Study Unit 7: DEPRECIATION

OBJECTIVES

1. To define and explain the process of depreciation
2. To identify the causes of depreciation.
3. To illustrate the different methods of computing depreciation.

INTRODOUCTION

Depreciation is the process of allocating the cost of a plant assets to expense in the accounting periods benefiting from its use in a rational and systematic manner.

It applies to three classes of plant assets such as land improvement, buildings, and equipment each of these classes is considered to be a depriciatable asset, because the usefulness to the company and revenue-producing ability of each class will decline over the asset useful life. Note that depreciation does not applied to land because its usefulness and revenue-producing ability generally remain intact as long as the asset is owned thus land is not depreciable asset.

Depreciation affects the balance sheet through accumulated depreciation and income statement through depreciation expenses. Recognition of depreciation does not result in the accumulation of each cash for the replacement of the asset.

CAUSES OF DEPRECIATION

- ❖ Wear and tear. Depreciable asset's useful life its revenue-producing ability decline because wear and tear hence no revenue production. Assets like machinery and vehicle etc. However, assets like land do not depreciate because its usefulness is greater over time because of the scarcity of good land site.
- ❖ Absolensence. This is process of becoming outdated before the asset physically wears out. This also causes decline in revenue-producing ability e.g. change in technology and fast changing demand
- ❖ Physical detoriation. This mainly occurs to tangible assets due to exposure to the element such as wind and sun. Periodic repairs and a sound maintenance policy may keep buildings and equipment's in good operating order and extract the maximum useful life from them, but every machine or building at some point must be discarded

FACTORS AFFECTING COMPUTATION OF DEPRECIATION

There are three factors that affect the computation of depreciation

1. **COST**

The cost of all expenditures necessary to acquire the asset and make it ready for the intend use.

2. USEFUL LIFE

It is also called service life of the asset; it is an estimate of the expected productive life, it may be expressed in term of time, units of activity such as machine hours or in unit of output. In making the estimate the management should consider such factors as the intended use of the asset, its expected repair and maintenance policies, and its vulnerability to obsolescence. The company past experience with similar assets is helpful when deciding the expected useful life of depreciable assets.

3. SALVAGE VALUE

Salvage value is an estimate of the asset's value at the end of its useful life. It is also called residual value or scrap value. It may be based on the asset's worth as scrap or salvage or on its expected trade in value. It is also often viewed as the amount we expect to receive from selling the asset at the end of its benefit period.

METHODS OF DEPRICIATION

1) STRAIGHT LINE METHOD

Straight line charges the same amount to expense for each period of asset's useful life. It is the most common method used for financial reporting. Its measured by the passage of time. A two step is used to compute expense.

First step

Compute the depreciable cost over the asset's life; this amount is called cost to be depreciated. It is computed by subtracting the asset's salvage value from the total cost

Second step

Depreciable cost is divided by the number of accounting period or estimated useful life.

Depreciation expense = $\dfrac{\text{(asset cost-residual value)}}{\text{Useful life of the asset}}$

Example

cost = $10000

salvage value= $1000

Accounting period or useful life =5yrs

Solution

Depreciation expense= $\dfrac{\text{original cost – estimated residual value}}{\text{Estimated useful life}}$ = $\dfrac{10000 - 1000}{5}$

$= \$1800 \text{ per year}$

Compute an annual rate at which an asset is being depreciated. Note that when an annual rate is used under straight line method, the percentage rate is applied to the depreciable cost of the asset the asset.

Depreciation rate = <u>annual depreciation expense</u>   X 100%
**   Cost of asset**

For example, the company buys an asset for £10000 the asset has an estimated useful life of 5yrs and estimated residual value of £1000.

Depreciation schedule

Year	book value beginning	depreciation expense
	10000	1800
1st	8200	1800
2nd	6400	1800
3rd	4600	1800
4th	2800	<u>1800</u>
5th	1000	<u>9000</u>

ILLUSTRATION SHOWING STRAIGHT

Therefore, at the end of the 5yrs £1000 will be recorded as the residual value.

2. **UNITS-OF-PRODUCTION METHOD**

This method of depreciation is based on the assumption that depreciation solely the result of use and the passage of time plays no role on the depreciation process. It is ideally suited factory machinery: Under this method useful life is expressed in terms of the total units of production or use expected from asset. production is measured in terms of units output or in term of machine hours used operating the machinery. Units-of-Activity is generally not suitable for assets such as buildings or furniture, because depreciation for these assets is more a function of time than use. It charges a varying amount to expense for each period of an asset's useful life depending on its usage. There are two steps used to compute unit-of-production

Step one

Compute the depreciation per unit and it is computed by subtracting the asset's salvage value from its total cost and then divided by the total number of units expected to be produced during its useful life

Step two

Compute depreciation expense for the period by multiplying the units used in the period by the depreciation units.

