary repairs are recorded by debiting the accumulated depreciation account, under the assumption that some of the depreciation previously recorded has now been eliminated. The effect of this reduction in the accumulated depreciation account is to increase the book value of the asset by the cost of the extraordinary repair. As a result, the new book value of the asset should be depreciated over the new estimated useful life.

**Example:** A Machine costing Birr 95,000 had no estimated residual value and an original estimated useful life of 20 years, has been depreciated for 15 years by the straight line method. At the very beginning of the 16th year, the Machine was given a major overhaul costing Birr 25,000.This expenditure extended the useful life of the Machine 10 years beyond the original estimate.

**Required:**

1. Record the necessary journal entry for extraordinary repairs.
2. Determine the revised book value of the Machine after extraordinary repairs.
3. Compute the depreciation expense for the remaining 10 years.

**Solutions:**

 Dr. Accumulated deprn ­\_ Machine…… Birr 25,000

 Cr. Cash……………………………………… Birr 25,000

 *(To record the extraordinary repair)*

 Cost of the Machine…………………………………………………………...Birr 95,000

**Less:** *Accumulated Depreciation Balance:*

 Accumulated deprn before extraordinary repair…….. Birr 71,250

 *(Birr 4,750 per year \* 15 years)*

**Less:** Extraordinary repair (Debited to Acc. deprn.)………… (25,000)

Balance of Accumulated Depreciation……………………....................................... (46,250)

Revised book value of the Machine after the extraordinary repair……………... **48,750**

Revised Annual periodic depreciation…………………………………………….**Birr 4,875**

 *(Birr 48,750* ***÷*** *10 years)*

* **Revenue Expenditures**

  **Revenue expenditures** are expenditures incurred in order to maintain the normal operating efficiency of the asset. Such expenditures are debited to expense account. They affect the expense of only the current period. Among the more usual kinds of revenue expenditures for plant asset are the repairs, maintenance, lubrication, Cleaning and inspection necessary to keep an asset in good working condition.

**Capital and Revenue Expenditures in Matching Rule**

The distinction between capital and revenue expenditures is important in applying the matching rule. For example, if the purchase of a machine that will benefit a company for several years is mistakenly recorded as revenue expenditure, the total cost of the machine becomes an expense on the income statement in the current period. As a result, current net income will be reported at a lower amount (understated), and in future periods, net income will be reported at a higher amount (overstated). If, on the other hand, revenue expenditure, such as the routine overhaul of a piece of machinery, is charged to an asset account, the expense of the current period will be understated. Current net income will be overstated by the same amount, and the net income of future periods will be understated.

* 1. **Disposal of Plant Asset**

 Plant assets that are no longer needed by the business are disposed. A disposed plant asset may be a fully depreciated (with no book value) or a not fully depreciated asset (with book value)

There are three ways of disposing a plant asset. Those are:

1. By Discarding
2. By Selling
3. By Trade in /Exchange

Common Procedures applied under all Methods of Disposal:

* Updating the balance of accumulated depreciation & book value to the date of disposal for a not fully depreciated asset.
* Debiting accumulated depreciation & crediting the original cost of the asset to remove both from the record.
1. **Disposal by Discarding**

 When a plant asset is no longer useful & when it has no market value, it is discarded/ thrown as worthless.

* **Discarding a fully Depreciated Asset:**

**Example:** A Machine that costs Birr 10,000 & no salvage value becomes fully depreciated on December 31, 2004 & discarded as worth less on March 31, 2005

**Required:** Show the journal entry of March 31, 2005

**Solution:**

Entry on March 31, 2005:

 Dr. Acc. Deprn - Machine.………… Birr 10,000

 Cr. Machine…………………………….. Birr 10,000

**Note:** Loss is not recorded when a fully depreciated asset is discarded.

* **Discarding a not fully Depreciated Asset:**

**Example:** A Machine that costs Birr 10,000 with no estimated salvage value is depreciated at a straight line rate of 10%. On December 31, 2004, accumulated depreciation balance, after adjusting entries, is Birr 7,000. On March 31, 2005, the asset is removed from service and discarded.

**Required:**

1. Determine the Balance of Accumulated Depreciation & Book Value as of March 31, 2005.
2. Show the journal entries of March 31, 2005.

