**Chapter Two: Plant Asset and Intangible Assets**

**Introduction**

***Fixed (plant) Assets*** are tangible long-lived resources that are used in the operation of the business & are not intended for sale to customers.

Plant assetsare resources that have three characteristics: they have a physical substance (a definite size and shape), are used in the operations of a business, and are not intended for sale to customers. They are also called **property, plant, and equipment;** **plant and equipment;** and **fixed assets**. These assets are expected to provide services to the company for a number of years.

Except for land, plant assets decline in service potential over their useful lives.

Because plant assets play a key role in ongoing operations, companies keep plant assets in good operating condition. They also replace worn-out or outdated plant assets, and expand productive resources as needed. Many companies have substantial investments in plant assets.

Plant assets are often subdivided into four classes:

* 1. **Land** - such as building site
	2. **Buildings** - such as stores, offices, factories and warehouses
	3. **Equipment** - such as stores checkout counters, cash registers, coolers, office furniture, machinery & Trucks
	4. **Land improvement** – expenditures for improvements that are neither as permanent as the land nor directly associated with the building may be set apart in a land improvement account and depreciated according to their different life spans. E.g.- drive ways, parking lots, fences

**Determining the cost of plant assets**

Plant assets are recorded at cost in accordance with the cost principle of accounting. Cost consists of all expenditures necessary to acquire the asset & make it ready for its intended use. For example, the purchase price, freight costs paid by the purchaser & installation costs are all considered part of the cost of factor machinery. Thus, all reasonable & necessary costs incurred to get an asset in position & condition ready for use may be included as part of the cost of the asset.

Some of the common acquisition costs for property, plant and equipment assets are:

* **Land** is an asset that is considered to have unlimited useful life. It includes costs such as, Purchase price, sales taxes, permits from government agencies, broker’s commissions, title fees, surveying fees, real estate tax, razing or removing unwanted buildings less any salvage, grading & leveling, paving a public street bordering the land.
* **Building** - When a building is **purchased**, such costs include the purchase price, closing costs (attorney’s fees, title insurance, etc.) and real estate broker’s commission. Costs to make the building ready for its intended use include expenditures for remodeling and replacing or repairing the roof, floors, electrical wiring, and plumbing. When a new building is **constructed**, cost consists of the contract price plus payments for architects’ fees, building permits, excavation costs and interest on money borrowed to finance construction
* **Machinery & Equipment** – The cost of machinery and equipment includes its purchase price (less any discounts), plus transportation charges, insurance while in transit, sales and other taxes, purchase commission, installation costs, the cost of testing the asset before it is used and repairs (purchase of used equipment).
* **Land improvement** - Land improvements are structural additions made to land. Examples are driveways, parking lots, fences, cost of trees & shrubs, landscaping, outdoor lighting and underground sprinklers. The cost of land improvements includes all expenditures necessary to make the improvements ready for their intended use.

To illustrate, assume ABC Co. orders a machine at a list price of Br. 10,000 with terms of 2/10, n/30, sales tax of Br. 588 must be paid, as well as fright charges of Br. 1,250. Transportation from the rail road station to the factory costs Br. 150 & installation labor amounts, to Br. 400. One employee with a salary of Br. 800 operates the machine and the salary paid for the first month of operation was Br. 800. Cost of maintenance materials needed during the first month of operation was Br. 25. Repair cost of Br. 2,000 was paid for damage occurred during unpacking and installing.

List price of the Machine 10,000

Less cash discount (2% x Br. 10,000) 200

Net cash price 9,800

Sales tax 588

Freight 1,250

Transportation 150

Installation labor 400

Cost of machine Br. 12,188

The salary of employee is not part of the acquisition cost because it is incurred after the machine become operational.

The acquisition of the machine is then recorded as follows:

Machinery 12,188

Salary expense. 800

Maintenance expense. 25

Loss due to employee negligence 2,000

Cash 15,013

 (To record the acquisition of a machine)

Costs not necessary for getting a fixed asset ready for use does not increase the asset’s usefulness. Such costs should not be included as part of the asset's total cost.

* Mistake in installation eg. Repair cost incurred which is not covered under insurance Uninsured theft
* Damage during unpacking & installing
* Fines for not obtaining proper permits from government agencies

These costs of such items should be debited to an expense not to the asset account

**Lump-sum acquisition**

A *lump-sum purchase* occurs when more than one type of assets is acquired in a single transaction. The lamp-sum purchase price then must be allocated equitably to the individual components. The most common method of allocation is based on the relative fair market value of the individual assets.

