

## 2. Methods of computing Depreciation

### 2.1 Methods for Depreciation

1. **Methods Available:** The following methods are available for computing and allocating the depreciable amount of an asset over its useful life –
  - (a) Straight Line Method or Fixed Instalment Method,
  - (b) Reducing Balance Method or Written Down Value (WDV) Method,
  - (c) Sum of Digits Method
  - (d) Machine Hour Method,
  - (e) Production Units Method,
  - (f) Depletion Method,
  - (g) Annuity Method, (not included CA Foundation syllabus)
  - (h) Sinking Fund Method (not included CA Foundation syllabus).

**Note:** Of the above, the first 2 methods viz. Straight Line and Reducing Balance Method are widely used.

2. **Selection of method:** The choice of a method is based on –
  - (a) The type of asset,
  - (b) Nature of its use, and
  - (c) Circumstances prevailing in the business.

**Note:**

- A combination of more than one method **may** be used.
- Depreciable Assets **not having any material value** are fully depreciated in the year in which they are acquired.
- The Income Tax Rules prescribe the WDV Method (i.e. Reducing Balance Method), except in the case of an undertaking engaged in generation and distribution of power.

### 2.2 Straight Line Method (SLM) or Fixed Instalment Method

1. <b>Meaning</b>	(a) Under this method, an <b>equal or constant amount of depreciation</b> is written off from the Depreciable Asset, every year. (b) At the end of the useful life of the asset, the cost of the asset will be NIL or equal to its Residual Value / Scrap Value.	
2. <b>Formula</b>	Straight Line Depreciation = $\frac{\text{Cost Less Residual Value}}{\text{Useful Life}}$	SLM Deprn Rate = $\frac{\text{SLM Depreciation}}{\text{Cost of Asset}}$
3. <b>Merits</b>	(a) Easy to understand, simple to use, and gives accurate results in most cases. (b) Suitable for assets which generates equal utility during every year of its useful life.	
4. <b>Demerits</b>	(a) As the life of the asset increases, its maintenance cost also increases. So, total expenditure to P&L A/c, i.e. Depreciation + Maintenance, will <b>not</b> be uniform in all years. (b) Value of the asset may be extinguished, whereas the asset may be physically available.	
5. <b>Example</b>	Arvind Ltd purchased a machine costing ₹ 75 Lakhs, having a useful life of 7 years. Its estimated Residual Value is ₹ 5 Lakhs. • Depreciation under Straight Line Method = $(75 - 5) \div 7 = ₹ 10 \text{ Lakhs per annum.}$ • SLM Depreciation Rate = $10 \div 75 = 13.33\%$	

### 2.3 Reducing Balance Method or Written Down Value (WDV) Method

1. <b>Meaning</b>	(a) Depreciation Amount for each year is computed by applying a fixed percentage on the Opening Balance of the Asset (i.e. Diminishing Balance of the Asset.) (b) Reducing Balance refers to the Written Down Value of the Asset, i.e. value of the asset as reduced by the depreciation upto the previous year. (c) Depreciation Rate is computed such that at the end of the useful life of the asset, the cost of the asset will be equal to its Residual Value / Scrap Value / Break-up Value.
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2. <b>Formula</b>	$WDV \text{ Depreciation Rate} = 1 - \sqrt[n]{\frac{\text{Residual Value}}{\text{Cost of Asset}}}$ , where n = Useful Life.
3. <b>Merits</b>	(a) Annual Charge of depreciation reduces from year to year, such that the total expenditure to P&L A/c, i.e. Depreciation + Maintenance, will be <b>uniform</b> in all years. (b) The value of the asset will <b>never</b> be extinguished, as it happens in SLM Method. (c) Simple to use, and most <b>suited</b> for Plant, Machinery, Fixtures, etc.
4. <b>Demerits</b>	(a) There is a danger that depreciation rate may be taken too low, in which case, the full depreciation may <b>not</b> be provided within the useful life of the asset. (b) If similar assets are grouped (i.e. called Block of Assets) and depreciation rate is applied on the WDV of the entire Block, there is a possibility that the residue (balance) of the asset may lie in the Asset Block A/c even after the asset has been scrapped. [ <b>Note:</b> This difficulty can be overcome by maintaining an asset-wise Plant & Depreciation Register.]
5. <b>Example</b>	Arvind Ltd purchased a machine costing ₹ 5 Lakhs, and has ascertained its WDV rate as 16% p.a. The Depreciation amounts for the first five years will be as under –