Assumption

Original cost =$10000

Estimated residual value = 1000

Estimated usage year 1	5000 units
Year 2	4500 units
Year 3	5500 units
Year 4	3000 units
Year 5	2000 units
	20000 units

Depreciation expense per unit= $\dfrac{cost - salvage\ value}{Estimated\ total\ units\ of\ production}$ = $\dfrac{10000 - 1000}{20000}$

=$0.45 per unit

Depreciation schedule

Year	cost per year	units used	expenses
2000	0.45 x	5000	2250
2001	0.45 x	4500	2025
2002	0.45 x	5500	2475
2003	0.45 x	3000	1350
2004	0.45 x	2000	900
			$9000

Illustration showing Units- of-production
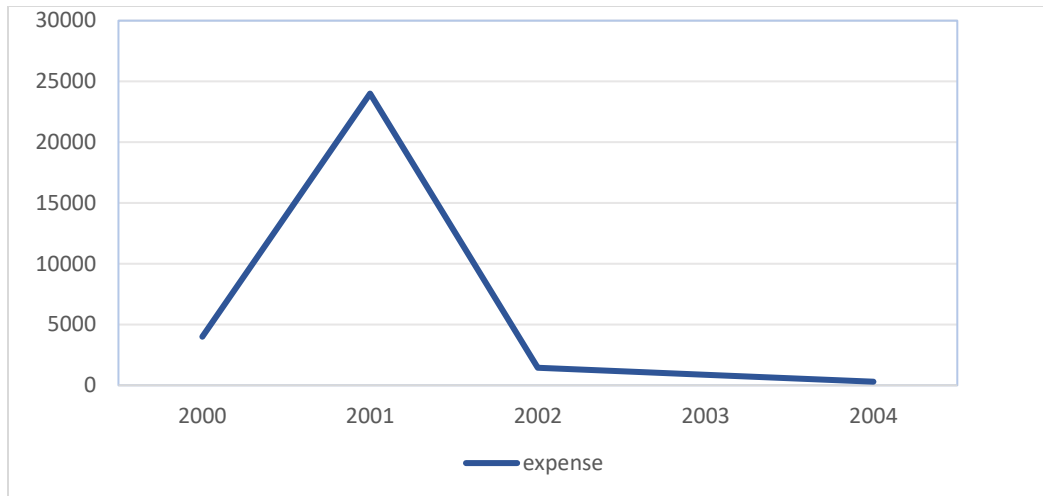
A. DECLINING-BALANCE METHOD

This provides decreasing periodic expense over the estimated useful life of the asset. the method is named because the computation of periodic depreciation is based on a declining book value. To apply this method, the annual straight line depreciation rate is doubled. For the first year of use the cost of the asset is multiplied by the declining balance rate. After the first year the declining book value (cost accumulated depreciation) of the asset is multiplied by its rate. The depreciation rate remains constant from year to year, but the book value to which the rate is applied declines each year, under this method salvage value is ignored in determining the amount to which the declining balance rate is applied. Salvage value does limit the total depreciation that can be taken. Depreciation stops when asset's book value equals expected salvage value