To illustrate, assume Delta Co. acquired Land, Building & Machinery from ABC Co. for Br. 1,000,000. A professional appraiser valued each of the assets at the appraised fair market Prices: Land, Br. 800,000; Building Br. 560,000 & Machinery Br. 240,000. The Br. 1,000,000 is allocated among the assets as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Asset** | **Appraised Fair Market value** | **Percent of Total Appraised Value** | **Purchase Price** | **Cost Allocated to Assets** |
| Land | Br. 800,000. | Br.800, 000 / 1, 600,000. = 50% | 50% x 1,000,000. | Br. 500,000. |
| Building |  560,000. |  560, 000 / 1, 600,000. = 35% | 35% x 1, 000,000. |  350,000. |
| Machinery |  240,000. |  240, 000 / 1, 600,000. = 15% | 15% x 1, 000,000. |  150,000. |
|  ***Total*** | ***1,600,000.*** |  ***100%*** |  |  ***1,000,000.*** |

**The entry to record the lump-sum purchase:**

Land 500,000

Building 350,000

     Machinery 150,000

 Cash 1,000,000

(To record acquisition of land building & machinery)

**Concept of Depreciation**

***Depreciation-*** is the process of allocating the cost of a plant asset over its useful (service) life in a rational and systematic manner. The basic purpose of depreciation is to provide the proper matching of expense with revenues in accordance with the matching principle.

It is important to understand that **depreciation is a process of cost allocation. It is not a process of asset valuation**. No attempt is made to measure thechange in an asset’s market value during ownership.

Depreciation applies to three classes of plant assets: land improvements, buildings, and equipment. Each asset in these classes is considered to be a **depreciable asset**. Why? Because the usefulness to the company and revenue-producing ability of each asset will decline over the asset’s useful life. Depreciation **does not apply to land** because its usefulness and revenue-producing ability generally remain intact over time. Thus, **land is not a depreciable asset**.

**Causes of Depreciation**

 The two major causes of depreciation are physical deterioration & obsolescence.

1. **Physical Deterioration** – occurs from wear & tear while in use as well as from the action of the weather (exposure to sun, wind, and other climatic factors)
2. **Obsolescence (Function Depreciation**) - is the process of becoming out of date before the assets physically wears out. In today's rapidly advance in technology, obsolescence is a more important consideration than physical deterioration. E.g. a personal computer made in the 1980's would not be able to provide an Internet connection. Assets like computers, other electronic equipment & airplanes may become obsolete before they physically deteriorate. An asset is obsolete when another asset can do the job better or more efficiently.

**Factors in Computing Depreciation**

Three factors affect the computation of depreciation:

1. **Cost:** is the initial cost incurred in acquiring the asset. Cost is measured in accordance with the cost principle of accounting. Cost is objective fact.
2. **Useful Life** - is an estimate of the expected productive life, also called service life, of the asset. Useful life maybe expressed in term of time, units of activity such as machine hours, or in units of output.
3. **Salvage Value** - also called scrap or residual value is an estimate of the asset's value at the end of its useful life.
	* The full cost of a plant asset is depreciated if the asset is expected to have no residual value.
	* The plant assets cost minus its estimated residual value is called the depreciable cost.

**Depreciation Methods**

There are several alternative methods of computing depreciation. A business need not use the same method of depreciation for all its various assets.

Depreciation is computed using one of the following different methods:

1. Straight line method
2. Units of output method
3. Declining balance method
4. Sum-of-the-years’-digits method

Like the inventory costing method, each method is acceptable under GAAP, thus it is up to the management of the business to select a method, which is believed to be appropriate in the circumstance. Depreciation affects the Balance sheet reports through the account of accumulated depreciation, as well as the Income statement through the account of depreciation expense. Thus, its proper accounting and record is imperative for financial reporting.

1. **Straight - Line Method**

Under the Straight - Line Method, an equal portion of the cost of the asset is allocated to each period of use; consequently, this method is most appropriate when usage of an asset is fairly uniform from year to year.

In order to compute depreciation expense under the straight-line method, companies need to determine depreciable cost. **Depreciable cost** is the cost of the asset less its salvage value. It represents the total amount subject to depreciation. Under the straight-line method, to determine annual depreciation expense, we divide depreciable cost by the asset’s useful life.

**To illustrate**, assume that on January 1, 2014 ABC Company acquire a delivery truck at a cost of Br. 68,000 a residual value of Br 5,000 and an estimated useful life of five years. The annual computation of depreciation expenses will be as follows:

Straight-line depreciation per year $=\frac{Cost-Residual Value}{Useful Life in years}$

$$ =\frac{68,000-5,000}{5}$$

 = **Br. 12,600**

***Depreciation Schedule – Straight-line method***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** |  **Computation** | **Depreciation****Expense** |  **Accumulated     Depreciation** | **Book value** |
| **Depreciation Depreciable** **Rate Cost** |
| 1st | 20% x Br. 63,000 | Br. 12,600 | Br. 12,600 | Br. 55,400 |
| 2nd | 20% x 63,000 | 12,600 |  25,200 |  42,800 |
| 3rd | 20% x 63,000 | 12,600 |  37,800 |  30,200 |
| 4th | 20% x 63,000 | 12,600 |  50,400 |  17,600 |
| 5th | 20% x 63,000 | 12,600 |  63,000 |  5,000 |
|  | 100% |  Br. 63,000 |  |  |

Depreciation rates for various types of assets can conveniently be stated as percentages.