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Cost / Opg WDV	5,00,000	4,20,000	3,52,800	2,96,352	2,48,936
(-) Depreciation	5,00,000 × 16% = 80,000	4,20,000 × 16% = 67,200	3,52,800 × 16% = 56,448	2,96,352 × 16% = 47,416	2,48,936 × 16% = 39,830
Closing WDV	4,20,000	3,52,800	2,96,352	2,48,936	2,09,105

## 2.4 Sum of Digits of Years Method

1. <b>Meaning</b>	It is a variation of the WDV Method. Under this method, Depreciation Amount for each year is computed by applying the following formula –
2. <b>Formula</b>	$\text{Deprn p.a.} = \text{Depreciable Amt} \times \frac{\text{No. of years of balance useful life (including current year)}}{\text{Total of Digits of the Useful Life of the Asset (in years)}}$
3. <b>Example</b>	Arvind Ltd purchased a machine costing ₹ 78 Lakhs, having a useful life of 5 years, and estimated Scrap Value ₹ 3 Lakhs. Depreciation amounts for the five years will be –

Here, sum of digits = (1 + 2 + 3 + 4 + 5) = 15. [**Note:** This can also be calculated as  $[n \times (n+1)] \div 2$ ]

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Depreciation Amount for the year	75 × 5/15 = ₹ 25 Lakhs	75 × 4/15 = ₹ 20 Lakhs	75 × 3/15 = ₹ 15 Lakhs	75 × 2/15 = ₹ 10 Lakhs	75 × 1/15 = ₹ 5 Lakhs

**Note:** Depreciation is calculated on the Depreciable Amt, i.e. Cost less Residual Value = 78 – 3 = 75 Lakhs.

## 2.5 Machine Hour Method

1. <b>Meaning</b>	In this method, Depreciation is computed based on the number of Machine Hours (rather than years). So, Depreciation Amount for each year is computed by applying the formula –
2. <b>Formula</b>	$\text{Deprn p.a.} = \text{Depreciable Amt} \times \frac{\text{No. of Machine Hours during the year}}{\text{Total Machine Hours during the entire useful life}}$
3. <b>Example</b>	Arvind Ltd purchased a machine costing ₹ 23 Lakhs, having a Scrap Value of ₹ 2,30,000. The machine has a useful life of 20,700 machine hours distributed as under – <ul style="list-style-type: none"> <li>Years 1 to 3: 2,500 machine hours each,</li> <li>Years 4 to 6: 2000 machine hours each, and</li> <li>Years 7 to 10: 1800 machine hours each.</li> </ul> In this case, Depreciation Amounts will be computed as under –

- Depreciable Amount = Cost less Residual Value = ₹ 23,00,000 – ₹ 2,30,000 = ₹ 20,70,000
- Total Machine Hours = (3 × 2500) + (3 × 2000) + (4 × 1800) = 20,700 machine hours.
- Depreciation Amount for each of the years will be –

Particulars	Years 1 – 3	Year 4 – 6	Year 7 – 10
Depreciation Amount	$20,70,000 \times 2500 / 20700 =$ ₹ 2,50,000 p.a.	$20,70,000 \times 2000 / 20700 =$ ₹ 2,00,000 p.a.	$20,70,000 \times 1800 / 20700 =$ ₹ 1,80,000 p.a.

## 2.6 Production Units Method of Depreciation

1. <b>Meaning</b>	In this method, Depreciation is computed based on the production / output quantity. So, Depreciation Amount for each year is computed by applying the formula –
2. <b>Formula</b>	$\text{Deprn p.a.} = \text{Depreciable Amt} \times \frac{\text{Production Quantity for the current year}}{\text{Total Estimated Production Quantity from the Machine}}$
3. <b>Example</b>	<p>Arvind Ltd purchased a machine costing ₹ 25 Lakhs, having a Scrap Value of ₹ 5 Lakhs. The machine is expected to produce 10 Lakh units of output in the following manner –</p> <ul style="list-style-type: none"> <li>Years 1 &amp; 2: 1,15,000 units each,</li> <li>Years 3 to 7: 1,00,000 units each, and</li> <li>Years 8 to 10: 90,000 units each.</li> </ul> <p>In this case, Depreciation Amounts will be computed as under –</p>