**Solution:**

1. **Updating the Balance of Accumulated Depreciation & Book Value:**

Accumulated depreciation balances as of December 31, 2004 ………………….. Birr 7,000

**Add:** Depreciation Expense (Jan 1 - March 31, 2005). …………………………… 250

 *(Birr 10,000 \* 0.1\* 3* ***/****12)*

 Updated Accumulated Depreciation as of March 31, 2005……………………. **Birr 7,250**

 Updated Book Value as of March 31, 2005 (Birr 10,000 - 7,250) …………….... **Birr 2,750**

1. **Entries on March 31,2005:**
* *To Update Accumulated Depreciation:*

 **Dr.** Deprn Expense………… Birr 250

 **Cr.** Acc. Deprn - Machine.……… Birr 250

* *To Record the Disposal:*

 **Dr.** Acc. Deprn - Machine.……… Birr 7,250

 **Dr.** Loss on disposal …………… Birr 2,750

 **Cr.** Machine…………………………….. Birr 10,000

**Note:** Discarding an asset with a book value of Birr 2,750 is a loss to the company, thus a loss is recorded when a not fully depreciated asset is discarded. Loss on disposal appears in the other expense section of the income statement.

1. **Disposal by Sale**

When a plant asset is disposed by sale, there are three possibilities:

* Selling Price = Book Value; **No Gain No Loss**
* Selling Price < Book Value; **Loss**
* Selling Price > Book Value; **Gain**

**Example:** Assume that a Machine is purchased at a cost of Birr 12,000 with no estimated scrap value and is depreciated at a straight line rate of 10 %. On December 31, 2004, the accumulated depreciation balance, after adjusting entries, is Birr 9,000. On April 30, 2005, the asset is removed from service and sold.

**Required:**

1. Determine the Balance of Accumulated Depreciation & Book Value as of April 30, 2005.
2. Show the journal entries of April 30, 2005 assume that the machine is sold at a selling price of:
3. Birr 2,600
4. Birr 2,000
5. Birr 3,100

**Solution:**

1. **Updating the Balance of Accumulated Depreciation & Book Value:**

Accumulated depreciation balances as of December 31, 2004 ………………….. Birr 9,000

**Add:** Depreciation Expense (Jan 1 - April 30, 2005). ……………………………... 400

 *(Birr 12,000 \* 0.1\* 4* ***/****12)*

 Updated Accumulated Depreciation as of April 30, 2005……………………. **Birr 9,400**

 Updated Book Value as of March 31, 2005 (Birr 12,000 – 9,400) …………….. **Birr 2,600**

1. **Entries on April 30, 2005:**
* *To Update Accumulated Depreciation:*

 **Dr.** Deprn Expense………… Birr 400

 **Cr.** Acc. Deprn - Machine.……… Birr 400

* *To Record the Disposal:*

|  |  |  |
| --- | --- | --- |
| 1. **Entry when sold at Br 2,600**

**SP = BV, no gain no loss** | 1. **Entry when sold at Br 2,000**

**SP < BV, loss of Br 600** | 1. **Entry when sold at Br 3,100**

**SP > BV, gain of Br 500** |
| **Dr.** Cash………Br 2,600**Dr.** Acc. Deprn….. 9,400 **Cr.** Machine…….Br 12,000 | **Dr.** Cash…………….Br 2,000**Dr.** Loss on disposal….. 600**Dr.** Acc. Deprn………… 9,400 **Cr.** Machine…….Br 12,000 | **Dr.** Cash………Br 3,100**Dr.** Acc. Deprn….. 9,400 **Cr.** Machine…………Br 12,000 **Cr.** Gain on disposal……...500 |

**Note:** When an asset is disposed by sale, Cash is debited for the amount received; gain or loss is recorded for the difference between the selling price and the book value.

\*\*\* When an asset with no book value (fully depreciated asset) is disposed by sale gain is recorded for the amount of cash received.

1. **Disposal by Exchange /Trade in**

 Old asset may be exchanged for new asset having similar use (similar asset exchange) or for different asset (dissimilar asset exchange).