In the illustration, it was assumed that the asset was acquired on Jan. 1, the beginning of the accounting period. If the asset had been acquired during the year, on October 1, it would have been in use for only 3 months, or 3/12 of a year. Then, the depreciation expense for the three months would be computed as follows:

 Depreciation on December 31 = Br. 63,000.00 x 20% x 3/12 = **3,150**

The straight-line method predominates in practice. It is simple to apply & it matches expenses with revenues appropriately when the use of the asset is reasonably uniform throughout the service life.

1. **Unit of Output Method**

This method is used for assets whose useful life is limited by physical wear- and -tear rather than obsolescence. The asset life is expressed in expected units of output, such as hours, miles, or number of units. This method is appropriate when the service of a fixed asset is related to use rather than time. It is based on the assumption that an asset depreciates only as it is used. Thus the asset life is expressed in expected units of output such as miles or units produced.

To use this method, companies estimate the total units of activity for the entire useful life, and then divide these units into depreciable cost. The resulting number represents the depreciation cost per unit. The depreciation cost per unit is then applied to the units of activity during the year to determine the annual depreciation expense.

**To illustrate**, assume that the delivery truck in the previous example has an estimated useful life of 100,000 miles, and in the first and second year of its usage is 15,000.00 and 10,000 miles respectively. The depreciation for the first year is then computed as follows:

Depreciation per unit of output $=\frac{Cost-Residual Value}{Estimated Units of output(Miles)}$

$$ =\frac{68,000-5,000}{100,000 miles}$$

 = **Br. 0.63 per miles**

In the units-of-output method, a fixed amount of depreciation is assigned to each unit of output produced or each unit of capacity used by the plant assets.

Year 1 depreciation expense **=** Br. 0.63 x 15,000 miles

 = **Br. 9,450**

If the 2nd year usage is 10,000:

Year 2 depreciation expenses. **=** Br. 0.63 x 10,000 miles

 = **Br. 6,300**

So, when the amount if use of a fixed asset varies from year to year, the units- of – output method is more appropriate than the straight –line method. In such a case, the units-of-output method better matches the expense with related revenue.

1. **Declining Balance Method**

The **declining-balance method** produces a decreasing annual depreciation expense over the asset’s useful life. The method is so named because the periodic depreciation is based on a **declining book value** (cost less accumulated depreciation) of the asset.

The basic idea behind the declining balance method is that more service benefits are received in the early years of an asset's life when it is new & fewer benefits are received each year as the asset grows older. So this method assigns more (greater) depreciation expenses to the early years of the asset's life & less to later ones.

A common declining-balance rate is double the straight-line rate. The method is often called the **double-declining-balance method**.

**To illustrate**, consider the previous example of the Br. 68,000 delivery truck.

To depreciate the truck by the double declining balance method, we double the straight-line rate of 20% (which is 100% divided by its useful life) & apply the doubled rate of 40% to the book value at the beginning of each year.

Thus, Annual depreciation = Book value at beginning of year X Declining balance rate

***Depreciation Schedule Declining Balance Method***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Computation** | **Annual Depreciation expenses** | **Accumulated Depreciation** | **Book** **Value End of year** |
| **Book Value** **Beg. of year** | **Depreciation Rate** |
| **0** | **-** | **-** | **-** | **-** | Br. 68,000. |
| **1st** | Br. 68,000 | 40% | Br. 27,200 | Br. 27,200 | 40,800 |
| **2nd** |  40,800 | 40% | 16,320 | 43,520 | 24,480 |
| **3rd** |  24,480 | 40% | 9,792 |  53,312 | 14,688 |
| **4th** |  14,688 | 40% | 5,875 |  59,187 | 8,813 |
| **5th** |  8,813 | - |  3,823 | 63,000 | 5,000 Residual value |

* The declining balance method produces a decreasing annual depreciation expense over the useful life of the asset.
* The method is so named because computation of periodic depreciation is based on a declining book value (cost less accumulated. depreciation) of the asset.
* The depreciation rate remains constant from year to year, but the book value to which the rate is applied declines each year.
* Unlike the other depreciation methods, salvage value is ignored in determining the amount to which the declining balance is applied. Salvage value, however, does limit the total depreciation that can be taken. Depreciation stops when the asset's book value equals expected salvage value.
* Because the declining balance method produces higher depreciation expense in the early years than in the later years, it is considered an **accelerated depreciation** method.