For example

Assumption

Original cost = £10000

Estimated salvage value =$1000

Estimated useful life 5yrs

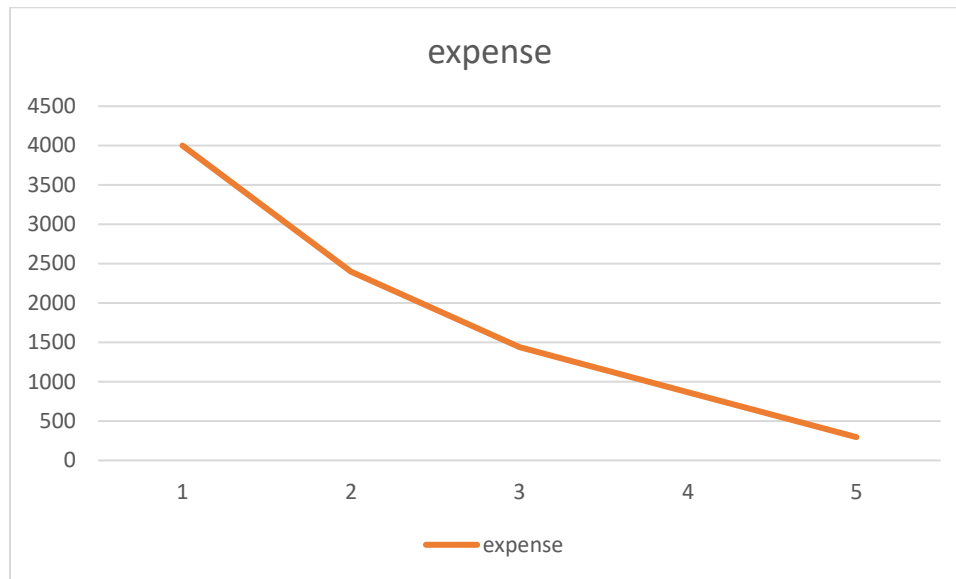Declining balance rate =200%

DB RATE = DB X straight line rate

=200 X 1/n

=200 X 1/5

= 40%

Depreciation schedule

Year	PP&E	accum. depreciation	net book value	calculation of exp.	dep expense
1	1000	0	10000	40% X 1000	4000
2	1000	4000	6000	40% X 6000	24000
3	1000	6400	3600	40% X 3600	1440
4	1000	7840	2160	40% X 2160	864
5	1000	8704	1296	40% X 1296	296
					$9000

expense

The calculation of depreciation expense in 5yrs results in calculated depreciation expense only the of £518 which would reduce the balance below the residual value. Therefore, the amount of expense necessary to bring the balance to the residual value (£1000) is recorded.

NOTE:

When using decline balance method, the estimated residual value is considered in the determining the depreciation rate. It's also ignored in computing the periodic depreciation. However, the asset should not be depreciated below its estimated residual value.

B. SUM OF THE YEAR DIGIT METHOD

This accelerates depreciation expense so that the amount recognized in the early periods of an assets useful life are greater than those recognized in the later period. This type of depreciation pattern (larger amount in early periods) identifies an accelerated depreciation method. The SYD is found by estimating an assets useful life in years assigning consecutive numbers to each year and totaling those numbers for n years

$$SYD = 1+2+3...+n$$

E.g.

If the asset is to last for 5yrs then SYD =1+2+3+4+5 =15   OR

One can use the formula SYD = $\underline{n(n+1)}$

$$2$$

   Where n =the number of periods in the assets useful life

   Therefore, SYD = $\underline{5(5+1)}$ = 15

$$2$$

The yearly depreciation is then calculated by multiplying the total depriciatable amount for the asset's useful life by a fraction whose numerator is the remaining useful life and whose denominator is SYD thus the formula

   Annual depreciation = (original cost – salvage value) X   remaining useful life

                                                                                    SYD

Year of useful life	fraction of depreciation		original less salvage	annual depreciation expense
1	5/15	X	9000	300
2	4/15	X	9000	240
3	3/15	X	9000	180
4	2/15	X	9000	120
5	1/15	X	9000	60
				9000

COMPARISON OF THE METHODS

YEAR	STRAIGHT LINE	UNITS-OF-PRODUCTION	DECLINING BALANCE
2000	1800	2250	4000
2001	1800	2025	2400
2002	1800	2475	1440
2003	1800	1350	864
2004	1800	900	296
TOTAL	**$9000**	**$9000**	**$9000**