* **Similar Asset Exchange**

**Procedures in exchange of similar asset:**

* Market value of old asset /trade in allowance is estimated.
* Old asset at its market value + cash(boot) is exchanged for new similar asset, therefore, Price of new asset – market value of old asset = cash(boot) paid on exchange
* Gain or loss on exchange is measured by comparing market value of old asset with its Book Value.
* If the market value of old asset =Book Value; no loss or no gain
* If the market value of old asset < Book Value; loss
* If the market value of old asset > Book Value; gain

**There are two recording procedures:**

1. For financial reporting purpose:
* Loss on exchange is recorded , when loss occurs, the cost base of the new asset will be:

 Cost at which new asset is recorded = prices of new asset

* Gain on exchange is not recorded , when gain occurs, the cost base of the new asset will be:

 Cost at which new asset is recorded = book value + cash (boot) paid, or

 = Prices of new asset - gain

1. For income tax purpose:

Both loss & gain on exchange are not recorded; the cost base of the new asset will be:

 Cost at which new asset is recorded = Book Value of old asset + cash (boot) paid

 OR = Prices of new asset - gain

 = Prices of new asset +loss

**Example:**

* Original Cost of an old Machine……………Birr 45,000
* Updated Acc. Deprn. balance as of the date of disposal…..Birr 38,000
* Updated Book Value as of the date of disposal………….....Birr 7,000
* List price of the new Machine……………………………….Birr 55,000

Assume:

1. Trade in allowance is Birr 5,000
2. Trade in allowance is Birr 8,500

**Required:**

1. Compute the cash or boot paid on exchange
2. Determine gain /loss on exchange.
3. Record journal entry for financial reporting & income tax purpose

**Solutions:**

1. When the trade in allowance is Birr 5,000:
2. Price of new asset = market value of the asset + cash ( boot) paid

 Cash (boot paid) = price of new asset - market value of the old asset

 = 55,000 – 5,000

 = **Birr 50,000**

1. Market value of old asset < Book Value i.e. 5,000< 7,000 ; loss = **2,000**
2. Journal entry for financial reporting & income tax purpose
* **For financial reporting purpose:** loss of Birr 2,000 is recorded:

 Cost base of the new asset= list price of Birr 55,000

 Machine (new)…………………….. 55,000

 Loss on disposal…………………… 2,000

 Acc. deprecation …………………..38,000

Machine (old) ………………………….. 45,000

 Cash …………………………………….. 50,000

* **For income tax purpose**

 Cost base of the new asset = book value of old asset + cash (boot) paid

 = Prices of new asset +loss

 7,000+ 50,000 = Birr **57,000** or 55,000 + 2,000 = Birr **57,000**

 Machine (new)…………………….. 57,000

 Acc. deprecation ………………….. 38,000

Machine (old) ……………………….. 45,000

 Cash ………………………………….. 50,000

1. When the trade in allowance is Birr 8,500:
2. Price of new asset = market value of the old asset + cash ( boot) paid

 Cash (boot paid) = price of new asset - market value of the old asset

 = 55,000 – 8,500

 = Birr **46,500**

1. Market value of the old asset > book value i.e. 8,500 > 7,000; Gain = **1,500**
2. Journal entry for financial reporting & income tax purpose
* **For financial reporting purpose:**

 Gain of Birr1, 500 is not recorded.

 Cost base of the new asset = 7,000 + 46,500, or

 = 55,000 -1,500

 = Birr **53,500**

 Machine (new)………………………… 53,500

 Acc. deprecation ………………………. 38,000

Machine (old) ………………………….. 45,000

 Cash …………………………………….. 46,500

* **For income tax purpose:**

Gain of Birr1, 500 is not recorded.

 Cost base of the new asset = 7,000 + 46,500, or

 = 55,000 -1,500

 = Birr **53,500**

 Machine (new)………………………… 53,500

 Acc. deprecation ………………………. 38,000

Machine (old) …………………………..45,000

 Cash …………………………………….46,500

* 1. **Natural Resources and Depletion**

**Depletion:** is the periodic allocation of the cost of natural resources in to expense. Depletion expenses vary from period to period, depending on the quantity of the natural resources extracted. Depletion calculation is similar to units of production method of depreciation.

**Steps to Compute Depletion**

 Step 1: Compute depletion rate.

 Depletion Rate = Cost of Resource – Residual value

 Estimated Total Units of Resource

Step 2: Multiply the depletion rate by the quantity extracted from the resource during the period.