If the asset has been acquired on October 1, rather than on January 1, depreciation for only 3 months would be computed as follows:

40% x Br**.** 68,000.00 x 3/12 **=** Br. 6,800

For the next year, the calculation would be, 40% x (68,000 - 6,800) =Br. 24,480

1. **Sum of the years Digits method**

Like the declining balance method, the sum of the year's digit allocates a large portion of the asset cost to the early years of its use as accelerated depreciation method. The depreciation rate to be used is a fraction, of which the numerator is the remaining years of useful life (as of the beginning of the year) & the denominator is the sum of the individual years that comprise total service life.

SYD is an appropriate method for assets that provide more service benefits in the early years of their lives & less in later years. Many assets are efficient when first purchased but become less efficient as time passes. This decrease in utility may be caused by technological obsolescence or by accumulated effects of physical wear and tear. Copying machines & computer are examples of assets that are depreciated by an accelerated depreciation method

**To illustrate,** Consider again the example of the delivery truck costing Br. 68,000 having an estimated life of Five (5) years & an estimated residual value of Br. 5,000.

First the sum of the digits of the years of the asset’s useful life has to be determined through a short cut formula that yields the same results as the more tiresome addition process.

Sum of the digits = n (n+1), where n is number of years in the assets life

 2

 5- years sum of the digits = 5(5+1)/2 = 30/2= 15

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Computation** | **Annual Depreciation expenses** | **Accumulated Depreciation** | **Book** **Value** |
| **Depreciable Cost** | **SYD** **Fraction** |
| 0 | **-** | **-** | **-** | **-** | Br. 68,000 |
| 1st | Br. 63,000. | 5/15 | Br. 21,000 | Br. 21,000 | 47,000 |
| 2nd | 63,000. | 4/15 | 16,800 | 37,800 |  30,200 |
| 3rd |  63,000. | 3/15 | 12,600 |  50,400 |  17,600  |
| 4th | 63,000. | 2/15 | 8,400 | 58,800 | 9,200 |
| 5th | 63,000. | 1/15 | 4,200 |  63,000 |  5,000 |
|  |  |  | Br. 63,000 |  |  |

If the truck was acquired on October 1, since the asset was in use for only 3 months during the first accounting period, the depreciation to be recorded in the 1st period will be for only 3/12 of a full year. i.e.

 3/12 x Br. 63,000 x 5/15 = Br. 5,250

For the second year, Br. 63, 000 x 5/15 x 9/12 = Br. 15,750

 63,000 x 4/15 x 3/12 = 4,200

 Total 19,950

**Revision of periodic Depreciation**

Since depreciation involves estimation of useful life & salvage value of an asset, whenever a business learns a change in the original estimation, the annual depreciation expense needs to be revised. If wear & tear or obsolescence indicates that annual depreciation is inadequate or excessive, a change in the periodic amount should be made. When a change in an estimate is required, the change is made in current & future years but not to prior periods.

To determine the new annual depreciation expense, we compute the depreciable cost at the time of the revision & divide it by remaining useful life.

**To illustrate,** assume that a fixed asset purchased for Br. 130,000 was originally estimated to have a useful life of 30 years and a residual value of Br. 10,000. The asset has been depreciated for 10 years by the straight-line method. During the eleventh (11th) year, it is believed that the remaining useful life is 25 years (instead of 20) because of its excellent condition, and that the residual value is Br. 5,000(rather than Br. 10,000).

Book Value at the end of 10 years:

Asset cost Br. 130,000

Less: Accumulated Depreciation (130,000 -10,000) x 10 years = 40,000

 30

Book value (undepreciated cost), end of 10th year = Br. 90,000

Depreciation expense for current & future periods:

Depreciation per year $=\frac{Book value end of 10th year-Revised estimated residual Value}{Revised remaining useful Life in years}$

Depreciation per year $=\frac{90,000-5,000}{25}=3,400$

The financial statements of past periods are not revised to reflect changes in the estimated useful lives of depreciable cost.