COMPARISON
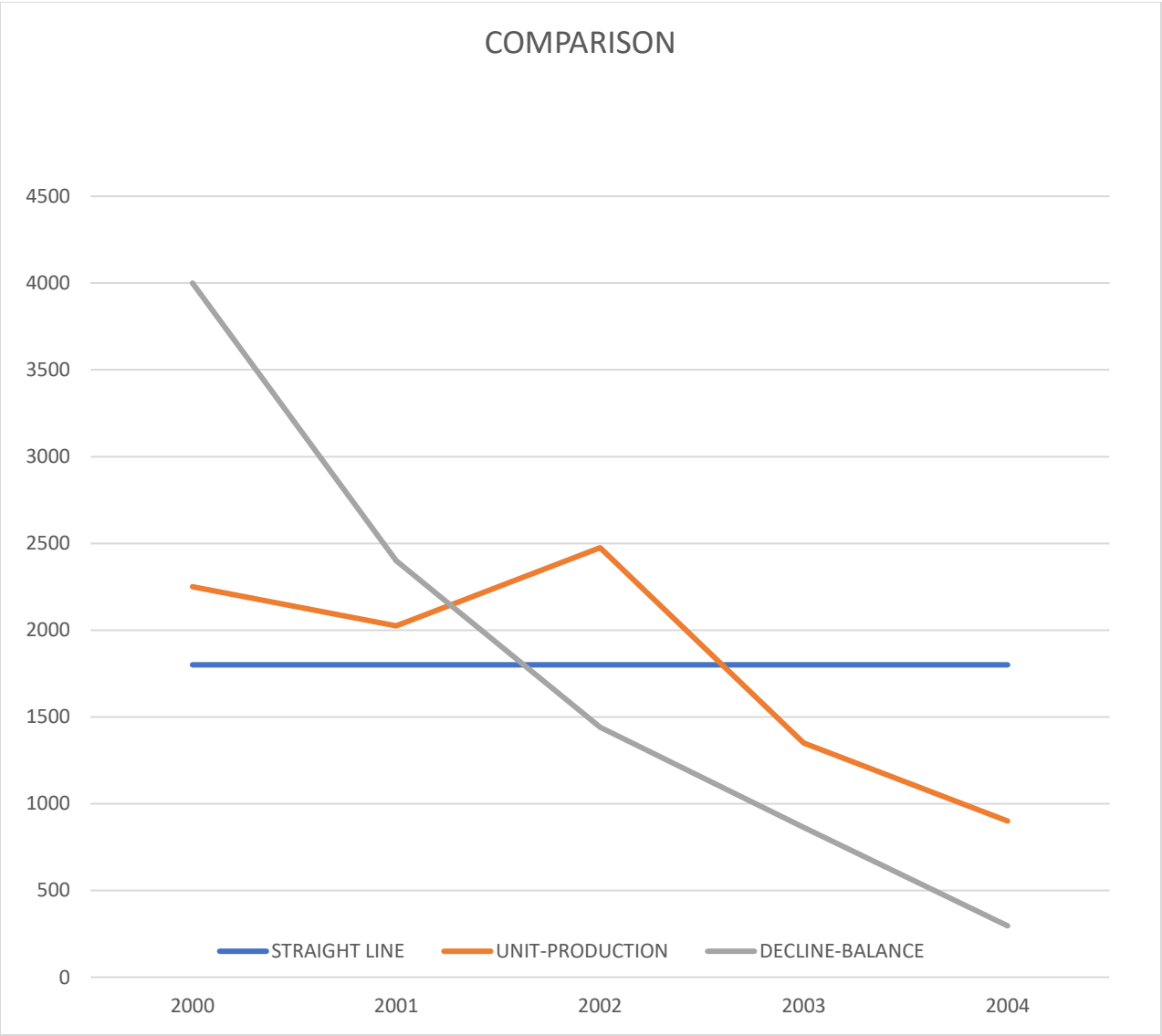
CONCLUSION

There are two accounting principles based on when calculating and reporting depreciation i.e.

❖ Cost principle. This principle requires that the expense reported on the income statement, and the asset amount that is reported on the balance sheet should be based on the historical (original) cost to replace the asset. (the amount should not be based on the cost to replace the asset, or on the current market value of the asset.)

❖ Matching principle. This principle requires that the assets cost be allocated to depreciation expense over the life of the asset. in effect the cost of the asset is divided up with some of the cost being reported on each of the income statements issued during the life of the asset. by assigning apportion of the assets cost to various income statement, the accountant is matching apportion of the assets cost with each period in which the asset is used. This also implies that the cost is being matched with the revenue earned by using the asset.

Self review question – study unit 7

a) What is depreciation?
b) Identify and discuss the causes of depreciation.
c) A firm buys machinery at shs.10,000,000 and depreciation is to be provided on machines at 20% p.a on reducing balance method. Show the depreciation charged to the income statement for the next 3 years.

Self review answer – study unit 7

a) Depreciation is the allocation of depreciable amount of an asset of its estimated useful life. Ie it is defined as cost of wear and tear.
b) Causes of depreciation
➤ Physical deterioration
   - Wear and tear
   - Rust, rot and decay
   - Accidents
➤ Economical factors
   - Obsolescence
   - Inadequacy

Year	Machinery value	Depreciation	Net Book value
1	10,000,000	2,000,000	8,000,0000
2	8,000,000	1,600,000	6,400,000
3	6,400,000	1,280,000	5,120,000

Total depreciation expense for 3 years = **4,880,000**

END