- Depreciable Amount = Cost less Residual Value = ₹ 25,00,000 – ₹ 5,00,000 = ₹ 20,00,000
- Total Production Qty = (1,15,000 × 2 yrs) + (1,00,000 × 5 yrs) + (90,000 × 3 yrs) = 10,00,000 units.
- Depreciation Amount for each of the years will be –

Years 1 – 2	Year 3 – 7	Year 8 – 10
$₹ 20 \text{ Lakhs} \times 115000 / 10,00,000 =$ ₹ 2,30,000 p.a.	$₹ 20 \text{ Lakhs} \times 100000 / 10,00,000 =$ ₹ 2,00,000 p.a.	$₹ 20 \text{ Lakhs} \times 90000 / 10,00,000 =$ ₹ 1,80,000 p.a.

## 2.7 Depletion Method of Depreciation

1. <b>Meaning</b>	<p>(a) Depletion means reduction or exhaustion.</p> <p>(b) This method is used in the case of Mines, Quarries, Oil Well, etc. containing only a certain estimated quantity of resources / products.</p> <p>(c) Depreciation Amount for each year is computed by applying the formula –</p>
2. <b>Formula</b>	$\text{Deprn p.a.} = \text{Depreciable Amt} \times \frac{\text{Quantity of Mineral / Oil extracted during current year}}{\text{Total Estimated Quantity from the Mine / Quarry / Well}}$
3. <b>Example</b>	<p>Arvind Ltd took a quarry on lease by paying ₹ 75 Lakhs. As per technical estimate, the total quantity of mineral deposit is 1,00,000 tonnes. The extraction pattern is given below –</p> <ul style="list-style-type: none"> <li>Year 1: 6,000 tonnes,</li> <li>Years 2 to 5: 15,000 tonnes each, and</li> <li>Years 6 &amp; 7: 17,000 tonnes each.</li> </ul> <p>In this case, Depreciation Amounts will be computed as under –</p>

Depreciation Amount for each of the years will be –

Year 1	Year 2 – 5	Year 6 – 7
$₹ 75 \text{ Lakhs} \times 6,000 / 1,00,000 = ₹ 4,50,000$	$₹ 75 \text{ Lakhs} \times 15,000 / 1,00,000 =$ ₹ 11,25,000 p.a.	$₹ 75 \text{ Lakhs} \times 17,000 / 1,00,000 =$ ₹ 12,75,000 p.a.

## 2.8 Suitability of different methods of Depreciation

Method	Suitability
1. Straight Line Method	Used for assets of specified useful life, e.g. Machinery, Building, Furniture.
2. WDV Method	Used commonly for Machinery, Plant, Fixtures, etc.
3. Sum of Digits Method	Used as a variation of WDV Method.
4. Machine Hour Method	Used for Machines whose lifetime can be measured in terms of hours of operation (and not in terms of years)

Method	Suitability
5. Production Units Method	Used for Machines producing product of uniform specifications.
6. Depletion Method	Used in the case of Mines, Quarries, Oil Well, etc. containing only a certain quantity of product / output.
7. Annuity Method (not included CA Foundation syllabus)	Used for writing off the amounts paid for long lease which involves considerable capital outlay.
8. Sinking Fund Method (not included CA Foundation syllabus)	Used when the amount required for replacement is invested specifically in outside securities.

## 2.9 Accounting Entries for Depreciation

Depreciation can be recorded in the books of account, under 2 approaches, which are described below –

Method	Method 1 Asset Credit Method	Method 2 Provision for Depreciation Method
1. Journal Entry	(a) Depreciation A/c Dr. To Fixed Asset A/c (b) Profit and Loss A/c Dr. To Depreciation A/c.	Profit and Loss A/c Dr. To Provision for Depreciation A/c.
2. Provision for Depreciation A/c	There is no Provision for Depreciation Account at all.	Depreciation for each year is credited to Provision for Depreciation A/c, which shows the Accumulated Depreciation on the Asset.
3. Effect on Asset A/c	Asset A/c is shown at Historical Cost less Depreciation. So, balance in Asset A/c is reduced year after year.	Asset is shown in the books at Original Cost. Net Book Value = Original Cost <b>less</b> Accumulated Depreciation thereon.

**Note:** The above schemes are applicable to SLM and WDV Methods. The same treatment is also applicable under – (a) Sum of Digits, (b) Machine Hours, (c) Production Units, and (d) Depletion Methods.