**Capital Expenditure versus Revenue Expenditure**

Thedifference between these two types of expenditure can be summarized as follows:

|  |  |
| --- | --- |
| ***Capital Expenditure*** | ***Revenue Expenditure***  |
| Increases the operating efficiency, productive Capacity, or extend the useful life of the plant assets | Merely maintains its existing condition or restore the asset to good working order |
| Material in amount and occur infrequently | Fairly small amounts that occur frequently |
| Benefits more than one accounting period | * Primarily benefits one (the current accounting) Period
 |
| Such expenditures are debited to the asset Account or to the related accumulated depreciation account | * Such costs are debited to expense account
 |

***Examples of Capital Expenditures***

* **Additions**: an addition generally results in a larger physical unit and increased productive capacity. Additions: are debited to the asset account to which the expenditure pertains. Example cost of adding an air conditioning, major engine overhaul.
* **Betterment/Improvements**: may result in replacement of a subunit of a productive asset with a new unit. E.g. a factory machine with a l0 h.p. electric motor may be improved by replacing the motor in a 15 h.p. motor. The cost of the new unit should then be debited to the machine account.
* **Extra Ordinary Repairs** – an expenditure that increases the useful life of an asset beyond its original estimate is called an *extraordinary repair*. Such expenditure should be debited to the related accumulated depreciation account. In such cases, the repairs are said to be restore or make good a portion of the depreciation recorded in years. The depreciation for future periods should be computed on the basis of the revised book value of the asset and the revised estimate of the remaining unequal life.

**To Illustrate**, assume that a machine costing Br. 50,000 has no estimated residual value and an estimated useful life of 10 years. Assume also that the machine has been depreciated for 6 years by the straight-line method. At the beginning of the seventh year, an extra ordinary repair of Br.11, 500 increases the according useful life of the machine to 7 years (instead of four). The annual depreciation for the remaining 7 years of use would be 4,500, computed as follow:

Cost of machine --------------------------------------------- Br. 50,000

Less: Accumulated Depreciation Balance:

 Depreciation for 6 years (Br.5, 000 x 6) Br.30,000

 Deduct: debit due to extra ordinary repairs 11,500

 Balance of Accumulated depreciation ------------ 18,500

Revised Book Value of machine after extra ordinary repair 31,500

Annual Depreciation (31,500 ÷ 7 years remaining useful life) 4,500

The revised annual depreciation can also be computed through the following formula by first determining the revised annual depreciation.

Computation of revised depreciable cost:

$$Book value prior to capital exp. + Capitalexpenditure- Net EstSalvage Value=Revised Depreciable cost$$

20,000 + 11,500 - 0 = 31,500 ÷ 7 years = 4,500

**To illustrate** again, assume that Haben Co. makes a Br. 10,000 major repair to factory machinery. This capital expenditure increases the remaining useful life of the machine to 5 years. In addition, the salvage value is expected to be Br. 4,000. The book value of the factory machine prior to the major repair is Br. 100,000. Under the straight-line method, the new annual depreciation for the remaining five years of useful life is Br. 21,250 computed as shown below:

Book value prior to capital expenditure --------------------------- Br. 100,000

 Add: Cost of capital expenditure ------------------------- 10,000

 Book value after capital expenditure ---------------------- 110,000

 Less: New estimated salvage value ------------------------ 4,000

 Revised depreciable cost ------------------------------------ 106,000

 Remaining useful life ----------------------------------------- ÷ 5

 Revised Annual depreciation Br. 21,200

 Depreciation Expense -------------------------- 21,200

 Accumulated depreciation ------------ 21,200

***Effects of Error in Distinguishing between capital and Revenue expenditure***

Treating a capital expenditure as revenue expenditure or vice versa creates errors in the Financial Statement. Suppose a company makes an extraordinary repair to equipment and erroneously expenses this cost. It is a capital expenditure that should have been debited to an asset account. This accounting error overstates expenses and understates net income on the income statement. On the balance sheet, the asset (equipment) account is understated and so is owner’s equity. On the other hand, capitalizing the cost of an *ordinary* repair creates the opposite error. Expenses will be understated and net income will be overstated on the income statement. The balance sheet reports overstated amounts for assets and owners equity.

These examples indicate that a careful distinction between capital and revenue expenditures is essential to the attainment of one of the most fundamental objective of accounting - the determination of accurate net income for each year of operation of a business.

**Disposal of Plant Asset**

Eventually, a plant asset ceases to serve a Company’s needs. The asset may have become **worn out**, **obsolete,** or for some other reason no longer useful to the business.

Plant assets of various types may be disposed of in three ways:

1. Retirement – the plant asset is scrapped or discarded
2. Sale – the plant asset is sold to another party
3. Exchange – an existing plant asset is traded in a new plant asset.

At the time of disposal, it is necessary to determine the book value of the plant asset. The book value is the difference between the cost of the plant asset and the accumulated depreciationto date.

If the disposal accounts at any time during the year, depreciation for the fraction of the year to the date of the disposal must be recorded. To record the disposal of a plant asset, credit the asset account and debit its accumulated depreciation.

1. **Retirement (Discarding) Fixed Asset**

When fixed asset are no longer useful to the business and have no residual or market value, they are discarded.