  **I.e. Depletion expense = Depletion Rate \* Quantity Extracted**

**Example:** Assume that ABC Company acquired land with Mineral deposit for Birr 500,000. The Mineral deposit is estimated to have 1,000,000 tons of Ore and is estimated to have a residual value of Birr 100,000 after mining is completed. Suppose the company extracted 90,000 and 80,000 tons of ore during Year 1 and Year 2 respectively.

**Required:**

1. Determine the depletion rate
2. Determine the depletion expense of Year 1 and 2
3. Journalize the adjusting entry on December 31 of each year to recognize depletion expense
4. Determine the balance of accumulated depletion and Book Value of the mineral deposit on December 31, year

**Solutions:**

1. Compute depletion rate.

 Depletion Rate = 500,000 – 100,000

 1,000,000

 =**Birr 0.40 per tone**

1. Compute depletion expense

Depletion expense – Year 1 = 0.4 \* 90,000 = Birr 36,000

 Depletion expense – Year 2 = 0.4 \* 80,000 = Birr 32,000

1. Adjusting entries

 Year - 1

Dr. Depletion Expense………Birr 36,000

 Cr. Acc. Depletion………………….Birr 36,000

 Year - 2

Dr. Depletion Expense………Birr 32,000

 Cr. Acc. Depletion………………….Birr 32,000

* Balance of accumulated depletion, end of Year 2: **Birr 68,000**
* Balance of Book Value, end of Year 2: Birr 500,000 – 68,000 = **Birr 432,000**
	1. **Intangible Assets and Amortization**

 Intangible assets are long –lived assets that do not have physical substances and used for the operation of the business enterprise. They include patent, copyrights, Good will, franchise, organization costs, trademarks and the like. The periodic cost allocation of intangible assets over its useful life is called **Amortization**. Amortization is computed on straight-line method, mostly a contra asset account is not maintained in recording the expense, and the credit is directly recorded in intangible asset’s account.

**Patent**: it is an exclusive right to produce and sell a certain product. The legal life of a patent is 17 years. Its useful life may be less than its legal life since goods protected by specific patent may become obsolete. Legal or economic life whichever is shorter is used to record amortization. An enterprise may purchase patent from others or it may be obtained from new products developed in its own research laboratories. The cost of purchased patent includes legal and other fees and is debited to the patent account.

**Example:** on October 1, 2004, an enterprise acquired a patent with a remaining legal life of 10 years and an estimated useful life of 8 years incurring legal and other costs of Birr 48, 000.

**Required:** Record the entry showing the acquisition of the patent and the amortization expense for the year ending Dec.31, 2004.

**Solutions:**

October 1, 2004: Acquisition:

 Dr. Patent…………………… Birr 48,000

 Cr. Cash/A/P…………………………… Birr 48,000

December 31, 2004: Amortization of 3 months: Birr 48, 000/8 years = Birr 1, 500

 **Dr.** Amortization Expense…Birr 1,500

 **Cr.** Patent………………. Birr 1,500

**Copyright:** it is a legal right given to artists and authors to publish and sell artistic or musical composition. The legal life of copy right is creator’s life + 50 years (it extends 50 years beyond the artist/author’s death). Copy right can be purchased from others. Because of the uncertainty regarding the useful life of a copy right, the cost is normally amortized over short period of time.

**Good will**: it is an intangible asset that attaches to the business due to some favorable conditions such as quality products and services. Good will is recorded at the time of purchase or sale of a business; it is acquired with other tangible assets. The life of good will should not exceed 40 years.

**Example**: On January 1, 2004, an enterprise acquired good will in the amount of Birr 3, 000,000 with tangible assets with a value of Birr 10, 000,000.

**Required**: Record entry showing the acquisition of good will and the amortization for the year ending Dec.31, 2004

January 1, 2004: Acquisition:

Tangible assets……………………………….10, 000,000

 Good will……………………………………… 3,000,000

 Cash/A/Payable……………………………………………..13,000,000

December 31, 2004: amortization of 1 year: Birr 3, 000,000/40 years = Birr 75, 000 per year.

 Dr. Amortization Expense …………………….Birr 75, 000

 Cr. Good will……………………….Birr 75, 000