**To illustrate**, the accounting for a retirement, assumes that ABC Company retires its computer printers, which cost Br. 32,000.The accumulated depreciation on these printers is also Br.32, 000. The printer is therefore fully depreciated (zero book value), the entry to record this retirement is:

 Accumulated depreciation – printing equip. ------------- 32,000

 Printing equip -------------------------------------------32,000

 (To record installment of fully depreciation equip.)

What about if a fully depreciated plant asset is still useful to the company?

Assume that moon light company discards its delivery equipment, which cost Br. 18,000, and has accumulated depreciation of Br. 14,000 at the date of retirement. The entry to record the retirement is as follows:

 Accumulated depreciation-Deliver equips. ------ 14,000

 Loss on disposal ------------------------------------- 4,000

 Delivery equipment --------------------------------18,000

1. ***Selling of Plant Assets***

In a disposal by sale, the book value of the asset is compared to the proceeds received for the sale. If the proceeds received from the sale exceed the book value of the plant asset, a gain on disposal occurs. If, however, the proceeds of the sale are less than the book value of the plant asset sold, a loss on disposal occurs.

**To illustrate**, assume that on July 1, 1993 Guna Trading Company sells Office Furniture for Br 16,000 cash. The Office furniture originally cost Br. 67,000 and as of Jan 1, 1993, had accumulated depreciation of Br. 48,000. The yearly depreciation is Br. 16,000.

Depreciation for the first six months (until July 1) of 1993 is Br. 8,000. The entry to record depreciation expense and update accumulated depreciation to July 1 is as follows:

July 1, Depreciation expense ------------------- 8,000

 Accumulated depreciation of furniture ----------- 8,000

 (To record depreciation expense for the 1st six months of 1993)

After the accumulated depreciation balance is updated, ***a gain on disposal*** of Br. 5,000 is computed.

Cost of furniture ----------------------------------- Br. 67,000

Less: Accumulated Depreciation (41,000 + 8,000) 56,000

 Book value at date of disposal 11,000

 Proceeds from sale 16,000

 Gain on disposal Br**.**  5,000

The entry to record the sale and the gain on disposal is as follows:

July 1. Cash -------------------------------------------- 16,000

 Accumulated. Dep. - Office furn. ------------ 56,000

 Office furniture. ---------------------------------- 67,000

 Gain on Disposal --------------------------- 5,000

 (To record sale of office furniture at a gain)

***Loss on Disposal***

Assume that instead of selling the office furniture for Br. 16,000, Guna trading sells it for Br.9,000. In this case, a loss of Br. 2,000 is computed as follows:

 Cost of office furniture ------------------------ Br. 67,000

 Less: accumulated depreciation.------------- 56,000

 Book value at date of disposal --------------- 11,000

 Proceeds from sale ----------------------------- 9,000

 Loss on disposal ------------------------------- Br.2,000

The entry to record the sale and the loss on disposal is as follow:

July 1. Cash -------------------------------------------- 9,000

 Accumulated dep. - office furn. ----------- 56,000

 Loss on disposal ----------------------------- 2,000

 Office furniture ------------------------------------- 67,000

 (To record sales of office furniture at a loss)

1. **Exchanging Fixed Asset**

Plant assets may also be disposed of trough exchange. Business often exchange (trade – in) their old plant assets for similar assets that are newer and more efficient. Exchange can be for either similar or dissimilar assets because exchanges of similar assets are more common; we will focus more on the exchange for similar assets.

Exchange of similar assets involves assets of the same type. This occurs for example, when old delivery equipment is exchanged for new delivery equipment or when old office furniture is exchanged for new office furniture.

At the time of exchange, the seller allows the buyer an amount for the old equipment traded in. This amount called the Trade-in-Allowance may be either greater or less than the book value of the old equipment. The remaining balance- the amount owed – is either paid in cash or a liability is recorded. It is normally called ***boot***, which is its tax name.

The cost recorded for the new asset can be determined in either of two ways:

1. Cost of new asset = List price of new asset - unrecognized gain

ii. Cost of new asset = Cash given or liability assumed + Book value of old asset

***Gain Treatment***

Assume that ABC Company decides to exchange its old delivery equipment for new delivery equipment. The cost of the old equipment is Br. 4,000 and its related accumulated depreciation is Br. 3,200. The dealer of the new equipment offers a Br. 1,100 trade-in-allowance, and the cash market price of the new equipment is Br. 5,000.

The cost of the new equipment and the gain, which is not recognized, is computed as follows:

Similar equipment acquired (new):

List price of new equipment ------------------------- Br. 5,000

Trade-in allow on old equipment -------------------- 1,100

Cash to be paid at June 19, date of exchange ---- -- 3,900

Equip. Traded - in (Old):

Cost of old equipment -------------------------------- Br. 4,000

Accumulated Depreciation at date of exchange -- 3,200

Book value at date of exchange -------------------- 800

Recorded Cost of New Equipment:

**Method One**

List price of new equipment ---------------------- Br. 5,000

Trade-in allowance --------------------------------- Br. 1,100

Book value of old equipment -------------------- 800

Unrecognized gain on exchange ----------------- 300

Cost of new equipment ---------------------------- Br. 4,700

**Method Two**

 Book value of old equipment -------------------- Br. 800

Cash paid at date of exchange ----------------- 3,900

 Cost of new equipment ------------------------------ 4,700

The entry to record this exchange and payment of cash is as follows:

Accumulated Depreciation-equip. -------- 3,200

Equip. (New) ------------------------------- 4,700

 Equipment (Old) ------------------------------------------- 4,000

 Cash --------------------------------------------------------- 3,900

 (To record exchange of equipment).

The trade-in allowance and the list price of the new equipment are not recorded in the purchaser’s accounting records. These amounts are only used in order to determine the amount the purchaser must pay in addition to turning in the old truck.

**Loss Treatment**

When a loss occurs on the exchange of similar assets, it is recognized immediately, it is not deferred. When there is a loss, the cost recorded for the new asset should be the *market (list) price.*

To illustrate, consider the previous e.g., but assume this time the company exchanged the equipment by paying cash of Br. 4,600.

List price of new equipment -------------------- Br. 5,000

 Less: Trade-in allowance on old equip ------- ?\_\_\_

 Cash paid ------------------------------------------ 4,600

 Cash payment = List price – trade-in allowance

 Trade-in allow = List price – Cash payment

 = Br. 400

 Loss on Disposal = Trade in allowance – Book Value

 = Br. 400 – 800

 = Br. **(**400)

The entry to record the exchange, loss & cash Payment is as follows:

Equipment (new) ----------------------------------------- 5,000

Accumulate depreciation – equipment ----------------- 3.200

Loss on disposal ------------------------------------------ 400

 Equipment (old) ---------------------------------- 4,000

 Cash ----------------------------------------------- 4,600

 (To record exchange of equipment at loss)

The justification for requiring the recognition of a loss but not allowing the recognition of a gain is the *principle of conservatism.* The Principles of Conservatism requires that losses should be recognized when incurred, but gains should be deferred until cash or another liquid asset is received.

Consider again another related example: the cost of old equipment is Br.7,000; its accumulated depreciation is Br. 4,600. Cash paid is Br. 8,000. and the list price of the new equipment is Br. 10,000. Then, the amount of trade-in allowance, loss, and the value of the new equipment is determined as follows: following exchange:

Similar equipment acquired (new):

List price of new equipment ------------------- Br. 10,000

Trade – in allowance on old equip. \_ ?\_

Cash paid Br. 8,000

Equipment Traded - in (old)

Cost of old equipment -------------------------------- Br. 7,000

Accumulated Depreciation at time of exchange --- 4,600

Book Value at date of exchange ---------------------- 2,400

Trade-in allow. on old equip. ----------------------- 2,000

Loss on exchange ------------------------------------- Br. 400

The entry to record to exchange is as follows:

Accumulated Depreciation - equip. ---------- 4,600

Equipment (new) ---------------------------- 10,000

Loss on disposal of fixed assets ----------- 400

 Equip. ----------------------------------- 7,000

 Cash ------------------------------------- 8,000

 (To recode exchange of equipment to loss).

**Natural Resources**

The fixed assets of some businesses include standing timber and underground deposits of oil, gas, minerals or other natural resources. As this business harvest or mine and sell these resources, a portion of the cost of acquiring them must be debited to an expense account. This process of transferring the cost of natural resources to an expense account is called ***depletion*.**

A natural resource as its name implies is a resource existing naturally, not constructed by humans. Examples of typical natural resources are deposits of coal, oil, and other minerals. These natural resources are typically used as raw manufacture in the production of other goods .A quantity of natural resource can be considered as consisting of a total bundle of materials, tons of coal, barrels of oil, etc. As these materials are removed, a part of the natural resource is used up – depleted.

The ***acquisition cost*** of a natural resource is the cash or cash equivalent price, necessary to acquire the resource and prepare it for its intended use. For already discovered resources such as an existing Coal Mine, cost is the price paid for the property.

The systematic write-off of the cost of natural resources is called depletion. The units of activity (output) method are generally used to compute depletion, because periodic depletion generally is a function of the units extracted during the year.

$Depletion Cost Per Unit=\frac{Total Cost - Salvage}{Total Estimated Units}$

$Periodic DepletionExpense=Depletion Cost Per Unit x Number of UnitsExtracted \& Sold$

**To illustrate**, assume that the Global Coal Co. invests Br. 5,000,000 in a mine estimated to have 10 million tons of coal and no salvage value. In the first year, 800,000 tons of coal are extracted and sold.

Using the above formula, the computations are as follows:

 $Depletion Cost Per Unit=\frac{\$ 5,000,000}{10,000,000}$

 = Br. 0.5 depletion cost per ton.

 Depletion expense = Br. 0.5 x 800,000 tons

 = Br. 400,000

The entry to record depletion expense for the first year of operation is as follows:

Dec. 31 Depletion expense ---------------- 400,000

 Accumulated depletion -------------------- 400,000

 (To record depletion expense on coal deposits)

Accumulated depletion, a contra asset account similar to accumulated depreciation, is deducted from the cost of the natural resources in the balance sheet as follows:

 Coal Mines -------------------------------- Br. 5,000,000

 Less: Accumulated depletion ----------- 400,000 Br. 4,600,000

Sometimes, natural resources extracted in one accounting period will not be sold until a later period. In this case, depletion is not expensed until the resource is sold. The amount not sold is reported in the current asset section as inventory.

**Intangible Assets**

Long-lived assets that (1) lack physical substance and (2) are not held for investments are classified as ***intangible assets.***

The ***acquisition cost*** of intangible assets is determined by using the same general rule as property, plant, and equipment.

There are few differences between accounting for intangible assets and accounting for plant assets.

* + The term used to describe the write-off of an intangible asset is amortization, rather than depreciation.
	+ The amortization period of an intangible asset cannot be longer than 40 years.
	+ Unlike plant assets, all intangible assets are typically amortized on a straight-line basis. The universal use of this method adds comparability.

The following are some common intangibles.

1. **Patent**

A ***Patent*** is an exclusive right granted by the government for manufacturing, use, and sale of a particular product. The purpose of this exclusive right is to encourage the invention of new machine and processes. Although patents may be granted for fixed period time (17 or 20 Years) it may change as technology or consumer tastes change. So the cost of a patent should be amortized over its legal life or useful life, whichever is shorter.

**To illustrate**, assume that a patent is purchased from the investor at a cost of Br. 100,000 after five years of the legal life have expired (its legal life is 17 years). It is estimated that the useful life after purchase is only four years. The entry to be made to record the purchase and the annual amortization expense would be:

Jan 1, Patent -------------------------------------- 100,000

 Cash ------------------------------------- 100,000

 (To record acquisition of patent that until have a legal life of 17 years)

 Dec. 31 Amortization Expense - Patent --------- 25,000

Patents ----------------------------------------- 25,000

(To amortize cost patent on a straight-line basis and estimated life of four years)

Note that although the remaining life is 12 years, the estimated useful life is only four years, amortization should be based on this shorter period.

1. **Copy right**

A ***copyright*** is on exclusive right granted by government to protect the production and sell of literary or artistic materials for the life of the creator plus 50 years. The useful life of a copyright generally is shorter than its legal life. Similar to other intangible assets, the maximum write-off is 40 years. However, because of the difficulties of determining the period over which benefits are to be received, copyrights usually are amortized over a relatively short period of time.

1. **Trade mark and Trade Names**

A ***trademark or trade name*** is a word, phrase, or symbol that distinguishes or identifies a particular enterprise or product. E.g. Co-Ca Cola, Sony, Dell, Nike etc…

The creator or original user may obtain exclusive legal right to the trademark or trade name by registering it with the government office.

1. **Franchise and Licenses**

A ***franchise*** is a right granted by a company or a governmental unit to conduct a certain type of business in a specific geographical area.

When the cost of franchise is small, it may be charged immediately to expense or amortized over a short period such as five years. When the cost is material, amortization should be based upon the life of the franchise (if limited) and the amortization period, however, may not exceed 40 years.

1. **Goodwill**

In business, *goodwill* refers to an intangible asset of a business that is created from such favorable factors as location, product quality, reputation, and managerial skill. Goodwill allows a business to earn a rate of return on its investment that is often in excess of the normal rate for other firms in the same business.

GAAP permits the recording of goodwill in the accounts only if it is objectively determined by a transaction. E.g. Purchase or sale of business.

Unlike other intangible assets, Goodwill is not amortized rather it goes to impairment test.

To illustrate how goodwill is determined and accounted consider the following example:

**ABC- Hotel**

**Balance sheet**

 **At. Cost At fair Mkt. Value**

Total Assets 4,300.000 6,350.000

Total Liability -1,100.000 -1,100.000

 Net Asset 3,200.000 5,250.000

 Purchase Price (Cost) ------------------------ Br. 6,100.000

 Less: Fair mkt. Value of the assets -------- 5,250.000

Goodwill -------------------------------------- 850.000